

# **FLIPPED MATHEMATICS INSTRUCTION OBSERVATION PROTOCOL**

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### Introduction

- Flipped instruction is a model of instruction in which the lecture portion of a class is delivered electronically by video.
- Many variations of flipped implementations exist in mathematics, however extant classroom observation protocols do not adequately capture the nuances between these different variations.
- Our Flipped Mathematics Instruction Observation Protocol (FMIOP) draws upon existing frameworks and consists of two main lesson components: *in-class* and at-home.
- The *in-class* component captures two aspects of the lesson: instructional quality and interactivity.
- The protocol also distinguishes the whole-class and the non-whole-class activity formats.
- The *at-home* components are examined along three aspects: instructional quality, multimedia design, and interactivity.
- Looking ahead, due to rapid changes in technology, our observational tools must advance to account for key features of instructional videos, and their use in mathematics instruction.

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#### References

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		Observation	Protocol	
Format	Whole-Class Discourse (WCD)	Group Work (GRP)	Individual Work (IND)	Non-Instructional Tir (NIT)
Description	All students are expected to attend to public discourse.	Students are expected to work in groups.	Students work individually or in voluntary groupings (No clear expectation for them to work in groups)	<ul> <li>Segments are devoted to non-instructional tasks</li> <li>generally.</li> </ul>
Duration (mins.)	12	0	34	4
	At-Home		In-C	lass
Video/Multimedia			Lesson Characteristics	
Unclear  Voice Over  Embedded Questions	Focus Narrator Type Lecture Cap Interactivity Virtual Mar	pture nipulative	Unclear + For Ratio Weak + Ratio Disjointed + Flo	cus Explicit onale Compelling
Set- Up/ Motiv ation Printed V Dupl Irrel Sounds/Gri F	Lecture Rationale Competitive tructional Quality Atimedia Design Not Contiguity On Sam Not Contiguity On Sam Modality Animated Redundancy Descrip levant aphics Personalization Convert	elling ne Screen d Narration otion raneous rsational	Whole-Class Format Most Off Engage Instructional Quality Rules & Facts Math Dev Major Unmitig. N Major Math Repr Recall Math Co Recall Math Co Interactivity Teacher Math A Brief Video/Media Short Public Inv Nature of	ement Most On velopment Justified Aath Errors No Errors esentations Integrated mections Substantial uthority Class Involvement Explicit olvement Several Lengthy Discourse Collaborative
Problems/Exercises			Non-Whole-Class For Most Off Generation Less Generation Reactive Generation Reactive Generation	ment Video More irculation More
	Cognitive Domand		Individual	Talk Interactive







