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Involving Literacy and Technology: An Action Research Study to Improve Teacher Candidates' Practice

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Involving Literacy and Technology: An Action Research Study to Improve Teacher Candidates' Practice

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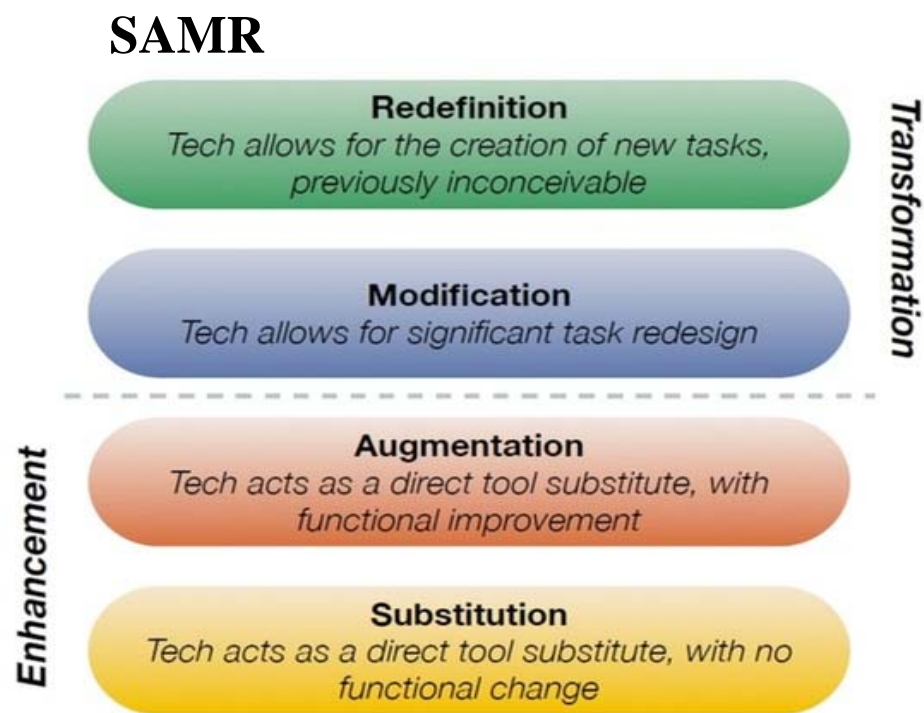
Kristal Curry, PhD, Coastal Carolina University

Cherner, T., & Curry, K. (in press). Enhancement or transformation? A case study of pre-service teachers' use of instructional technology. *Contemporary Issues in Technology and Teacher Education*, xx(xx), xx-xx.

Research Questions

1. How are pre-service English and Social Studies teachers using instructional technology during their internship?
2. Did the complexity of technology usage advance as pre-service teachers progressed through their internship?
3. Was instructional technology used as a tool for promoting student learning, as a teacher resource, or as a tool and resource?

Theoretical Framework: *Substitution, Augmentation, Modification, & Redefinition*



Critiques of SAMR

- 1. Does not take into account the content/context
- 2. Has a misleading hierarchical design
- 3. Does not address how edtech is used to advance student learning
- 4. Does not have a research base to support its use
- **5. Does focus on the purposeful use of technology**

Puentedura, R. (2010). SAMR and TPACK: Intro to advanced practice. Retrieved from http://hippasus.com/resources/sweden2010/SAMR_TPACK_IntroToAdvancedPractice.pdf.

Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The Substitution Augmentation Modification Redefinition (SAMR) model: A critical review and suggestions for its use. *TechTrends*, 60(5), 433-441.

Context

Location of Study: Cherry University



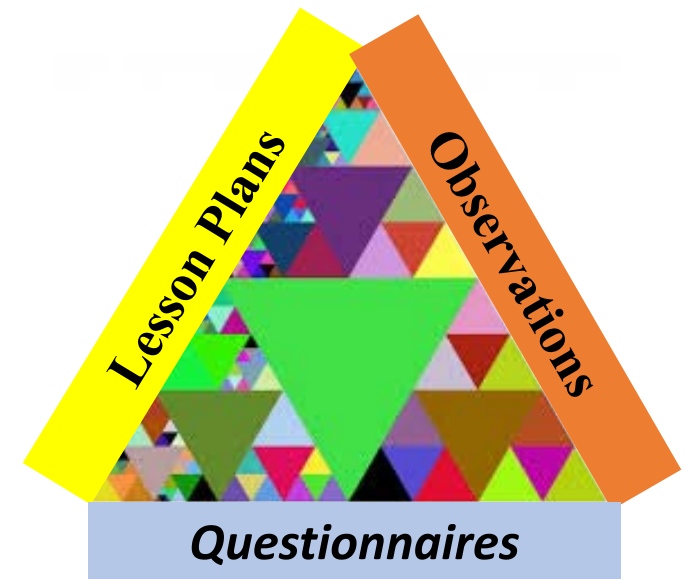
- Public University
- Southeastern United States
- Tourist Region
- Out-of-State & First-Time College Students

Description of Teacher Education Program

- Type: *MAT & NCATE Accredited*
- Observation: *Two weeks in the fall*
- Practicum: *Two weeks in the fall*
- Internship: *35 full-time teaching days*
- 1:1 School District: *Dell Venues*
- Blended Learning Requirement

Participants and Data Collection

Subject Area	Race/Ethnicity	Gender	Age
English	- 1 African-American	- 4 Females	- 7 are between 21-25 years of age
	- 7 Caucasians	- 4 Males	- 1 is between 26-30 years of age
Social Studies	- 2 African-Americans	- 3 Females	- 6 are between 21-25 years of age
	- 5 Caucasians	- 4 Males	- 1 is between 26-30 years of age



- Lesson Plans: *35 per participant – stored in Google Drive*
- Observations: *Four per participant*
- Questionnaires: *Four-item question administered after internship*

Glimpse at Data Collection Instruments

Observation Form

- Name of Intern:
- Date of Observation:
- Lesson's Objective (copied from intern's lesson plan):

Technology Used				
SAMR Level	Substitution	Augmentation	Modification	Redefinition
Brief summary of how technology was used				

Questionnaire Prompts

1. How often did you use technology to project information – PowerPoints, videos, images, etc. – from the front of the room?
2. How often did you use technology for students to complete daily processing assignments, such as illustrated timelines, graphic organizers, or using educational software like iCivics or No Red Ink?
3. How often did you use technology to support students in conducting research for new information, collaborating on longer-term tasks, or taking virtual tours?
4. How often did you use technology for students to create an artifact that can only exist digitally including: a multimedia presentation, podcast, website, documentary, recorded or edited music, blog, or another similar learning artifact?

Operationalizing SAMR

Category	Example 1	Example 2	Example 3	Example 4
<i>Redefinition</i>	Participating in game-based learning using websites and digital tools	Developing an online blog for others to read	Creating a multimedia presentation	Recording and editing music
<i>Modification</i>	Creating a graphic organizer that includes hyperlinks, images, and varied fonts	Searching massive databases for information	Visiting places that no longer exist (e.g., Ancient Rome, the Globe Theater)	Collaborating on a document in real time digitally
<i>Augmentation</i>	Viewing a video that pauses automatically to ask questions, which then scores and stores the response data	Posting to a class website	Creating an infographic	Viewing existing artifacts virtually
<i>Substitution</i>	Responding to an exit ticket by emailing their response to their teacher	Memorizing vocabulary terms using digital flashcards	Learning times tables and spelling	Tracing letters on a tablet

Question #1

How are pre-service English and Social Studies teachers using instructional technology during their internship?

Technology	Frequency of Use	Representative Example(s)
Google Classroom	20	Using Google Classroom to process information using an activity such as answering questions/prompts, creating presentations
Technology	Frequency of Use	Representative Example(s)
"Make a Case"	1	Presents a legal topic and multiple perspectives about how the topic could be interpreted
Easy Bib	1	Create and record reference citations
No Fear Shakespeare	1	Translate Shakespearean works into modern English and provides analysis and interpretation of the different works
Quizlet	1	Review vocabulary words for upcoming assessment
Digital Textbooks	1	Multimedia texts that include interactive maps and videos
PosterMyWall	1	Create infographics that include multimedia elements
USA Test Prep	1	Review material in preparation for upcoming AP test in U.S. history and tracks responses
iCivics	2	Game-based learning platform that teaches about federal elections and Constitutional rights
Popplet	2	Create semantic maps and/or graphic organizers in response to a topic

Question #2

Did the complexity of technology usage advance as pre-service teachers progressed through their internship?

Intern #	Observation 1	Observation 2	Observation 3	Observation 4
ENG 1 Intern	S, S, A (1.33)	S, S, M (1.67)	S, S, A, A (1.5)	S, A, M (2)
ENG 2 Intern	S,A (1.5)	A, R (3)	S, A, A (1.67)	S, A (1.5)
ENG 3 Intern	S, A (1.5)	A, A (2)	A, A (2)	A (2)
ENG 4 Intern	A (2)	S (1)	S (1)	M, M (3)
ENG 5 Intern	S, A (1.5)	S, S (1)	S, A (1.5)	S, A, A (1.67)
ENG 6 Intern	N/A*	N/A*	S (1)	M (3)
ENG 7 Intern	A (2)	A, A (2)	S, A (1.5)	A, A, A, A (2)
ENG 8 Intern	A (2)	N/A*	S, A (1.5)	S (1)
English average	1.69	1.78	1.46	2.02
SS 1 Intern	S, S, A (1.33)	A, M, M (2.67)	S, A, M (2)	R (4)
SS 2 Intern	S, M (2)	S, M (2)	R (4)	S, A, R, R (2.75)
SS 3 Intern	S, A, A, M (2)	M, M (3)	A, A, A, M (3)	A, A, M (2.33)
SS 4 Intern	S, S (1)	S, S (1)	S, S, S (1)	S, M (2)
SS 5 Intern	S, A (1.5)	S (1)	S, S (1)	A, A (2)
SS 6 Intern	S, S (1)	S, S, A, M (1.75)	S, M (2)	S, S, M (1.67)
SS 7 Intern	M, M (3)	S, A (1.5)	A, A, M (2.33)	S, S, A (1.33)
Social Studies Average	1.69	1.85	2.19	2.30
Total Average	1.69	1.81	1.80	2.15

* Not included in calculation—technology was not available to interns during these observations, so complexity of non-existent technology could not be determined.

Question #3

Was instructional technology used as a tool for promoting student learning, as a teacher resource, or as a tool and a resource?

Examples of Technology being a tool for learning.

Hardware	1:1 Devices (Tablets and Laptops)	
Software	Frequency of Use	Representative Example(s)
Google Classroom	20	Using Google Classroom to process information using an activity such as answering questions/prompts, creating presentations
Search Engines	10	Visiting popular search engines such as Google to find information about a topic
Achieve 3000	5	Software program used to monitor and support students reading comprehension skills
EdPuzzle	4	Embed questions within a video that students answer while recording data
StoryboardThat	3	Create graphic organizers in the form of "Storyboards" that combine text and images
No Red Ink	3	Software program that teaches and reviews grammar skills
iMovie	2	Create movies that relate to a specific topic or theme
Kahoot	2	A multiple-choice, quiz-based activity that poses questions and tracks responses
iCivics	2	Game-based learning platform that teaches about federal elections and Constitutional rights
Popplet	2	Create semantic maps and/or graphic organizers in response to a topic
"Make a Case"	1	Presents a legal topic and multiple perspectives about how the topic could be interpreted
Easy Bib	1	Create and record reference citations
No Fear Shakespeare	1	Translate Shakespearean works into modern English and provides analysis and interpretation of the different works
Quizlet	1	Review vocabulary words for upcoming assessment
Digital Textbooks	1	Multimedia texts that include interactive maps and videos
PosterMyWall	1	Create infographics that include multimedia elements
USA Test Prep	1	Review material in preparation for upcoming AP test in U.S. history

Question #3

Was instructional technology used as a tool for promoting student learning, as a teacher resource, or as a tool and a resource?

Examples of Technology being a tool for learning.

Hardware	Projector	
Software	Frequency of Use	Representative Example(s)
Presentation Software	21	PowerPoint or Google Slide presentations used for whole-class lecture or to project daily questions
CNN Student News	9	Share current events with students and discuss them
YouTube	8	Show a video clip to the entire class related to a topic of study
Kahoot	2	Projected on the screen for the teacher, while students answer using their tablets

Hardware	Cell Phones	
Software	Frequency of Use	Representative Example(s)
Mobile Applications	2	Students used cell phones to research a topic

Question #3

Was instructional technology used as a tool for promoting student learning, as a teacher resource, or as a tool and a resource?

Examples of Technology as a teacher resource.

Hardware	Projector	
Software	Frequency of Use	Representative Example(s)
Presentation Software	17	Used as a visual aide during lesson to project an image, quote, or instructions to students.
Digital Timer	6	Used by the pre-service teachers to pace the different components of a lesson or time allotted to students to complete a task
Online Name Wheel	2	Used to randomly select students to answer a question
Hardware	SMART Board	
Software	Frequency of Use	Representative Example(s)
SMART Notebook	4	Used to annotate text and conduct a “chalk talk” lesson
Hardware	Music Player	
Software	Frequency of Use	Representative Example(s)
Windows Media Player	4	Play music for students while they complete independent work
Hardware	Document Camera	
Software	Frequency of Use	Representative Example(s)
SMART Notebook	3	Annotate texts and model diagramming sentences as grammar practice

Implications

1. The majority of instructional technologies used were at SAMR's lower levels.
2. Technologies with multiple uses were used more frequently than standalone technologies that had only one functionality.
3. Projecting presentations is still the main use for SMART Boards.
4. Tablets are versatile tools and, with training, they can be used to both boost instruction and increase productivity.
5. There is a need for pre-service and in-service teachers to have clear guidelines, models, and experiences using technology at the M & R levels.
6. Teachers in this study did not take advantage of the dynamic opportunities for conducting research using technology that would enhance students' 21st Century Skills.

Questions

