



Characterizing the Use of Learning Assistants through COPUS Profiles

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Introduction

Because the contributions of Learning Assistants (LAs) on student learning in undergraduate STEM courses may be attributed to the type of teaching techniques practiced by instructors in LA supported courses, a research collaboration across three U.S. institutions is investigating ways to characterize differences in LA-supported courses. At North Dakota State University, in-class behavioral observations of instructors, students, and Learning Assistants were conducted using the Classroom Observation Protocol for Undergraduate STEM (COPUS) to generate data, and identify instructors' teaching practices, or COPUS profile.

Research Questions:

1. How do instructors with different COPUS profiles use LAs?
2. How does the prevalence of LA codes vary across COPUS profiles?

Learning Assistants

- High performing undergraduate students selected by faculty to support peer interaction and student-centered instruction
- Provide insight to instructors about student misconceptions in regards to course content
- Focus on supporting the students and not the instructor

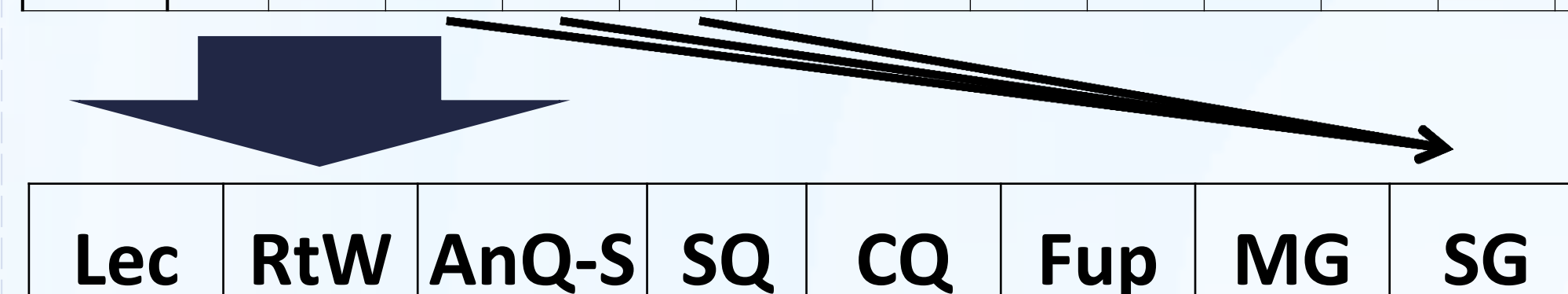
Methods

- COPUS observations were conducted in 5 science courses (3 biology courses, 1 physics course, and 1 chemistry course) during Spring 2016 semester.
- 13 codes (12 LA and 1 instructor) were added to original COPUS to document LA behaviors – in red above.
- COPUS profiles were determined for each course.

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Determining an Instructor's COPUS Profile

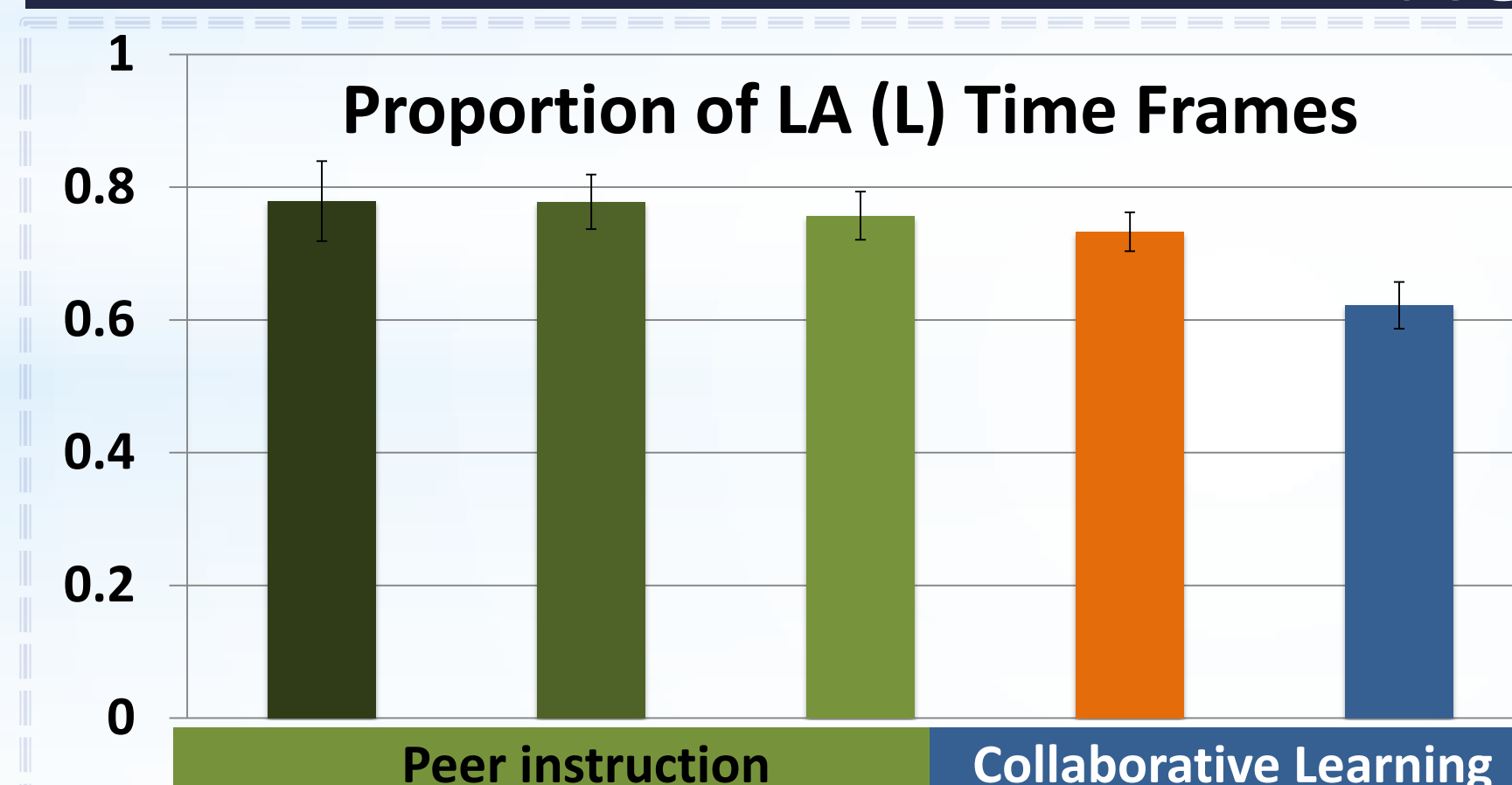
Time	Students Doing													Instructor Doing										LA(s) Doing														
	L	Ind	CG	WG	OG	AnQ	SQ	WC	Prd	SP	T/Q	W	O	Lec	RtW	Fup	PQ	CQ	AnQ	MG	1o1	D/V	Adm	W	O	L	Lec	RtW	PQ	AnQ	MG	1o1	Adm	LaLa	LaI	W	O	
0	1	1																1								1												
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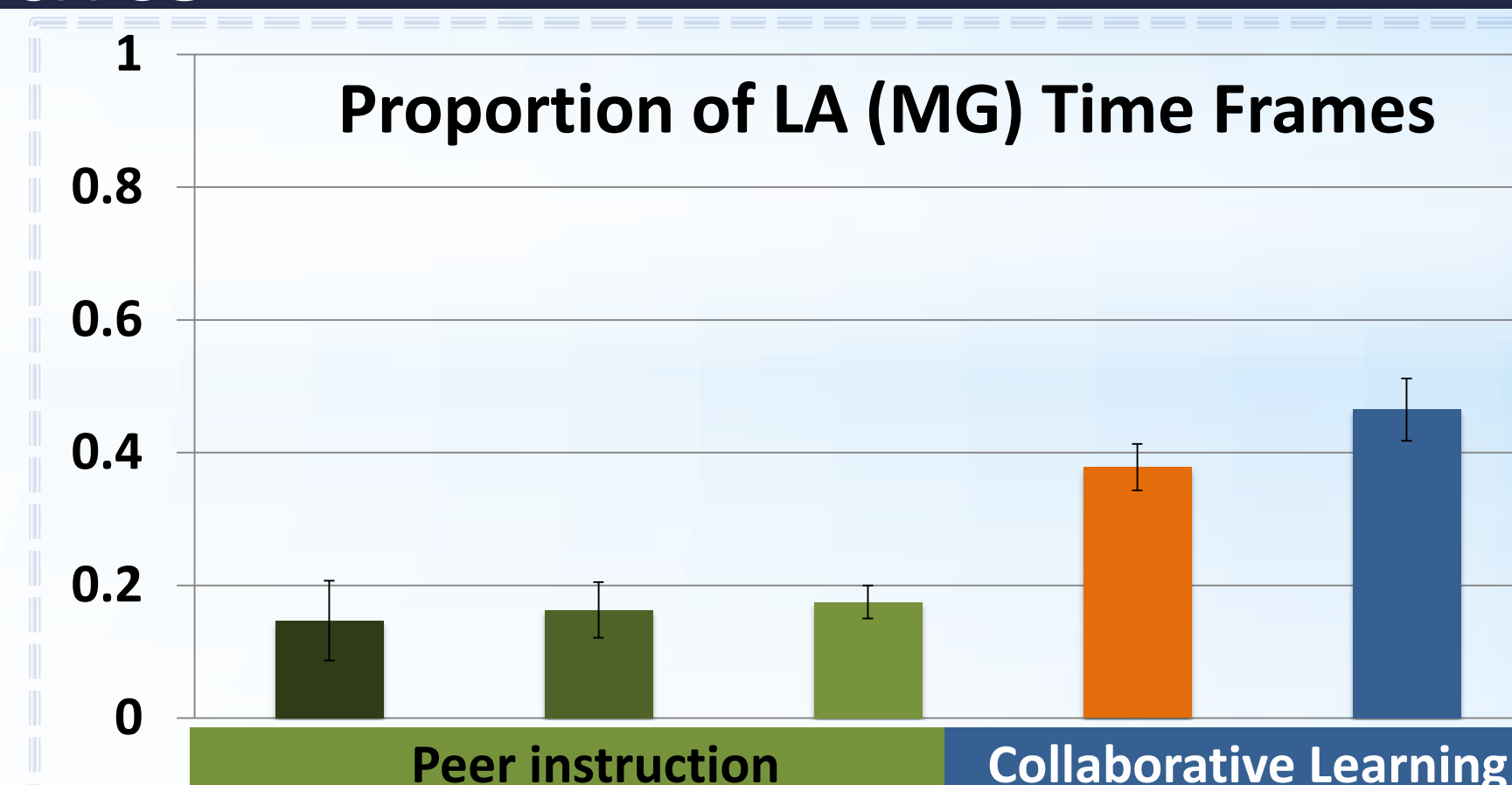
- COPUS: Classroom behaviors are documented in 2 minute intervals
- COPUS profiles are created using 10 COPUS codes (Lund et al)
- Clicker Groups (CG), Worksheet Groups (WG), and Other Groups (OG) combine to one code in COPUS profiles : Student Groups (SG)

Instructional Style	COPUS Profile	Lec	RtW	AnQ-S	SQ	CQ	Fup	MG	SG	Class	Instructional Style	Respective COPUS Profile
Lecturing	Lecture (slides)	94%	2%	8%	8%	3%	4%	0%	2%	1	Peer Instruction	Limited Peer Instruction
	Lecture (board)	93%	88%	15%	16%	1%	3%	0%	2%			
	Transitional lecture	87%	48%	20%	9%	5%	7%	1%	6%			
Socratic	Socratic (board)	97%	87%	52%	24%	0%	1%	1%	1%	2	Peer Instruction	Limited Peer Instruction
	Socratic (slides)	81%	6%	39%	20%	1%	9%	2%	7%			
Peer instruction	Limited Peer Instruction (slides)	76%	3%	8%	4%	19%	19%	5%	24%	3	Peer Instruction	Extensive Peer Instruction
	Limited Peer Instruction (board)	68%	70%	18%	8%	18%	24%	4%	22%			
	Extensive Peer Instruction	55%	13%	17%	4%	41%	50%	3%	24%			
PI/Collaborative Learning	Student-Centered PI	50%	3%	31%	6%	42%	54%	11%	50%	4	PI/Collaborative Learning	Student-Centered PI
Collaborative Learning	Group Work	26%	43%	28%	9%	0%	39%	25%	51%			

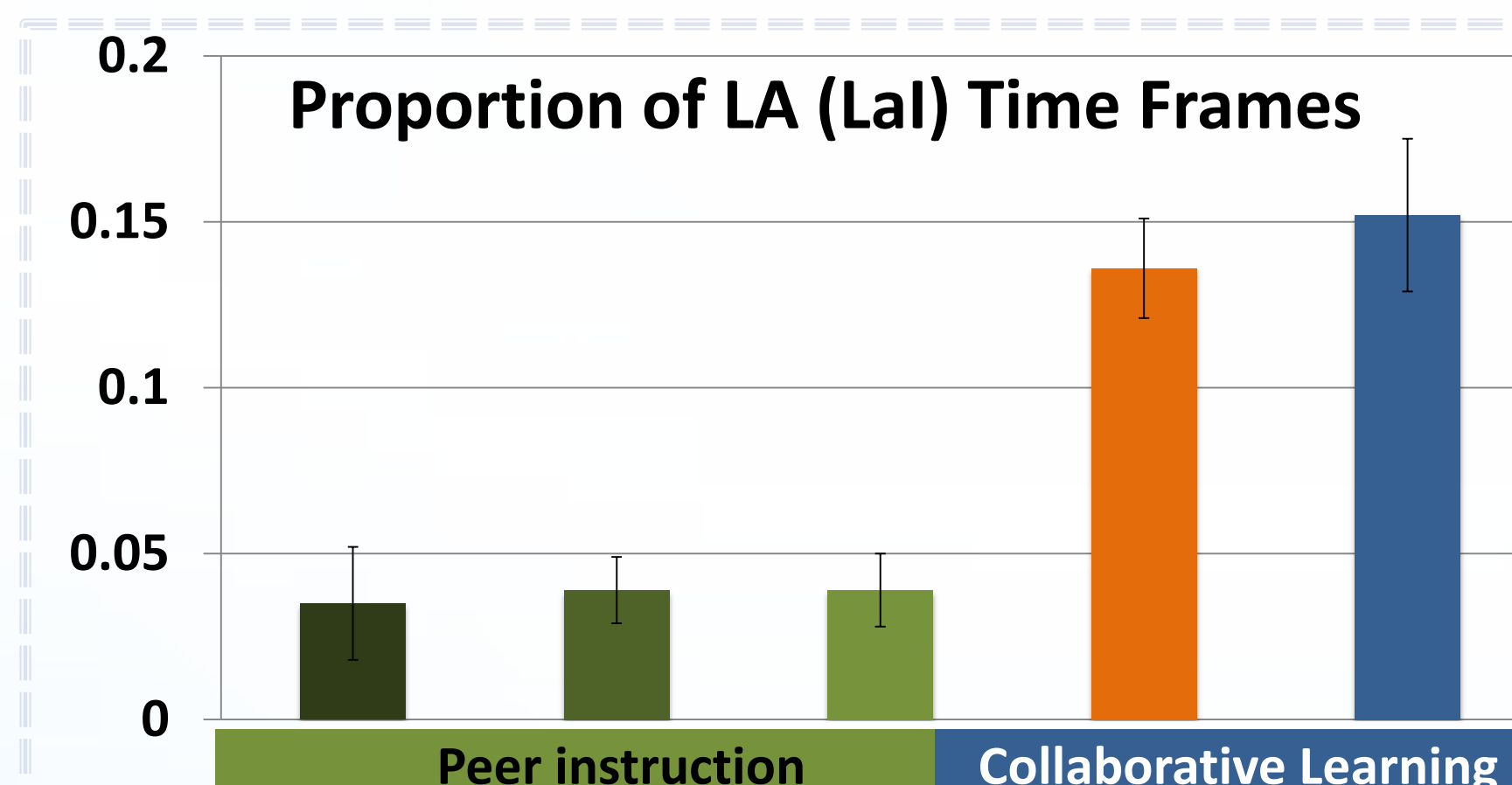
Results



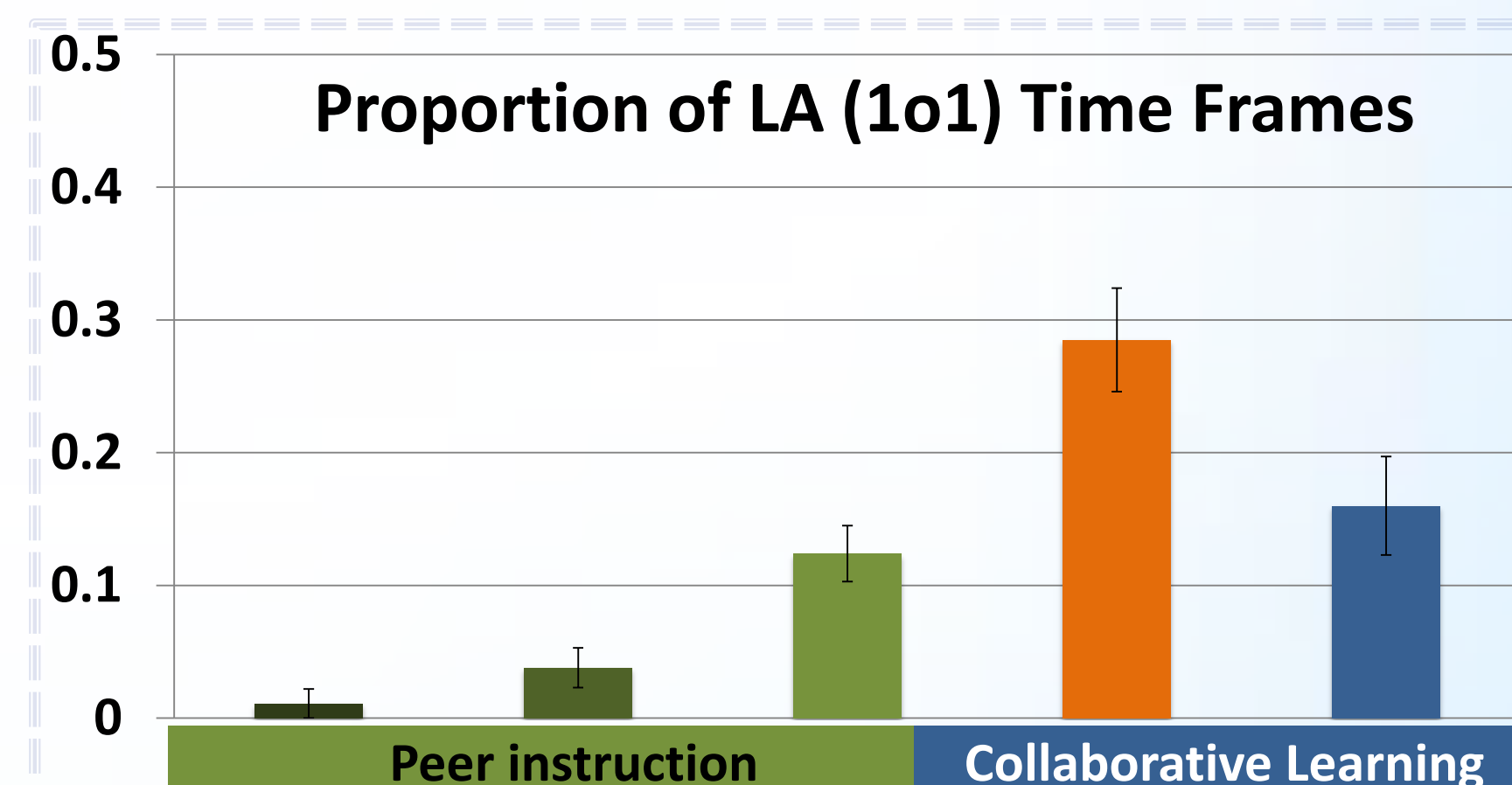
Listening (L) codes for LAs decrease in collaborative learning environments.



LAs move through groups (MG) more often in collaborative learning environments.



LAs interact with instructors (LaI) more often in collaborative learning environments.



LAs interact more often with students in collaborative learning environments.

Conclusions

- LAs are used more often in collaborative learning courses.
- Moving through groups (MG) and one on one interactions (1o1) are most prevalent in collaborative learning environments.
- Instructors can utilize LAs strategically to increase the number of LA-to-student interactions (1o1) regardless of their instructional style.

Future Work

- **NDSU:** Development of a new protocol to analyze and interpret student cognitive engagement during class time
- **CSU:** Observation and classification of active learning techniques employed by LAs outside of class

References:

¹ Smith MK, Jones FHM, Gilbert SL, & Wieman CE (2013). The Classroom Observation Protocol for Undergraduate STEM (COPUS): A New Instrument to Characterize University STEM Classroom Practices. CBE Life Sci Edu 12, 618–627.
² Lund TJ, Pilarz M, Belasco JB, Chakraverty D, Rosploch K, Undersander M, Stains M (2015). The best of both worlds: Building on the COPUS and RTOP observation protocols to easily and reliably measure various levels of reformed instructional practice. CBE Life Sci Edu 14, 1-12.