Flipping the Classroom: A Data-Driven Model for Nursing Education

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Introduction

To better understand the applicability of the flipped classroom and the Learning Actions Model to support nursing education, a specially designed, data-driven, flipped classroom model was developed for the 2014 American Nurses Credentialing Center (ANCC) Annual Symposium on Continuing Nursing Education. The goals of the project were to:
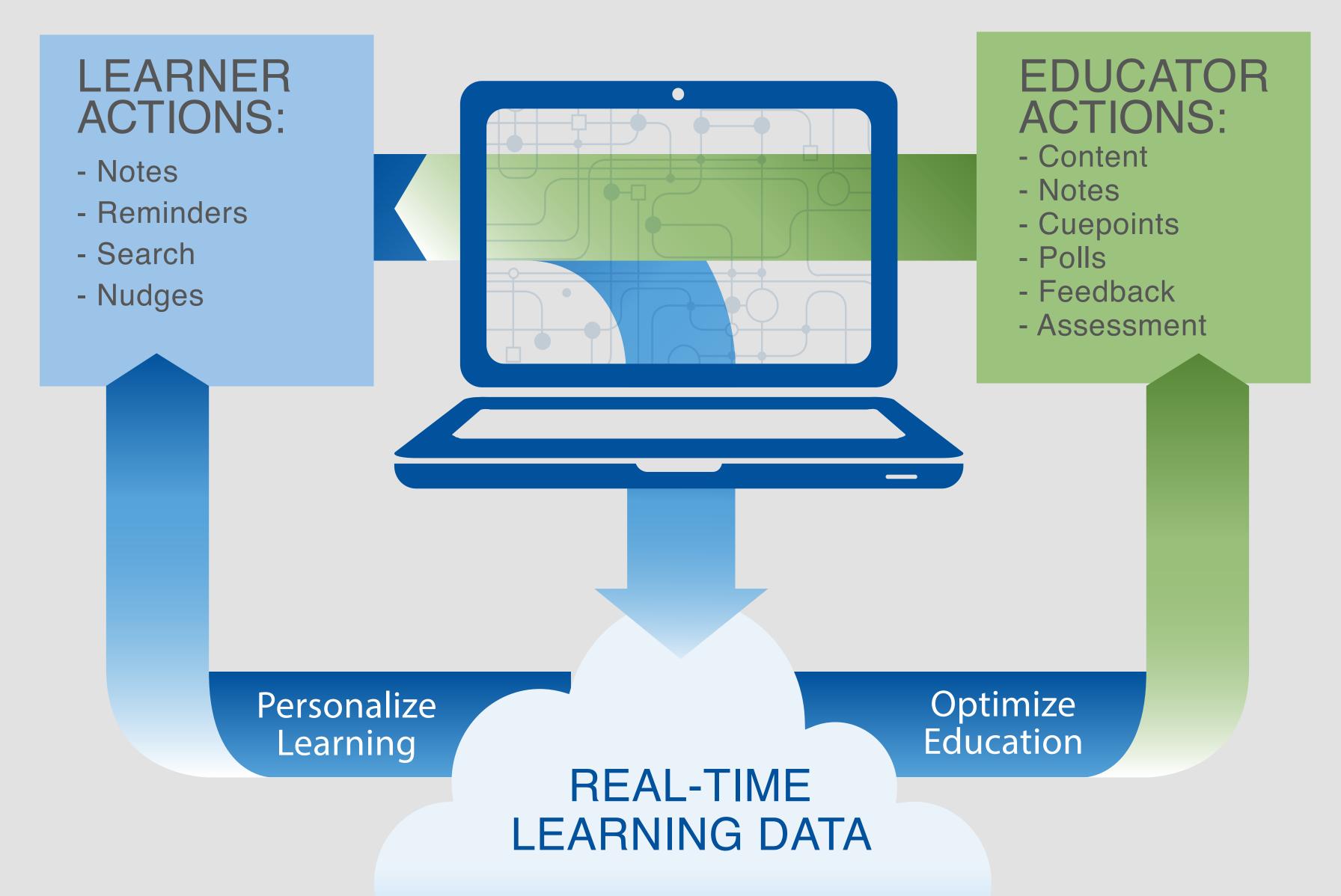
1 Maximize learning opportunities associated with a one-day conference

2 Expose nurse educators to the data-driven, flipped classroom model as a potential tool for their own use

3 Validate the effect of the Learning Actions Model in support of a blended and agile educational design
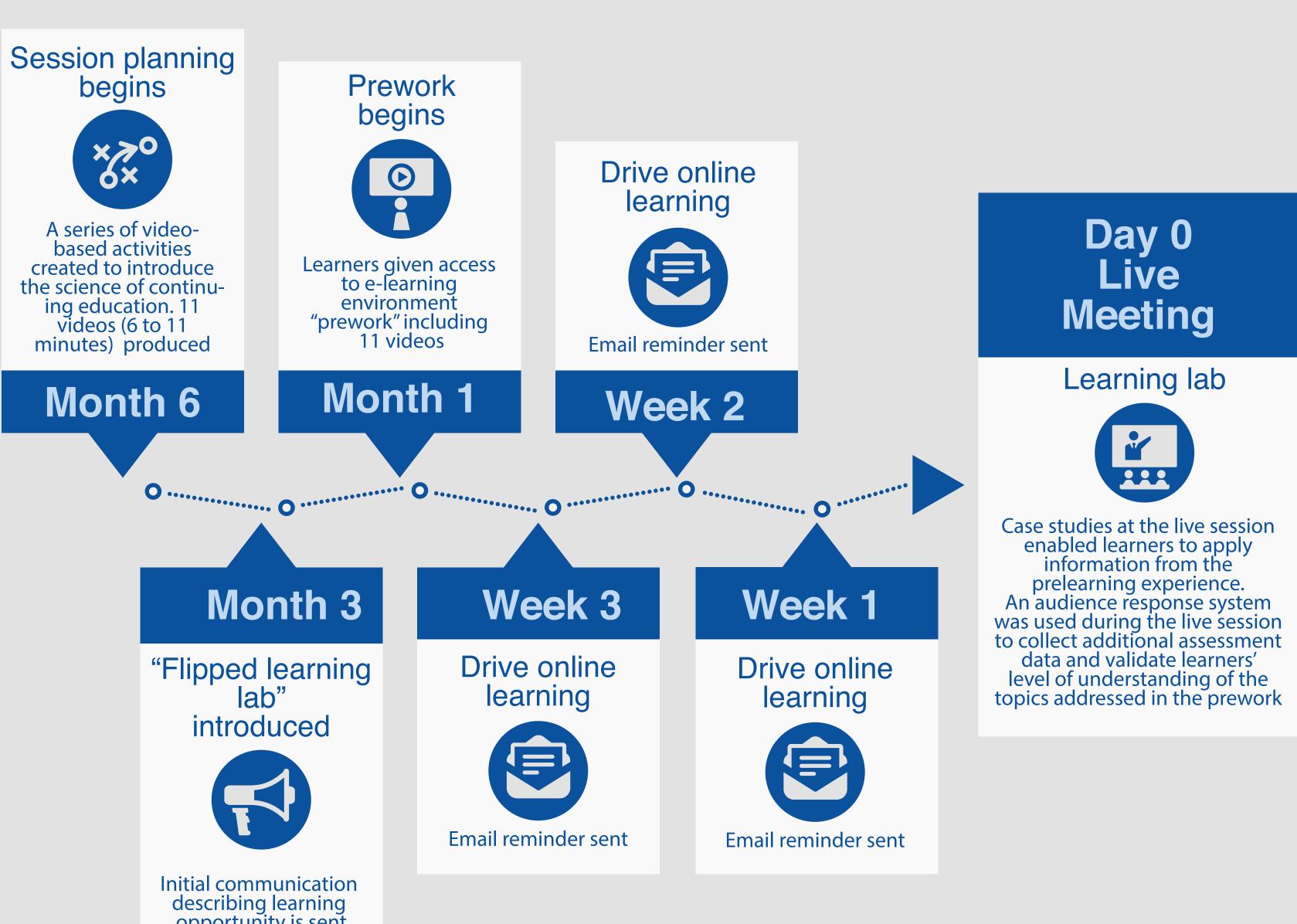
4 Expand the number of contact hours by combining self-paced prework with in person learning lab experience

Planning and Implementation

Month 6 — Session planning begins
A series of video-based activities created to introduce the science of continuing education. 11 videos (6 to 11 minutes) produced

Month 3 — "Flipped learning lab" introduced
Initial communication describing learning opportunity is sent

Month 1 — Prework begins
Learners given access to e-learning environment "prework" including 11 videos

Week 3 — Drive online learning
Email reminder sent

Week 2 — Drive online learning
Email reminder sent

Week 1 — Drive online learning
Email reminder sent

Day 0 Live Meeting
Learning lab
Case studies at the live session enabled learners to apply information from the prelearning experience. An audience response system was used during the live session to collect additional assessment data and validate learners' level of understanding of the topics addressed in the prework

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The Learning Actions Model Supports Educator Planning and Agile Design

LEARNER ACTIONS:
- Notes
- Reminders
- Search
- Nudges

EDUCATOR ACTIONS:
- Content
- Notes
- Cuepoints
- Polls
- Feedback
- Assessment

Personalize Learning — REAL-TIME LEARNING DATA — Optimize Education

ArcheMedX Learning Actions Model

To enable planners and facilitators to capture data about learning and engagement in the prework, an innovative e-learning technology, the ArcheViewer (McGowan, 2014) was used.

Analysis of the use of these learning actions helped facilitators prepare the live classroom experience to complement the prework. Anticipated questions and areas of concern were identified, and facilitators were able to focus on critical learning opportunities for attendees.

ArcheViewer Creates a Novel Learning Environment

ArcheViewer technology creates an immersive and engaging online learning environment by allowing educators to define distinct learning moments, build a searchable library of related resources, and highlight these resources and engage learners at predefined moments.

In addition, within the learning environment, learners have the ability to:

- consume content
- take notes
- search through related resources
- set reminders
- ask questions of faculty

Online Prework Engaged Learners

In more than 100 learners who participated in the online learning experience:

876 Views
19.8 Mins average completion time
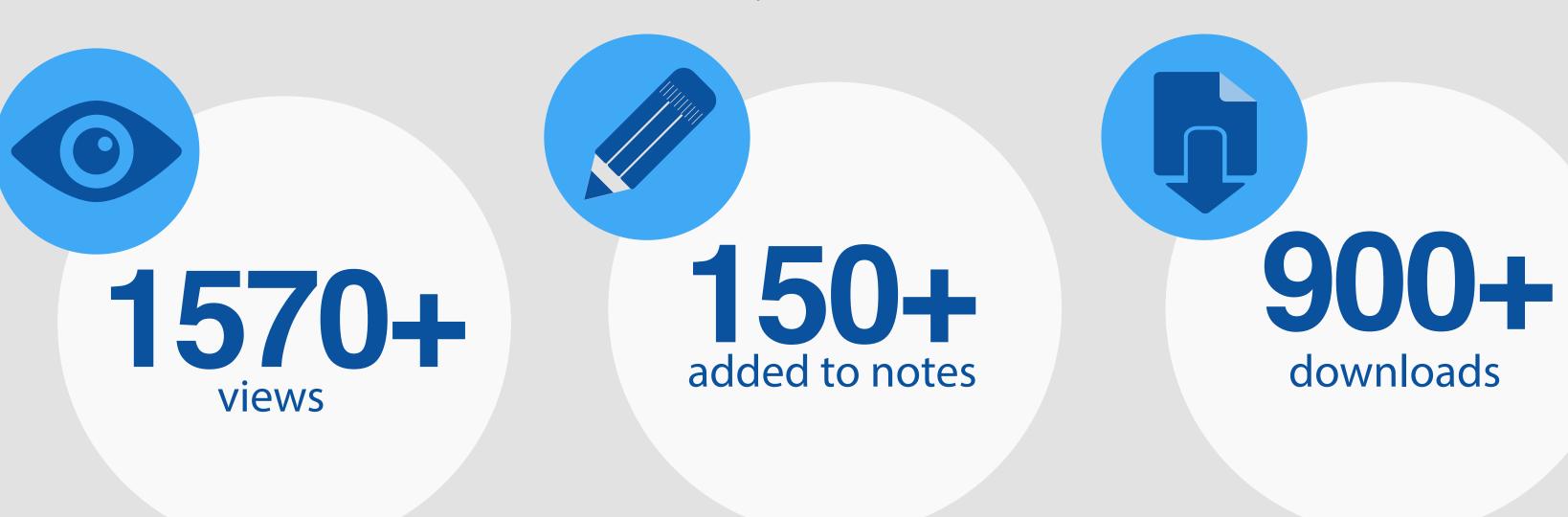**815** completions **96%** average completion rate

Engagement in Online Learning was High

These learners took nearly 5,000 core Learning Actions which were divided as follows:

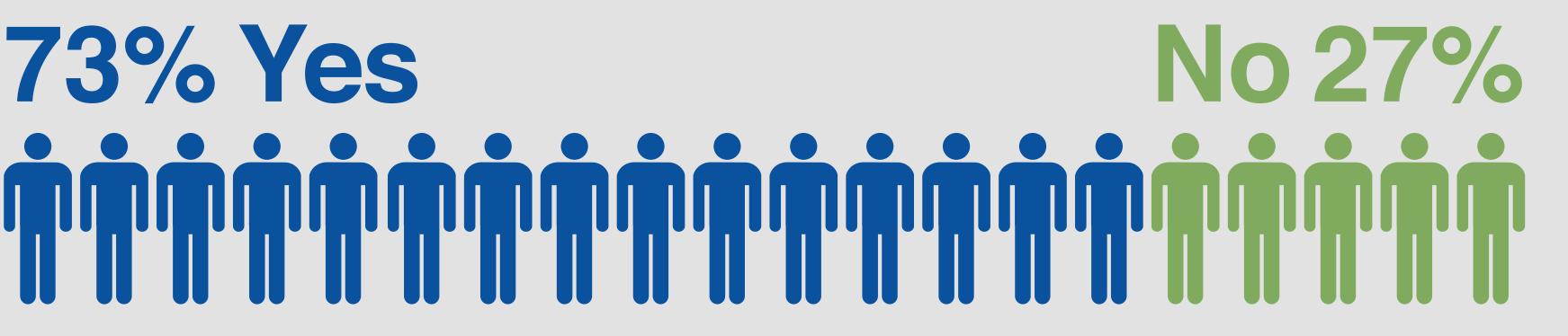- 1% Searches
- 36% Resources viewed
- 21% Resources downloaded
- 30% Poll responses
- 3% Notes
- 9% Reminders

Average engagement score **7.5**

Resources Were Utilized By Learners

A breakdown of the 98 resources used by learners revealed:
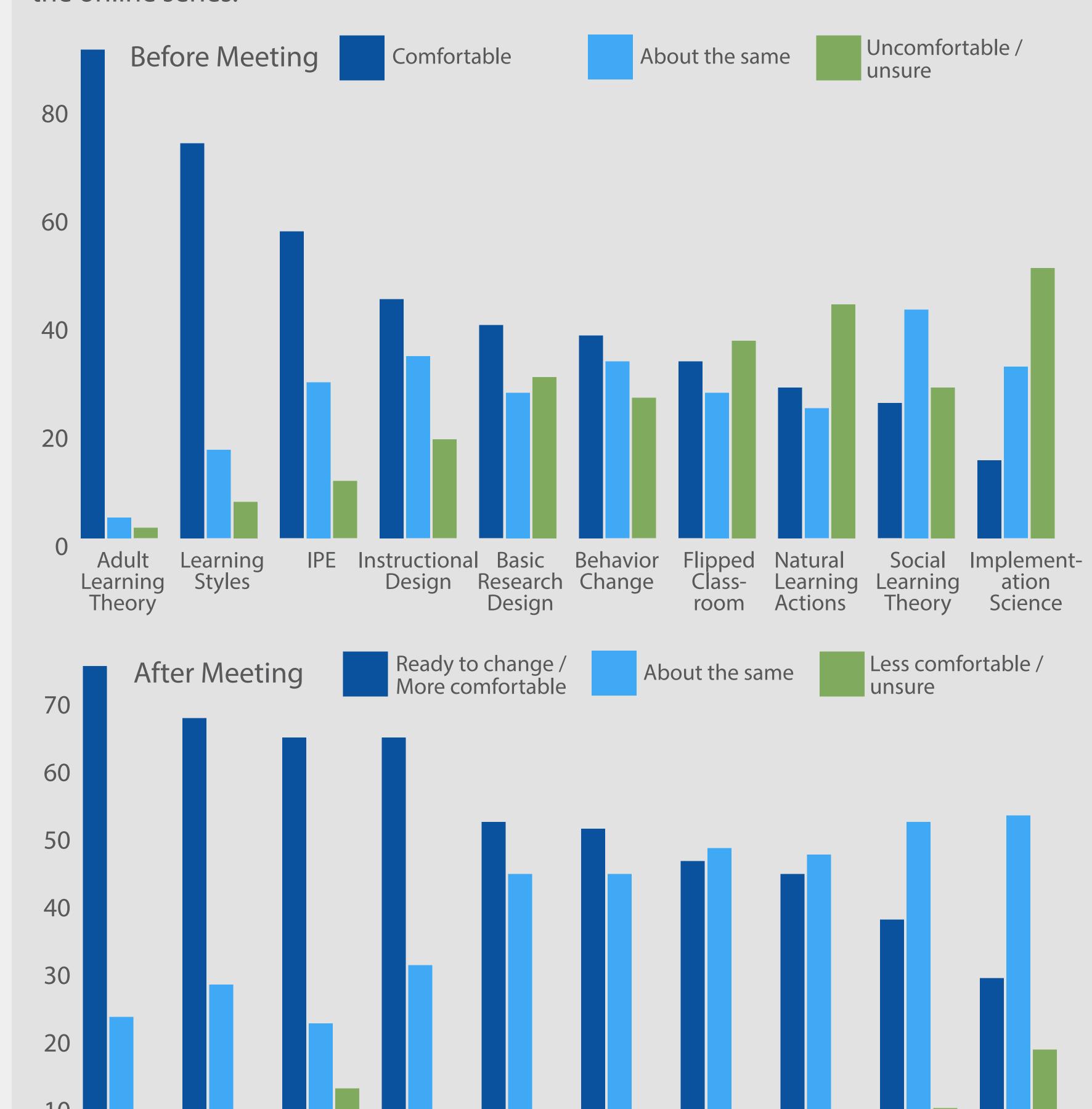
1570+ views
150+ added to notes
900+ downloads

Flipped Classroom was a new Experience for Majority

When asked "Is this your first time participating in a flipped classroom learning experience?" learners responded:
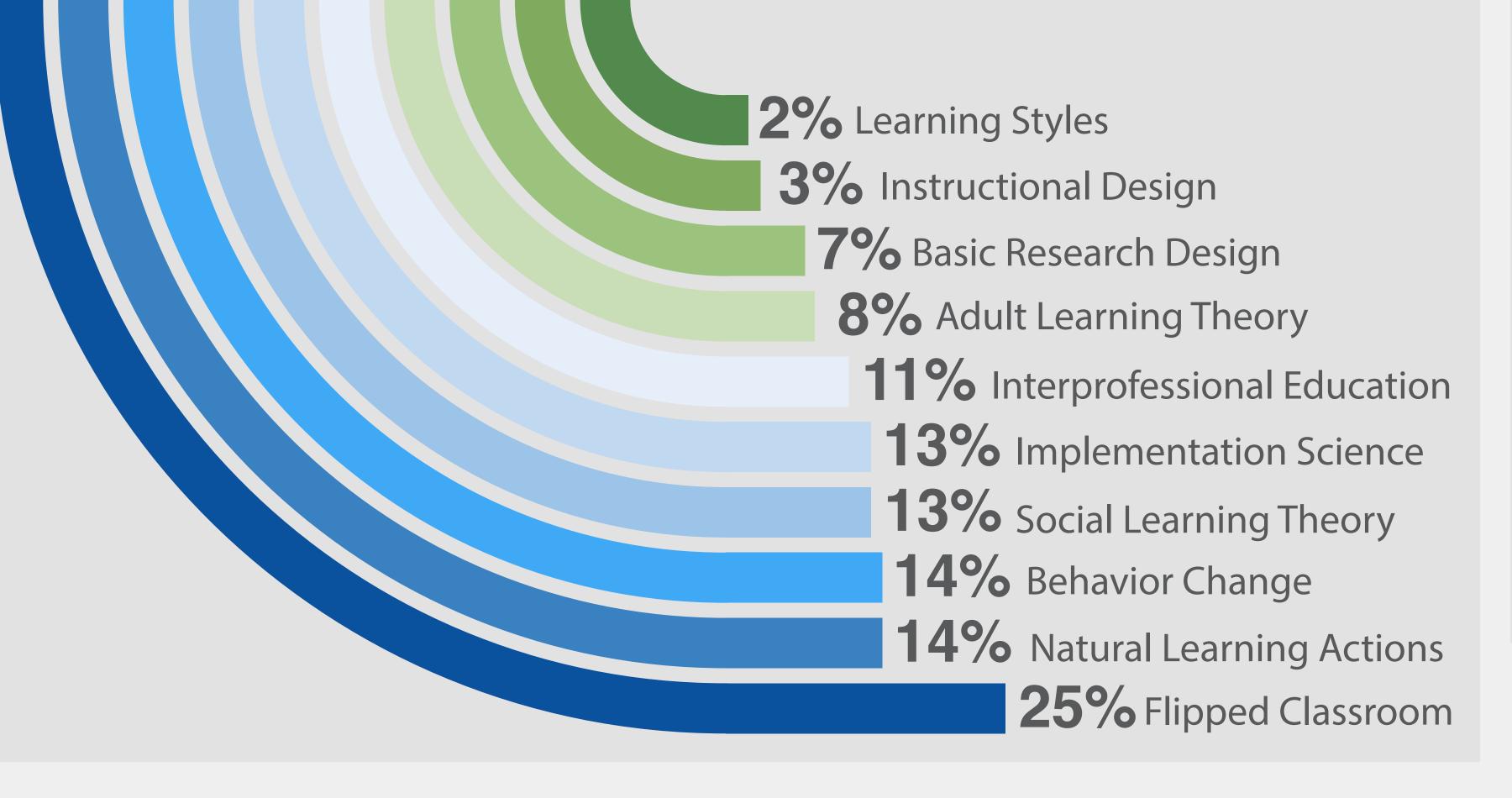
73% Yes   **No 27%**

Learner Comfort With the Science of CE Was Improved

Learners were asked how comfortable they were in applying what they learnt into their educational activity. Variation in comfort levels before and after the activity pointed out topics that could be seen as strengths and weaknesses of the population. Notably, variation in comfort across the topics was reduced following participation in the online series.

Before Meeting — Comfortable / About the same / Uncomfortable / unsure

Categories: Adult Learning Theory, Learning Styles, IPE, Instructional Design, Basic Research Design, Behavior Change, Flipped Classroom, Natural Learning Actions, Social Learning Theory, Implementation Science

After Meeting — Ready to change / More comfortable / About the same / Less comfortable / unsure

Categories: Flipped Classroom, Social Learning Theory, Natural Learning Actions, Behavior Change, Adult Learning Theory, Basic Research Design, IPE, Implementation Science, Learning Styles, Instructional Design
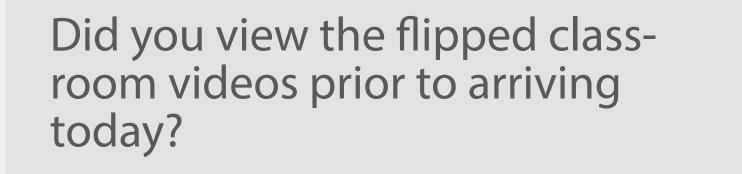
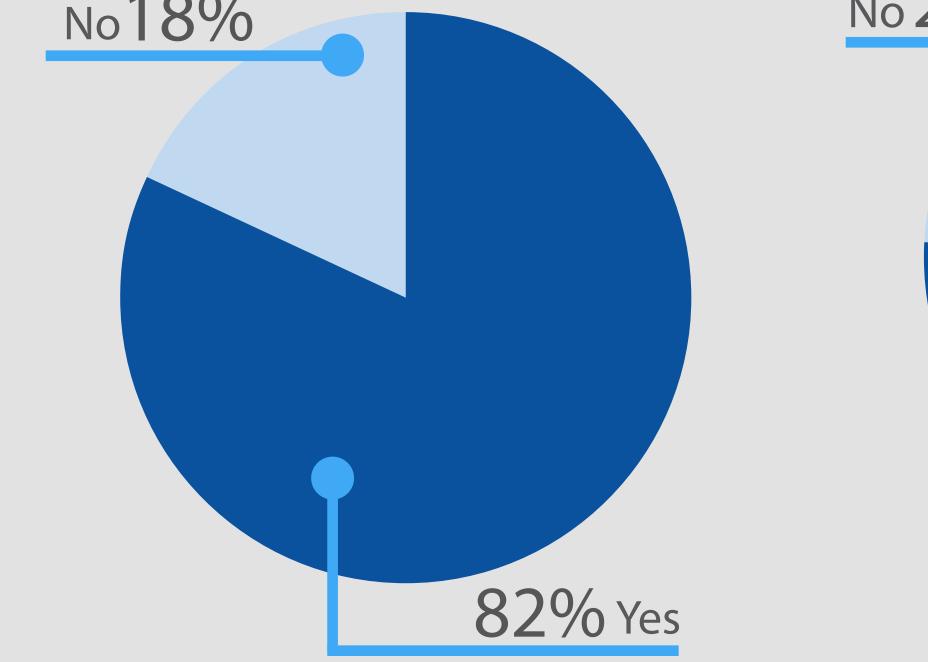## Learners Committed to Change in Practice Across Range of Topics

Percent of learners who responded as "Ready to change" when asked "Having completed the lesson how comfortable are you applying this information into your educational planning, delivery, and assessment":

- 2% Learning Styles
- 3% Instructional Design
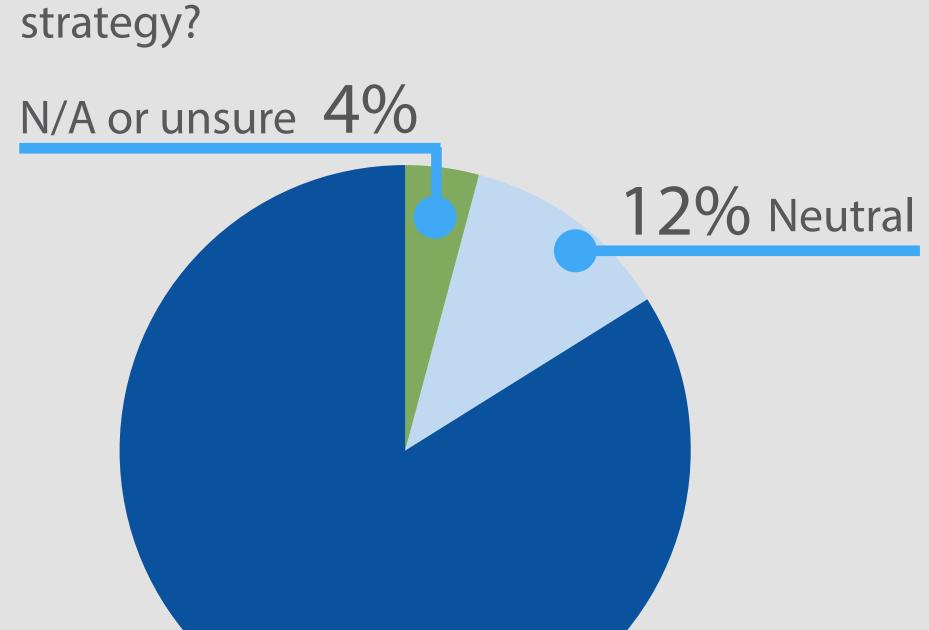- 7% Basic Research Design
- 8% Adult Learning Theory
- 11% Interprofessional Education
- 13% Implementation Science
- 13% Social Learning Theory
- 14% Behavior Change
- 14% Natural Learning Actions
- 25% Flipped Classroom

Prework Engaged and Prepared Live Learners

Did you view the flipped classroom videos prior to arriving today?
No 18% / 82% Yes

If you viewed the videos, do you feel more prepared today to engage with faculty and be a more active learner?
No 24% / 76% Yes

If you viewed the videos, how many videos did you watch?
1-3 8% / 4-6 14% / 7-9 5% / 10+ 74%

Do you believe that providing learners with an opportunity to engage with learning materials (content) before a live, problem-based workshop is an effective educational strategy?
N/A or unsure 4% / 12% Neutral / 84% Effective

Conclusions

- Flipped learning experience prepares learners to participate and engage in live or classroom-style learning
- Frequent notifications and clear communications drive participation
- Online prework must be designed to gather data about learners and learning such that the live intervention may be optimized
- The ArcheViewer e-learning technology permits planners and faculty to create a data-driven and therefore more rewarding overall learning experience