Bridging Inactive Viewing to Active Learning: Knowledge Checks in Pre-Class Recorded Lectures for Undergraduate Students

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Problem & PURPOSE

In the university setting, some students arrive for class unprepared because they do not consistently view the prerecorded lectures and may anticipate traditional lecture content to be replicated during class time. With students not being prepared for class, this interrupts valuable time that is to be utilized for application of the course material and students not being engaged with in-class activities.

Purpose: To integrate knowledge checkpoints in pre-class recorded lectures to increase student engagement and satisfaction among Bachelor of Science in Nursing (BSN) students.

Available Knowledge & Rationale

- Knowledge checks improve learning and cognitive processing
- COVID-19 accelerated the use of hybrid and flipped classrooms
- Students review lectures before class benefits include:
- Greater engagement
- Self-directed learning
- Stronger critical thinking
- Flexible, self-paced learning
- Student preparation is essential for effective in-class application.

Methods

• Context

Undergraduate nursing program within the College of Nursing, at large nonprofit, religious based university in a major city of the Midwestern United States. Participants (N = 30) were adults, ages 19 and older, students enrolled in a Bachelor of Nursing program.

• Intervention

The intervention evaluated the effect of embedding knowledge checks into prerecorded lecture in the flipped classroom (FC) setting. A two-week baseline period without knowledge checks was followed by a two- week intervention period of embedded knowledge checks in prerecorded lectures. Post intervention, students volunteered to participate in an anonymous 10-item BlueQ survey assessing the perceptions of engagement. Aggregated lecture viewing and completion data were also collected and evaluated the impact of the intervention

• Study of Intervention

- Descriptive post-intervention survey design Compared:
- **Weeks 1–2:** Lectures without knowledge checks
- **Weeks 3–4:** Lectures with embedded knowledge checks
- Measured: Student engagement (Blue-Q survey)
- Lecture viewing and completion rates
- Anonymous, de-identified data Descriptive analysis evaluated changes in engagement and lecture completion following the intervention.

• Measure

Participants completed a 10-item post-intervention survey using a 5-point Likert scale (1 = Not likely at all to 5 = Highly likely) to access perceived engagement and satisfaction with embedded knowledge checks. Each item was individually analyzed.

Data Analysis

Post-intervention survey data were analyzed in Microsoft Excel using descriptive statistics(means and standardized deviations) to summarize student engagement and satisfaction. All data were analyzed in aggregate to maintain participant anonymity. Percentages of completion of the lectures were compared to before and after the intervention

Results

30 of the 35 participants completed the survey, resulting in an 87% response rate. The survey included two domains, student engagement and satisfaction, with each domain measured using five Likert-scale items on a 5-point scale. The overall mean score across all survey items was $M = 4.09$ on a 5-point Likert scale.
Domain-specific mean scores were 4.03 ($SD = .69$) for engagement and 4.15 ($SD = .68$) for satisfaction.

The results for the lecture completion percentage (N = 35) before the embedded knowledge checks was 48.42% and the lecture completion percentage after the embedded knowledge checks was 87.85%, representing a 39.61 percentage point increase of the lecture completion.

Domain	Mean Score	Standard Deviation
Engagement	4.03	.69
Satisfaction	4.15	.68

Figure 1 Mean scores and standard deviations by Engagement and Satisfaction domains (1-5 Likert Scale

Student Completion of Prerecorded Lectures	
Pre-Embedded Knowledge Checks	48.42%
Post-Embedded Knowledge Checks	87.85%

Discussion

Findings support that embedding knowledge checks into prerecorded lectures for the flipped classroom setting was a favorable intervention by participants. Participants perceived the knowledge checks as supporting engagement with lecture content and contributing positively to their learning experience. With the implementation of placing knowledge checks in the prerecorded lectures, the project incorporated an evidence-based active learning strategy that encouraged students to engage in active learning rather than passive learning. The increase of completion percentage of the lectures by the participants validates supports the survey results and suggest that the embedded knowledge checks may have encourage students to complete prerecorded lectures before attending class, supporting the intended goals of the flipped classroom model.

Conclusions

Embedding knowledge checks in prerecorded lectures utilizing the flipped classroom approach was perceived as a favorable learning environment for nursing students and promoted an increase of lecture completion compliance. The intervention addressed the concern of student coming to class unprepared to participate in in-class activities and the application of course content. These findings support

implementing embedded knowledge checks had a correlation with an increase of the percentage of students that completed the lectures before attending class.

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