Adopting a Mobile-Device Classroom Response System in an Online Nursing Environment: Enhancing Learning, Innovation and Engagement in Master's Online Education

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But first things first!

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Presentation Objective

At the end of the presentation, the attendees will be able to:

to determine the adaptability of a classroom response system in an online Master's in Nursing class to enhance learning, engagement and innovative thinking.

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Classroom Response Systems (CRS)

- Have been around for more than a decade
- Popularly began as handheld devices, bought or rented by students
- Feedback device for both students and instructors, providing instantaneous results and follow-up (depending on the outcomes) (Welch, 2013)

As more courses are offered online, so are CRS that are downloadable on smartphones or interconnected to the learning management system

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Purpose of the Study

To determine whether features of a smartphone-downloadable CRS (functionality, support and effectiveness) can enhance learning, innovation and engagement.

Note that the CRS was not integrated into the learning management system.

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Functionality

- refers to the user-centered design of the CRS
- features must be relevant, useful and appropriate
- should enhance students' learning, user satisfaction, productivity and efficiency (Oulasvirta et al., 2017)

Measures

ease of app download, ease of navigation, learnability, intuitiveness, provides structures that users need to enhance learning

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Support

- when user-centric and supportive systems are in place with the technology enhanced learning tool, these correlate to user-satisfaction and can enhance learning (Lopes et al., 2018; Oulasvirta et al., 2017)

Measures

CRS' user-friendliness, ability to support users' learning needs, index of user satisfaction

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Effectiveness

- increases participation and engagement
- promotes active learning
- provides immediate feedback regarding comprehension
- increases faculty-student interaction (Revell & McCurry, 2010)

Measures

Accessibility of the device when needed; adaptability; provides immediate feedback, remediation and reinforcement; serves as an add-on tool to maximize student learning

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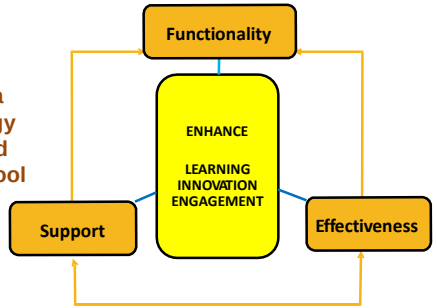
CRS as a Technology Enhanced Learning Tool



Pajarillo & Kaplan, 2018

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Methodology

- Mixed method, one-group, pretest-posttest descriptive design
- Convenience sampling of newly-admitted Master's in Nursing students (n = 48)
- Graduate Research Assistant (GRA) recruited the samples, who voluntarily participated
- The sample size was 88% of the total number of newly admitted graduate students
- The GRA showed the respondents how to download and use the smartphone CRS app before the initial survey was conducted

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Methodology

- Student-respondents were asked to rate the CRS using a 21-statement 5-point Likert scale, regarding their agreement with measures for functionality, support and effectiveness of the CRS
- Respondents used the CRS for about 12 weeks during the semester
- Before the end of the semester, the respondents were asked to rate the CRS again using the same instrument

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Results

Functionality – most of the measures showed an increase after respondents' use of the CRS

Increases were noted between pretest and post-test results in terms of:

- ease of uploading the app on the smartphone (from 79% - 95%)
- ease of understanding instructions on how to upload the app (from 80% - 95%)
- ease of learning to use the app (from 73% - 100%)
- ease of navigating the app from screen to screen (63% - 80%)
- absence of barriers when using the app (from 67% - 83%)

Modest changes in terms of:

- intuitive use of the app (from 59% - 64%)
- app has features that respondents need in their academic program (from 64% - 63%)

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Results

Support – respondents' ratings of the CRS were modest to very good increases

Modest increases were evident between pretest and posttest results in terms of:

- features being helpful to students' studies (from 51% - 59%)
- supports students' educational needs (from 46% - 58%)
- use of the CRS made them happy (from 53% - 64%)

Slight decrease that CRS was able to assist in the learning process (from 59% - 50%)

Big increase evident when respondents said that the CRS was:

- user-friendly (from 72% - 87%)
- able to serve the purposes for what it was designed for (from 60% - 72%)
- helpful educational resource (from 47% - 72%)

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Results

Effectiveness – respondents rated the CRS with modest scores in most measures:

Increases were evident in the following measures:

- accessibility of the CRS when needed (from 68% - 89%)
- respondents' easy adaptability to use of the CRS (from 83% - 97%)

Little to almost no change noted in the following CRS measures:

- as an add-on tool to support learning (from 66% - 67%)
- as a tool to provide feedback to students (from 60% - 64%)
- as an efficient tool for learning (from 60% - 58%)

Big decreases observed in the following measures:

- ability to maximize in the use of CRS (from 70% - 53%)
- feedback tool if lessons were understood and learned (from 76% - 68%)

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t-Test of significance

Table 5. t-Test of significance of three usability measures (Pre-test, Post-test)

Usability Measures	p-value	Decision
Functionality α at 0.05 = 2.365	.000985*	Reject Ho
Support α at 0.05 = 2.365	.001349*	Reject Ho
Effectiveness α at 0.05 = 2.365	.038544*	Reject Ho
Overall Usability α at 0.05 = 2.080	.000*	Reject Ho

*Significance at α = 0.05; two-tailed test

Individually, all three measures (functionality, support and effectiveness) showed statistical significance, as well as when all three measures were taken collectively.

In all, the CRS proved to be helpful in enhancing learning, innovation, engagement.

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Some Significant Comments by the Respondents

FUNCTIONALITY

- While most of the comments regarding functionality were positive, there were some issues.
- Navigating the screen is difficult; only one question at a time shows up; moving from screen to screen requires a few steps; there has to be a better way to use the app

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Some Significant Comments by the Respondents

SUPPORT

- Generally, comments were positive in terms of the CRS being supportive of students' learning
- A few respondents commented that there was not enough time to provide adequate evaluation

EFFECTIVENESS

- Very little time using the CRS; feedback was not instantaneous (because app was not integrated into the learning management system)

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Conclusions

- More and more apps will be smartphone or mobile-device accessible
- Respondents considered the app to be helpful, easy to use and learn
- Results showed that students considered the app innovative, led them to engage more, and consequently enhancing learning

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Conclusions

- Consider some design recommendations to improve screen navigation
- App should be integrated into the learning management system to maximize the use of all the features of the CRS (improved and timely feedback)
- Replicate study with a bigger sample and a longer study time period to allow for more objective results
- Consider having a control group to improve rigor

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