

# SAMR: A Model to Infuse Technology into Nursing PhD Coursework

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## Conflict of Interest

- I certify that I have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this presentation

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## Overview & Objectives

- *Explore* the historical and present use of technology in doctoral education
- Assess the conceptual and operationalization components of the SAMR (Substitution, Augmentation, Modification and Redefinition) Model
- *Evaluate* potential confounders and consequences of SAMR to aid in the implementation of technology in doctoral education
- *Examine* 4 case vignettes from an educational experiment using SAMR to introduce technology into a doctoral Research Design course
  - The 4 case vignettes cover:
    - A Discussion Board
    - A Classroom Wiki Page
    - A Interview Role-Play Assignment
    - A Virtual Student Poster Presentation

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## Technology in Doctoral Education

- Technology in doctoral education is often used to facilitate online education ranging from web-facilitated, blended, and fully online courses
- In a 2013 survey, 33.5% of doctoral students at US institutions took at least one online course
- Many Schools of Nursing utilize technology such as Blackboard to deliver and extend education to online learning environments
  - Student advantages include: flexibility, greater course choices, and the ability to practice & learn
- Research on the effects of online education compared to traditional face-to-face is mixed suggesting other variables such as instructor comfort with utilizing technology and course design may influence student outcomes

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## SAMR Model

- The SAMR (Substitution, Augmentation, Modification and Redefinition) Model is a framework created by Dr. Ruben Puentedura, PhD that categorizes four different degrees of classroom technology integration
- The purpose of SAMR is to describe and inform the formative steps instructors transition through as they become proficient in technology enriched learning experience



- SAMR may be a research-based model to inform nurse educators on the integration of technology in doctoral education coursework

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## SAMR Model

	Concept	Definition	Operationalization	Nursing Example
Enhancer	Substitution	Technology is a direct substitute, no functional change	The very first stage, technology replaces an activity that may have been done before using an analog version; the task is the same	An instructor uses Blackboard for a paper assignment submission
	Augmentation	Technology is a direct substitute, with functional change	Technology is replacing the analog version changing the task by significantly benefitting students' productivity	Student's work on a collaborative Wiki study guide
Transformer	Modification	Technology allows a significant task redesign	The technology incorporated into the task significantly alters it such that the learning objectives and experience change	A simulation instructor videotapes nursing students during an emergency and asks them to reflect afterwards
	Redefinition	Technology allows for the creation of new tasks, previously inconceivable	The technology allows for a new task and requires the instructor to think about learning activities that were previously inconceivable without the use of technology	A GoogleHangout with nursing students from around the globe to examine nursing practices

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## Confounders and Consequences Prior to Using SAMR

Confounders which influence outcomes using SAMR	
Prior experiences with technology	Student & instructor prior experiences with technology is beneficial but can be a hurdle if adjusting to the SAMR framework
Comfort with technology	Likewise, student & instructor comfort with technology is beneficial
Attitude towards technology	Instructors with a more positive opinion about technology are more likely to be successful using SAMR
Accessibility to technology	Ensure the proper technologies and resources are available for the planned learning activity but also for troubleshooting potential problems
Consequences of using SAMR	
Efficiency	SAMR leads to greater course efficiency by utilizing an online learning platform such as Blackboard (Substitution, Augmentation)
Motivation	The framework has been shown to increase student motivation through the course
Engagement	Greater student engagement through this model has been described and can be evident through discussion boards and other interactive tools
Content Knowledge	SAMR offers a platform to re-define activities using technology to enhance learning experiences
Social Interaction	Increased social interaction is facilitated through SAMR *this is not a replacement for face-to-face interactions

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## Case Vignettes

- At the University of Rochester, the PhD in Nursing coursework is completely face-to-face however there has been growing discussion on the role of technology to enhance doctoral education at the university
- In Fall 2019, the first-year Quantitative Research Design course (NUR511) started to incorporate different technologies to enhance the learning experience in and out of the classroom
  - 4 case vignettes are covered here as examples:
    - A Discussion Board on the Ethical & Nursing Considerations of the Placebo Effect (Substitution)
    - A Classroom Mid-term Review Wiki Page (Augmentation)
    - A Role-Play Research Participant Interview Assignment (Modification)
    - A Virtual Student Poster Presentation on the Role of Meat Consumption in Developing Chronic Disease (Redefinition)

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## A Discussion Board

- Discussion boards are tools to facilitate continued rapport beyond the classroom
  - A discussion board was used as a Substitution for a traditional face-to-face discussion

Ask genuine, open-ended questions

Make a model 1<sup>st</sup> post so students know what is expected of them

**Discussion Board**

Read the about "The Placebo Effect: Health Without Order" and "The Placebo Effect: Caffeine Experiment", and analyze the use of the placebo. How do you understand what the placebo effect is for about before a patient or a patient a placebo? What is your best guess? Have you ever been given a treatment which has a placebo effect?

Write 1 main discussion board post by October 1<sup>st</sup> 2019. Respond to at least 3 classmates by October 1<sup>st</sup> 2019 post to date.

**Video: The placebo effect: Health without Order**

**Video: Placebo Effect - Caffeine experiment**

**BILLION-WORD SERVICE**

**Placebo Effect: A review of antidepressants and having placebo**

For me, the placebo effect is defined as the beneficial or therapeutic effect of a drug or treatment which cannot be explained by the biologic properties of the drug or treatment itself. Therefore, the effect of the drug or treatment must be due to other extraneous and often unmeasured conditions. Antidepressants are a classic example of a class of medications which demonstrate efficacy and the potential for a placebo effect. As of 2014, only 43% of FDA trials showed a statistically significant benefit of drug over placebo (Rush, 2014). Antidepressants are thought to restore chemical imbalances in the brain, reversing the effect of some psychiatric disorders including major depressive disorder though considerable debate continues on the true biological mechanisms of these drugs in animal studies (Rush, 2014). Upon closer examination of FDA trials, Johnson et al. (2017) conducted a systematic review and meta-analysis and found an interesting finding: 65% of trials which measured quality of life as a secondary outcome reported a statistically significant increase (relative to 5 mg group mean 11.4, SD 14.2; placebo mean 11.5, SD 17.2; placebo group mean 5.3, SD 17.1). Unfortunately, with only 6 out of 111 randomized placebo-control trials it is difficult to make a true conclusion. In comparison, every study measured depression symptom severity.

However, the results of this study suggest the notion that quality of life should be measured as a major outcome, and I would argue that quality of life should be the main outcome. As long as the drug does not further compromise the medical care of the patient, as long as the medication improves quality of life then it is an effective treatment. Thus, you obtained with depression symptom severity even though this may not necessarily mean a better quality of life for patients. I would argue it is already compensated by without medication that is known to improve quality of life in patients.

In having, we should emphasize the positive aspects of treatment and therapy, and that has been shown to have a positive effect on outcomes. An example of this is to restore a statement instead of "there is your antidepressant" change it to "there is some medication to help feel better". A central principle of the placebo effect is communication to communicate realistic optimism and hope. Positive patient experiences in combination with supportive care to bring long-lasting placebo effects due to a physiological condition.

References:

Rush, J. (2014). Antidepressants and the Placebo Effect. *Psychology Today*, 23(2), 138-134.

Johnson, J. C., Kessler, R. C., Rohay, A., Harlow, B. E., Battistone, B. E., Lathrop, K., ... (2017). Selective serotonin reuptake inhibitors versus placebo in patients with major depressive disorder: A systematic review with meta-analysis and trial sequential analysis. *BMC Psychiatry*, 17(1), 36.

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## A Discussion Board

**Placebo Effect**

My thoughts on the placebo effect: The influence of an initial positive psychological state on a patient's response to an actual and psychological experience (study) is called the placebo effect. You agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response.

**Connect the discussion to practice and experiences**

**Placebo Effect**

Another topic to explore (comment) above, as I had your discussion of the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response.

**Connect to current events and opinion pieces**

**Placebo Effect**

Another topic to explore (comment) above, as I had your discussion of the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response. Additionally, you agree with the video about the placebo effect and the role of the placebo effect in a patient's response.

**Connect to other courses and prior knowledge**

**Re-orient the conversation to avoid wandering**

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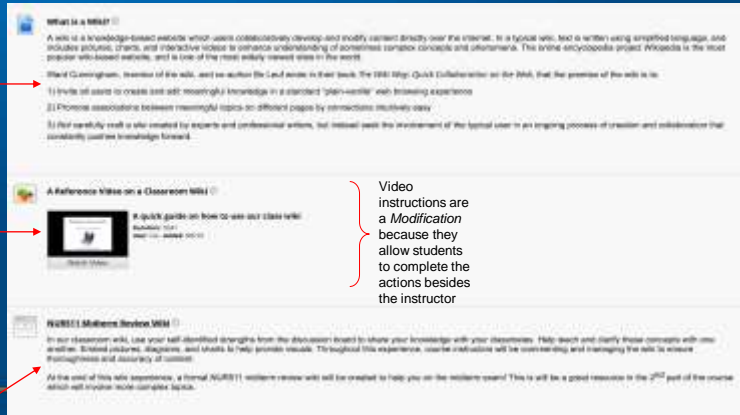
## Classroom Wiki Page

- A Wiki is a collaborative workspace where students can create and edit content text-based content
  - A Wiki was used as an Augmentation for typical file sharing
  - The Wiki allows students to share their knowledge, and allows all users to modify that knowledge, ask questions, and learn together

Define the technology and provide a purpose statement so students understand how it will enhance their learning

Provide further instructions on a Wiki and how to use it for students who may need further instruction

Write detailed instructions so students understand their role and contributions to the Wiki



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## Classroom Wiki Page

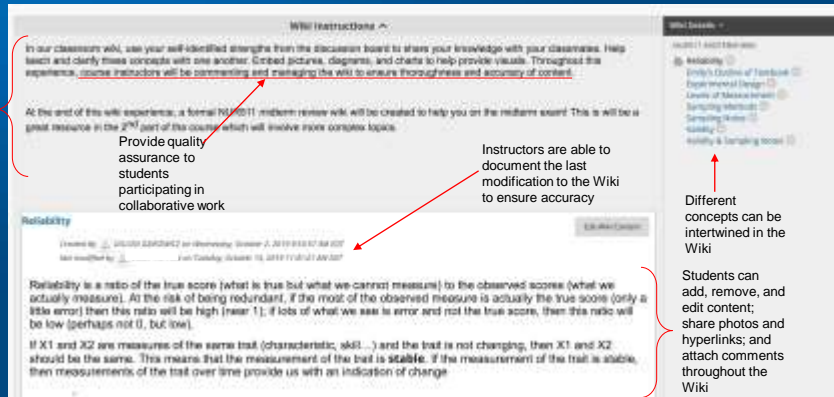
Detailed instructions so students understand their role and contributions

Provide quality assurance to students participating in collaborative work

Instructors are able to document the last modification to the Wiki to ensure accuracy

Different concepts can be intertwined in the Wiki

Students can add, remove, and edit content; share photos and hyperlinks; and attach comments throughout the Wiki



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# Role-Play Research Participant Interview Assignment

**Student Learning Objectives**

- In this role-play learning exercise, students will:
  - Role-play the scenario per instructions
  - Explain the barriers experienced marginalized populations such as African American women and teens from Memphis.
  - Determine and evaluate the most important barriers which impact otherwise outcomes
  - Identify and write clear, feasible ways to overcome these barriers
  - Analyze the scope and/or appropriateness
  - Reflect on the experience, and share with the group as a whole

State the purpose of the assignment and the specific learning objectives

**Articles to Read Before Activity**

Published articles from the actual study to provide context and study methodology

**Role Play Interview Assignment**

The scales were provided early so students could understand their structure

Detailed instructions and a step-by-step guide for students

**Scales and Surveys**

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# Role-Play Research Participant Interview Assignment

- After the face-to-face audio taped role-play activity, students were instructed to listen to the recording 3 days after the activity and reflect on the experience
  - Specifically, students were instructed to reflect on their thoughts, feelings, and how the activity increased their awareness in regards to selecting an appropriate scale
  - Students submitted the assignment via Blackboard (Substitution)

**Reflection Assignment**

At the end of this role-play scenario, please write a 1-3 page summary and reflect on the role-play experience, what you liked and disliked, and how it can be applied upon. How did this assignment increase your awareness as a future scientist? Secondly, provide another example population which can be used in the future. Justify your choosing and why it would be beneficial to students.

Here is an example of a student's reflection

The role-playing experience was an interesting didactic exercise that had its pros and cons. On one hand, part of me would have preferred to have had time to go through the PowerPoint slides related to it would have been (I guess you can say I'm a more conventional learner in that respect), but I do feel like it enabled some interesting reflection on the topic as a future scientist.

Both roles were enlightening. As the interviewer (I played the teenage boy who had read the interview once, and while doing better than his friends who had not, he still was doing things I got so put myself in another person's shoes, and think about what it would feel like for someone of a higher socioeconomic status and educational background to be asking me these sensitive questions. I could definitely see how people might worry that they are being judged, and be reluctant to be forthcoming in their responses. While I was initially nervous, I took a while for my partner to build the rapport to the extent that I felt comfortable discussing sensitive information especially that I was sharing "their" drug. Being aware of confidentiality, as well as the order to which my partner asked the questions (knowing first on my friend's behaviors, and then moved toward me to feel more comfortable discussing things I otherwise might not have contemplated this discussion.

As the interviewee, I realized moments when I did or said things that could've jeopardized the interview. At one point, when the respondent said she'd see me but didn't see me, I automatically said "yes," which could cause her to feel judged, especially if she wasn't the MUA, and perhaps change her answers going forward. Same when she told me she'd been in a DTC and had injured her shoulder as a result, I found myself going into "research mode," saying something to the effect of "I'm so sorry, that had to be really painful, do you want to talk about it?" While that is the correct response to a respondent's comment, it may result in not being a research interview. These are things I will have to be aware of going forward.

I had this one and always questioned them, they were brief and somewhat differently enough that we could discuss the pros and cons of each. The interviewing behaviors questionnaire was too long for the time given for the exercise. I also wish we had covered the PowerPoint (which had helpful tips, along with the readings, for conducting an interview) beforehand as I think I would've been more confident in my skills as the interviewer. I really liked the scenario, though, and the various characters we could roleplay. Future populations of interest (at least to me) might be adolescents engaging in self-harm or behaviors (self-harm, substance abuse, suicide risk, etc.). I like the idea of interviewing younger adolescents (13-16) as I feel that with another layer, factoring in their developmental stage, being the primary. My rationale is that if you can build rapport enough that a teenager is willing to disclose sensitive information, you can do that with just about any population.

The student reflects on her performance

Feedback for the instructor for future course structure

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## Virtual Student Poster Presentation

- A problem based activity was developed to allow an opportunity for students to apply the knowledge they were building during the course
- Students were grouped then instructed to design a study answering the research question: is meat consumption associated with worse health outcomes? Students then presented their poster virtually.

Detailed instructions outlining the objective, describing the problem and providing relevant context

We included a discussion board for students to share ideas and ask questions

The screenshot shows a virtual poster presentation interface with several sections and annotations:

- Objectives:** A section with a red arrow pointing to it from the text "Detailed instructions outlining the objective, describing the problem and providing relevant context".
- Background:** A section with a red arrow pointing to it from the text "A news article was provided to give students a mainstream perspective".
- Published Guidelines:** A section with a red arrow pointing to it from the text "Published guidelines- the detailed instructions reminded students to focus on the".
- Learning Objectives:** A section with a red arrow pointing to it from the text "We included a discussion board for students to share ideas and ask questions".
- Assignment Directions:** A section with a red arrow pointing to it from the text "The assignment directions were not detailed to allow students greater flexibility and creativity".

- By presenting the poster virtually, students were able to incorporate videos, narration, and animations while engaging with a broader audience
- Students were able to practice how to communicate to scientists and non-scientists alike
- Thus, this activity was a Redefinition



## Virtual Student Poster Presentation

Here is an example of a student groups' poster

Since this was a research design course we focused on methodology, and focused on:

- 1) theoretical underpinnings
- 2) operationalization
- 3) randomization and sampling

The poster is titled "Meats vs Beets: A Diet and Health Outcomes Analysis" and is divided into several sections:

- INTRODUCTION:** Discusses the American Heart Association's American College of Cardiology (ACC) Lifestyle Management to Reduce Cardiovascular Disease Guidelines, which recommend a diet consisting of nutrient-dense foods, including vegetables, fruits, legumes, beans, nuts, fish, and poultry, and low fat dairy while limiting consumption of saturated fat (found in red meat and full-fat dairy) and trans fats.
- RESEARCH QUESTION AND DESIGN:**
  - Question: Is meat consumption associated with worse health outcomes?
  - Design: Prospective 3-year, parallel, randomized design with educational nutritional intervention.
- STUDY DESIGN:**
  - Adults ages 40-75 recruited from primary care clinics referred to a large academic urban medical center in the northeast.
- STUDY DESIGN:**
  - Randomized controlled trial.
  - Participants will be randomly assigned to either presence or absence of CVD diagnosis using an online questionnaire.
- STUDY DESIGN:**
  - Controlled 3-year analysis to determine impact on health outcomes.
  - Assess for baseline between group differences using chi-square and ANCOVA tests.
  - ANCOVA analysis.
  - Compare terms of BP, BMI, and abdominal waist between CVD and CVD-free individuals and between groups.
  - Statistically control for confounding variables.
- STUDY DESIGN:**
  - Meat consumption (red meat, poultry, fish, and processed meats) will be present in different PCP offices, will approximately equal all eligible patients who are there for annual physical exams.
  - Intervention: Change adults age 40-75 years.
  - Inclusion Criteria: Non-English speaking.
- STUDY DESIGN:**
  - Baseline cholesterol panel, BMI, and blood pressure will be collected in all groups.
  - Intervention:
    - All PCP offices will receive educational intervention (brochure and video) phone calls about general health topics (nutrient to nutrition) (e.g. scheduling appointments, getting to medication time (pharmacy, etc.).
    - DMAR diet: 2-month dietary results with nutritional, BP, BMI, etc. followed up by weekly phone calls 13 weeks after 1st nutrition consult.
    - PLANT diet: 2-month dietary results with nutritional, BP, BMI, etc. followed up by weekly phone calls 13 weeks after 1st nutrition consult.
  - All participants will be contacted within one week after PCP enrollment to set up nutrition appointment.
  - Several nutrition appointments will be scheduled 2 weeks after first appointment.
  - All appointments, participants will receive video & written instruction, home meal, meal suggestions, and asked to try & follow the diet.
  - 24-hour dietary recall will be obtained at each nutrition appointment, followed up by weekly phone calls every 24-48 hours until week 13 (2 weeks following last nutrition appointment).
  - Outcome measures (cholesterol panel, BMI, BP) will be requested at 3 months follow-up appointment at PCP.





## Conclusions: Technology in Doctoral Education: SAMR Model

- Schools of Nursing throughout the United States are utilizing technology such as Blackboard to deliver and extend education to online learning environments
  - Student are favorable to this change because online education provides greater flexibility, course choices, and the ability to practice & learn
- The SAMR Model is a framework to describe and inform the formative steps instructors transition through as they become proficient in technology enriched teaching
  - Important antecedents include: prior experiences with technology, comfort with technology, attitude towards technology, accessibility to technology
  - Important consequences: efficiency, motivation, engagement, content knowledge, social interaction

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