

*How and For Whom*  
Does *Accelerated Learning* Work?  
The Case of the  
Open Learning Initiative's  
*Logic & Proofs*

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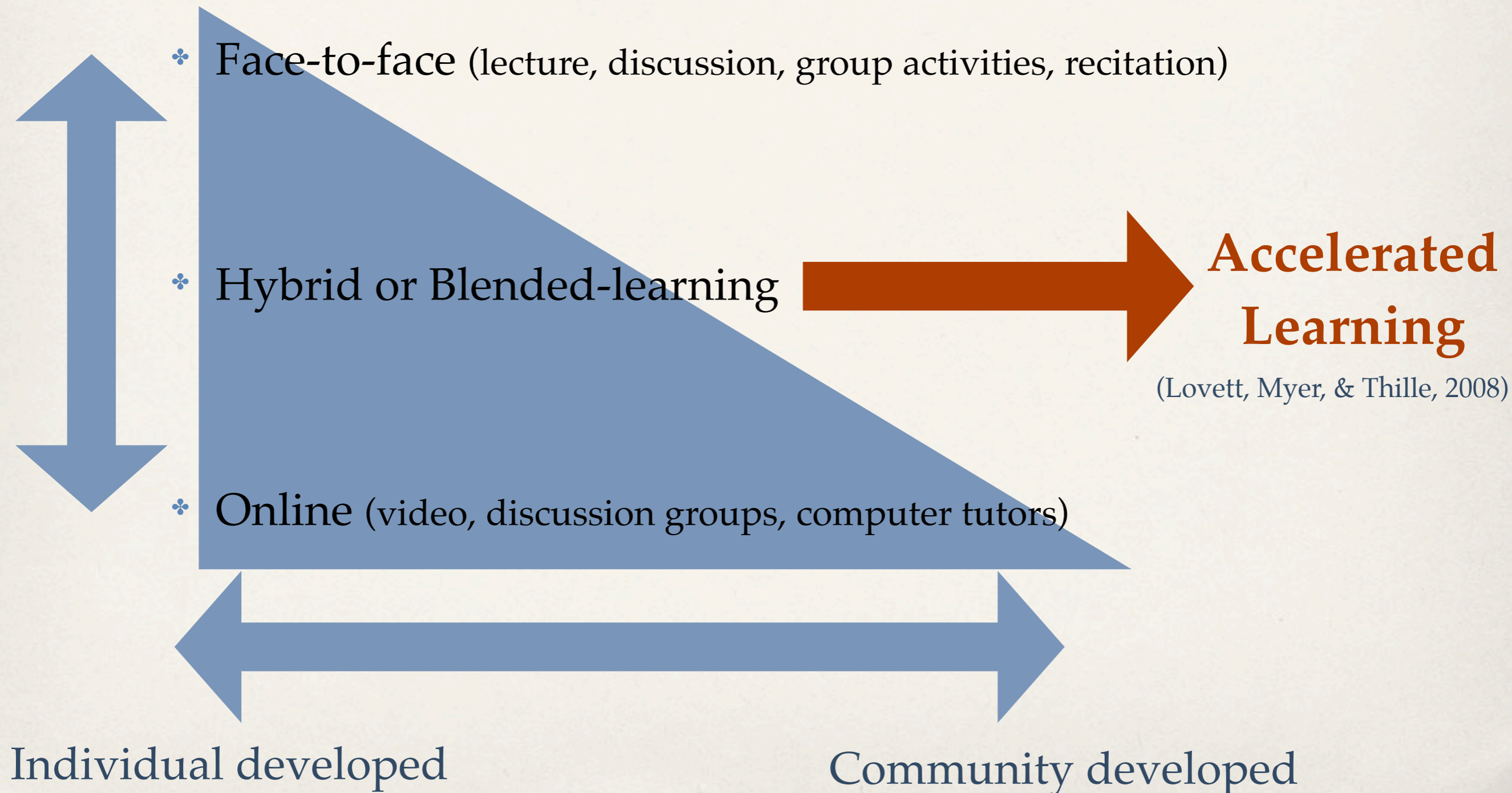
**Carnegie Mellon**

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OER11 — Manchester — May 11, 2011

# The standard continuum of instructional modes

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# Universal benefits of one mode?

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- ❖ Mixed outcomes in online vs. face-to-face comparisons
  - ❖ Sitzmann, Kraiger, Stewart, & Wisher, 2006; Johnson, Aragon, Shaik, & Palma-Rivas, 2000; Neuhauser, 2002
- ❖ Mixed outcomes for hybrid vs. face-to-face or online
  - ❖ Campbell, Gibson, Hall, Richards, & Callery, 2008; Rovai & Jordan, 2004; Lovett, Myer, & Thille, 2008

# Framing relative mode benefits: Implementation challenges & relative strengths

	Content knowledge	Teacher		Student
		Pedagogical content knowledge	Mode familiarity	In class attendance
Large class in research university	High	High	F2F & Online	Moderate
Small class in research university	High	High	F2F	High
Small class in commuter university	High	Mid	Online	Low
Small class in community college	Low	Low	F2F	High

# Research Context: Logic & Proofs

[oli.web.cmu.edu/openlearning/forstudents/freecourses/logic](http://oli.web.cmu.edu/openlearning/forstudents/freecourses/logic)

The screenshot shows the Open Learning Initiative website. At the top, there is a navigation bar with the logo and three tabs: "For Students", "For Instructors", and "The Initiative". On the left side, there is a search bar and a list of course categories. The main content area features a headline "Open courses backed by learning research." and three promotional cards: "Independent Learners", "Instructors", and "Academic Students". Each card includes a representative image, a brief description, and a call-to-action button. At the bottom, there is a news headline about Creative Commons and OLI support.

**Open Learning Initiative** For Students For Instructors The Initiative

Search  
Type keyword/s...

Open & Free Courses ›

- Engineering Statics
- Statistics
- Causal and Statistical Reasoning
- Modern Biology
- Biochemistry
- Chemistry
- Economics
- French
- Logic & Proofs
- Physics
- Empirical Research Methods
- Computational Discrete Mathematics
- Visual Communication Design

## Open courses backed by learning research.



### Independent Learners

Get free materials, activities and assessments for your self-guided learning



### Academic Students

Use these interactive courses to earn credits at your school or university.



### Instructors

Offer these courses to your students. You can customize them to suit their needs.

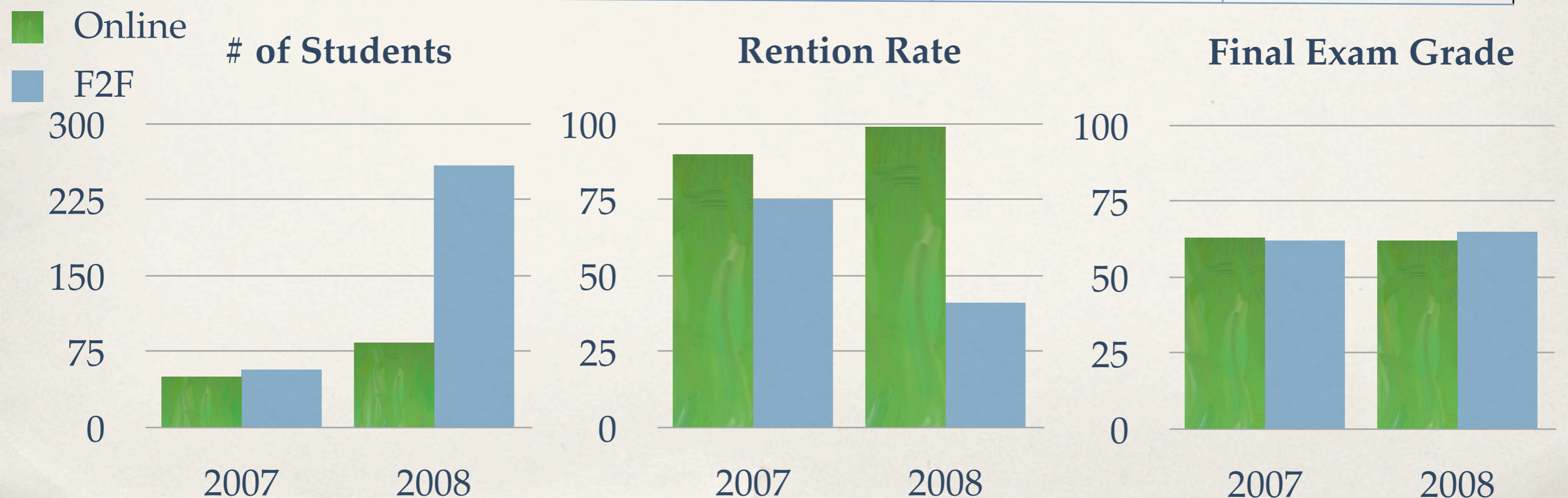
Creative Commons in Collaboration with OLI Announces Support Program for DOL TAACCCT Grantees

# Study Logic for Studying effects of *Logic&Proofs*

	(Willing) Contrast	(Willing&Studied) Acceleration Form
Large class in research university	Online vs. <b>F2F</b>	–
Small class in research university	Hybrid vs. <b>F2F</b>	Add advanced content
Small class in commuter university	Hybrid add to <b>Online</b>	Adaptively add content
Small class in community college	Hybrid vs. <b>F2F</b>	Add 50%

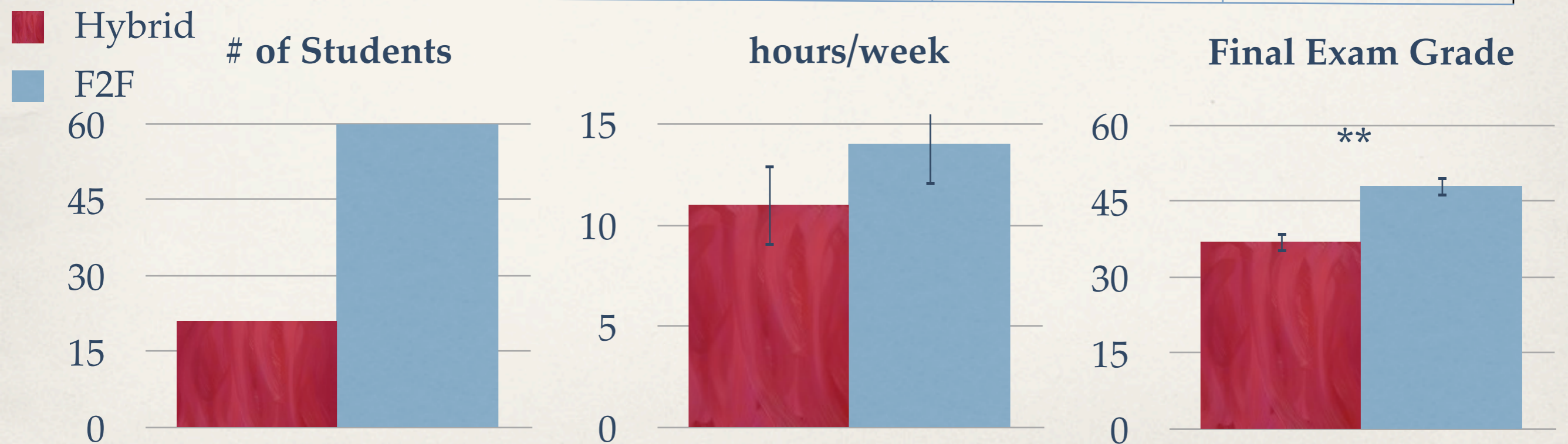
# Study 1: Online vs. F2F, Large Class, Research University Context

	Teacher	Teacher	Student
	Content knowledge	Pedagogical content knowledge	In class attendance
Large class in research university	High	High	Moderate



# Study 2: Hybrid vs. F2F, Small Class, Research University Context

	Teacher			Student
	Content knowledge	Pedagogical content knowledge	Mode familiarity	In class attendance
Small class in research university	High	High	F2F	High

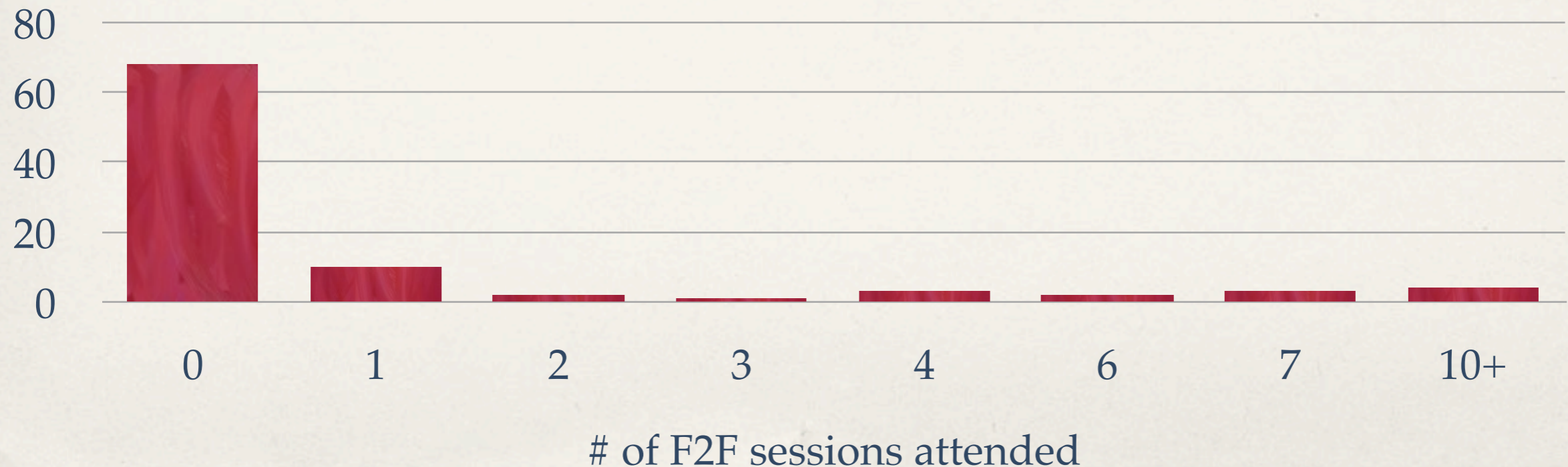




# Study 3: Hybrid vs. Online, Small Class, Research University Context

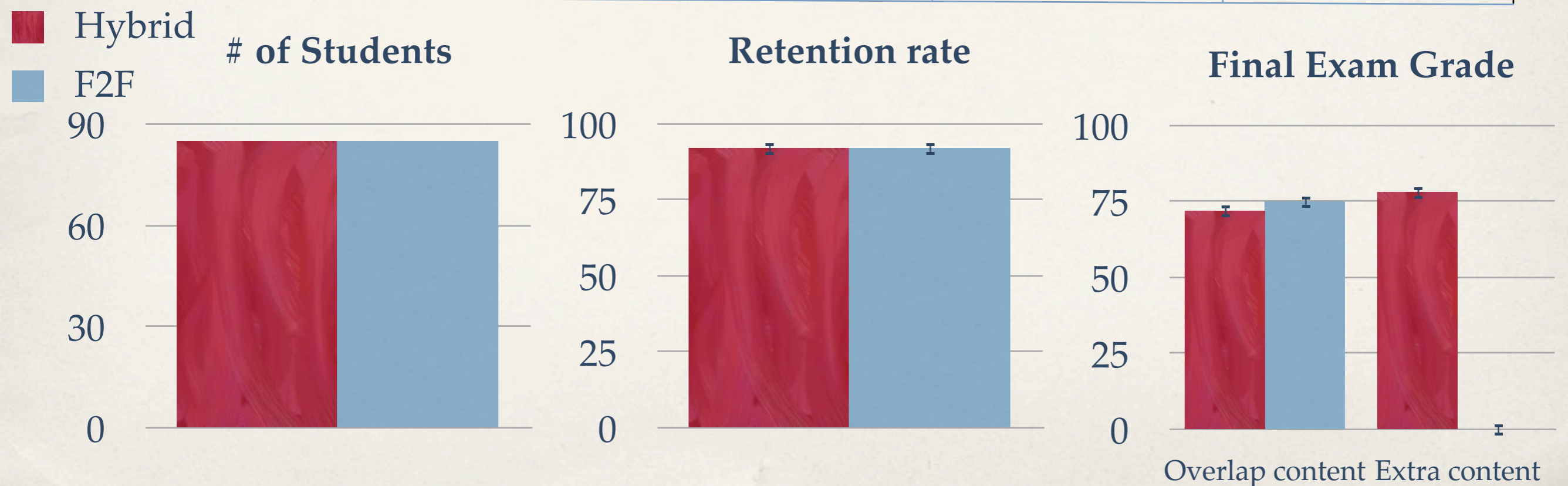
	Teacher			Student
	Content knowledge	Pedagogical content knowledge	Mode familiarity	In class attendance
Small class in commuter university	High	Mid	Online	Low

# of Students



# Study 4: Hybrid vs. F2F, Small Class, Community College Context

	Teacher			Student
	Content knowledge	Pedagogical content knowledge	Mode familiarity	In class attendance
Small class in community college	Low	Low	F2F	High



# Summary:

## Implementation challenges & relative strengths

	Teacher			Student	Outcomes
	Content knowledge	Pedagogical content knowledge	Mode familiarity	In class attendance	
Large class in research university	High	High	F2F, Online	Moderate	Better retention for online vs. F2F
Small class in research university	High	High	F2F	High	Better learning for F2F vs Hybrid
Small class in commuter university	High	Mid	Online	Low	Hybrid not implemented vs. Online
Small class in community college	Low	Low	F2F	High	Accelerated learning Hybrid vs. F2F

# Caveats & Future Directions

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- ❖ The joys of quasi-experimental research...
- ❖ The dangers of extrapolating broadly to classes of settings...
- ❖ What if...
  - ❖ Other types of online materials?
  - ❖ Better (or worse) instructor supports for transition?
  - ❖ Better (or worse) student incentives for participation?
  - ❖ Other types of learning measures?