



Developing technology competencies of pre-service and in-service teachers

Jim Wright, Ed.D. Kennesaw State University March 28, 2019





Introductions

- Jim Wright
- Educational Technologist
- 24 years at Kennesaw State
- Career minors the growth of the www
- Research interests in online learning and student engagement



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Problem statement:

What are the technological skills and traits that make a good teacher?

How does a College of Education develop **technology competencies** in their students?





Background of University

Kennesaw State University (KSU) is in the Atlanta, Georgia metro area and has 35,000 students.

Educator Preparation Provider (EPP) is one of the top producers of teachers in the State of Georgia. About 2,700 student in about 30 degree programs.

FY 2017 College of Education Graduates

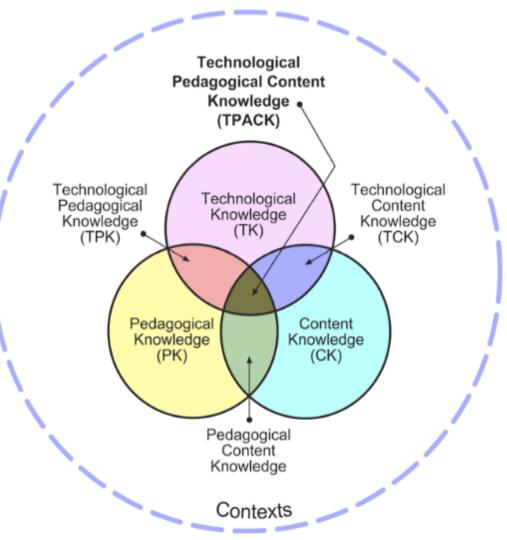
Bachelor's 199
Master's 276
Specialist's 195
Doctorate 21
Total 691



Theoretical foundation

Technological Pedagogical and Content Knowledge (TPaCK)

Mishra & Koehler (2006) http://tpack.org/







Knowledge about the subject matter being taught; including facts, concepts, theories and procedures, plus the nature of inquiry in a given field.

Technology Content Knowledge

Knowledge about how technology and content are reciprocally related.

Pedagogical Knowledge

Deep knowledge about the processes, practices and methods of teaching. Plus understanding that teaching may change with the use of new technologies.

Technology Pedagogical Content Knowledge

The thoughtful interweaving of all three key sources of knowledge: Technology, Pedagogy, and Content.

Pedagogical Content Knowledge

Knowledge of pedagogy that is applicable to the teaching of specific content.



Technology Knowledge

Knowledge of basic and advanced technology skills, plus the ability to adapt new technologies.

Technological Pedagogical Knowledge

Knowledge of the components and capabilities of various technology used in teaching,

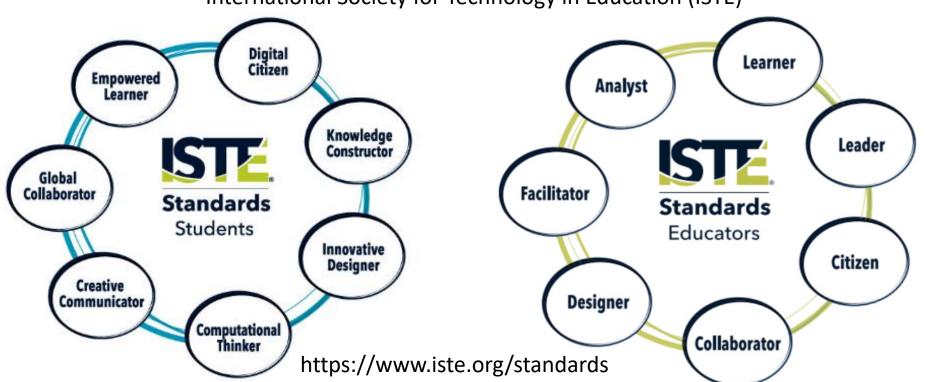
Interactions of TPACK as described by Mishra & Koehler (2006), in Robin (2008).





Look to the standards

International Society for Technology in Education (ISTE)









https://www.iste.org/standards







https://www.iste.org/standards





We developed our own technology standards

Standard 1: Technology Proficiency

Standard 2: Technology Integration

Standard 3: Blended/Online Learning

Standard 4: Field and Clinical Experiences

https://bagwell.kennesaw.edu/epp-standards.php





Standard 1: Technology Proficiency

Candidate demonstrates proficiency with current and emerging technologies.

- 1.1 Candidate explores and uses a variety of current and emerging technologies to support learning.
- 1.2 Candidate troubleshoots basic technology issues in the classroom.





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Candidate demonstrates the ability to integrate technology into standards-based teaching, learning, and assessment.

- 2.1 Candidate selects and evaluates digital tools and resources (academic content, technology tools, and information) for quality, accuracy, and effectiveness, and uses developmentally appropriate resources aligned with standards to engage learners.
- 2.2 Candidate plans and implements technology-enhanced learning experiences using a variety of evidence-based instructional strategies (e.g. higher order thinking, problem solving, creativity, authentic learning, and collaborative learning).

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- 2.3. Candidate uses technology tools to facilitate communication and collaboration of learners, families, and colleagues in local and global learning communities.
- 2.4 Candidate uses technology to personalize learning by designing and customizing instruction to support learner strengths, needs, and interests.
- 2.5 Candidate uses technology to engage learners in assessment practices and adjust instruction to meet learner needs.
- 2.6 Candidate implements effective classroom management strategies when integrating technology and ensures learners are engaged and using technology for learning.

 https://bagwell.kennesaw.edu/epp-standards.php





- 2.7 Candidate promotes equitable access to digital tools and resources.
- 2.8 Candidate promotes digital citizenship by modeling the safe, legal, and ethical use of digital information and technologies, including appropriate documentation of sources and responsible use of social media.
- 2.9 Candidate uses digital tools and resources to ensure accessibility and relevance for all learners.
- 2.10 Candidate engages in ongoing professional learning by connecting online with other educators and using social media tools to build a professional learning network (PLN).

https://bagwell.kennesaw.edu/epp-standards.php

Should we teach undergraduate students to teach online?

No

Yes

I am not sure





Standard 3: Blended/Online Learning

Candidate demonstrates the specialized knowledge and skills necessary for teaching and learning in a blended/online learning environment.

- 3.1 Candidate identifies basic principles of effective blended/online learning.
- 3.2 Candidate designs learning experiences for a blended/online learning environment





Standard 4: Field and Clinical Experiences

Candidate demonstrates technology proficiency, technology integration, and competency in a blended/online learning environment during field and clinical experiences.

4.1 Candidate engages in field and clinical experiences demonstrating the knowledge, skills, and dispositions identified in these technology standards.





Department of Instructional Technology Different Levels of Technology Competencies



Degree	Goal	Target Personal
Bachelor Degree (all programs)	Classroom Technology Integration	Classroom Teacher
Master's Degree or Specialist Degree	Technology Coaching	Classroom Teacher or School Level Support
Doctor of Education	Technology Leadership	School Level or System Level





Classroom Technology Integration

- Stand Alone Undergraduate Technology Class
- Face-to-face class customized for each subject area:
 - Elementary Education
 - Middle Grades Education (Math, Science, Language Arts, and Social Studies)
 - High School (Math, Science, History, and Physical Education)
- Student build a portfolio to show competencies (and future employers)





Student Portfolio

Portfolio Entry One: Introduction

Portfolio Entry Two: Instructional Software Selection and Evaluation

Portfolio Entry Three: Basic Productivity Software (BPTs)

Portfolio Entry Four: Beyond-the-Basic Productivity Tools (BBPTs)

Portfolio Entry Five: Interactive Presentations (NearPod)

Portfolio Entry Six: Student Response/Assessment Tools (SRTs)

Portfolio Entry Seven: Twitter, Blogs and Other Website Creation Tools

Portfolio Entry Eight: Multimedia Authoring (Audio/Video)

Portfolio Entry Nine: Online Projects and Student Publishing

Portfolio Entry Ten: Reflection Entry

Student Examples

http://garberprofessionalportfolio.weebly.com/
http://rodriguezprofessionalportfolio.weebly.com/





How to measure technology integration?

We use the **SAMR Model**.

A framework created by Ruben Puentedura that categorizes four different degrees of classroom technology integration. R

REDEFINITION

Technology allows for the creation of new tasks, previously inconceivable

M

MODIFICATION

Technology allows for significant task redesign

A

AUGMENTATION

Technology acts as a direct substitute, with functiona improvement

S

SUBSTITUTION

Technology acts as a direct substitute, with no functional change

TRANSFORMATION

ENHANCEMENT





The Technology Integration Matrix (TIM)











TECHNOLOGY

ENTRY LEVEL The teacher begins to

use technology tools to deliver increasing content to students.

ADOPTION LEVEL

The teacher directs students in the conventional and procedural use of technology tools.

ADAPTATION LEVEL

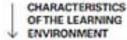
The teacher fed bates students in exploring and independently using technology tools.

INFUSION LEVEL

The teacher provides the learning context and the students thoses. the technology tools to achieve the outcome.

TRANSFORMATION LEVEL

The teacher encourages the innovative say of technology tools. Technology tooks are used to facilitate higher order learning activities. that may not have been possible without the use of technology.





ACTIVE LEARNING

Students are actively engaged in using technology as a tool rather than passively receiving information from the technology.

Active Entry

information passively received.

Active Adoption

Conventional. procedural use of tools

Active Adaptation

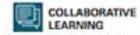
Conventional independent use of tools; some student charge and exploration

Active Infusion

Choice of tools and regular, self-directed

Active Transformation.

Extensive and unconventional was of toothe



Students use technology tools to policyborate with others comes man

Collaborative Entry

Individual student use

Collaborative Adoption

Collaborative use of touche les consumerés consi

Collaborative Adaptation

Collaborative use of totalist among attaches

Collaborative Infusion

Choice of tools and

Collaborative **Transformation**

Cullaboration with

https://fcit.usf.edu/matrix/matrix/





Future issues and concerns

Virtual and augmented reality

 The role of Artificial Intelligence (Al) and intelligent tutor system in education

Personalized Learning

 Security and transport of student records (Blockchain maybe?)







How do I get started?

21 Things for Students

https://21things4students.net/21things4students/21/begin-here/

- 1. Basics
- 2. Visual Learning
- 3. Cloud Initiation
- 4. Collaboration
- 5. Digital Footprint
- 6. Cyber Safety
- 7. Be Legal & Fair
- 8. Troubleshooting
- 9. Search Strategies
- 10. Digital Images
- 11. Powerful Presentations

- 12. Interactives
- 13. Dig the Data
- 14. Social Networking
- 15. Design Thinking
- 16. Career Prep
- 17. Creative Communications
- 18. Digital Storytelling
- 19. Buyer Beware
- 20. Mobile Computing
- 21. Coding and Game Design

REMC Association of Michigan





preguntas?



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