

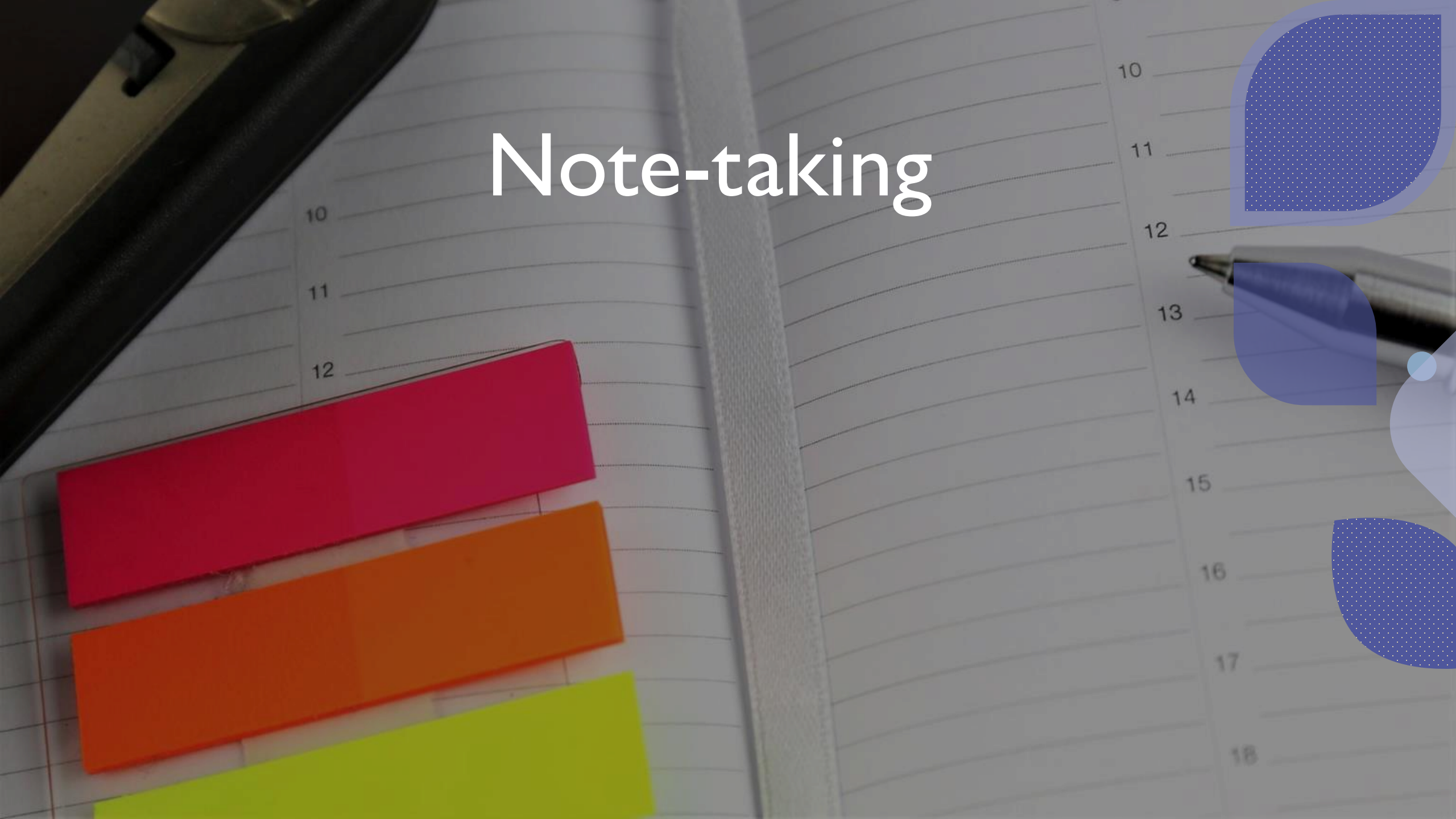
# The role of online collaborative note-taking behaviors, note completeness, and course performance

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# Note-taking



**COLLABORATION**





**MORE  
RESEARCH  
NEEDED**



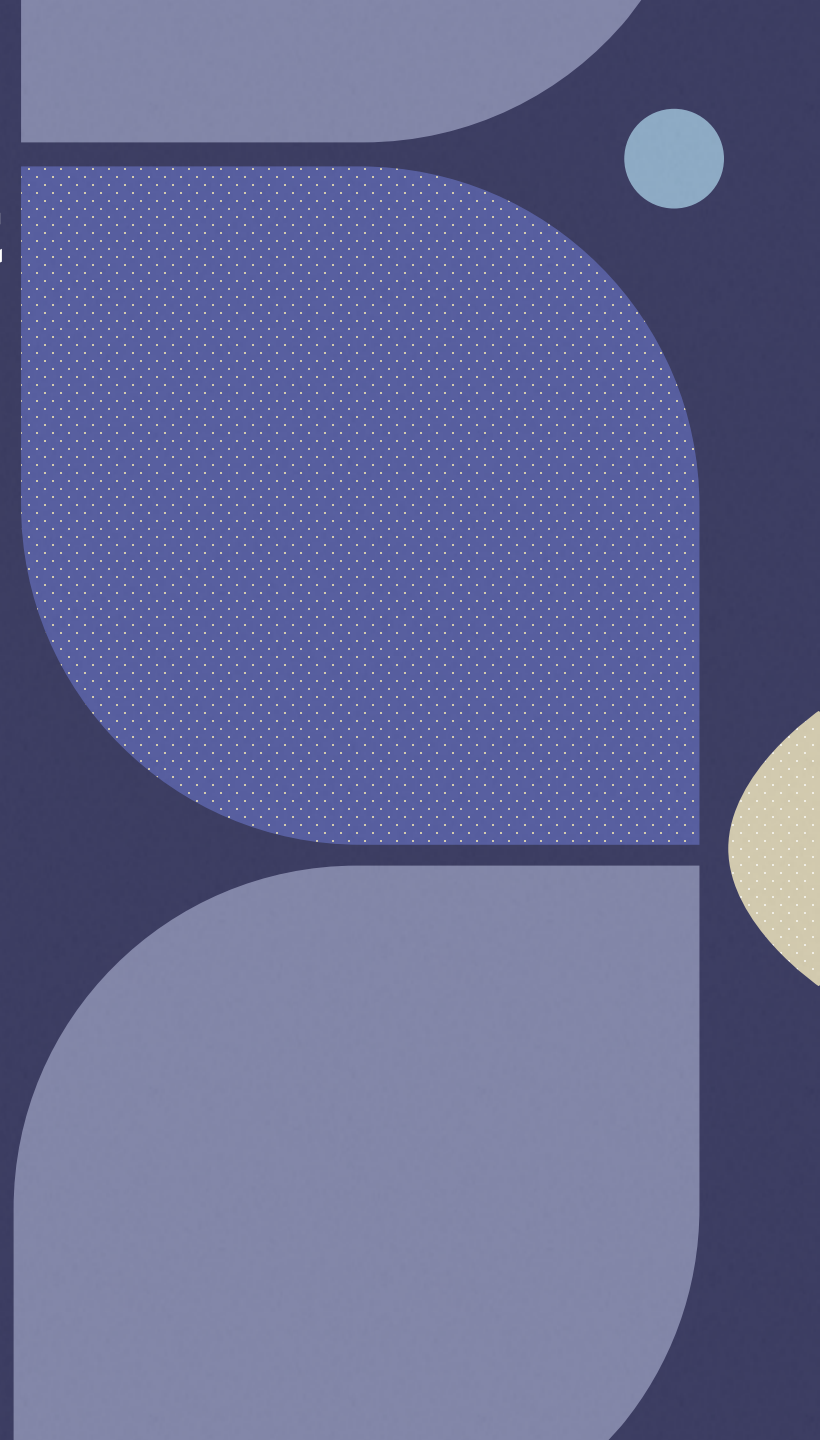


**Does  
collaboration  
change over  
time?**

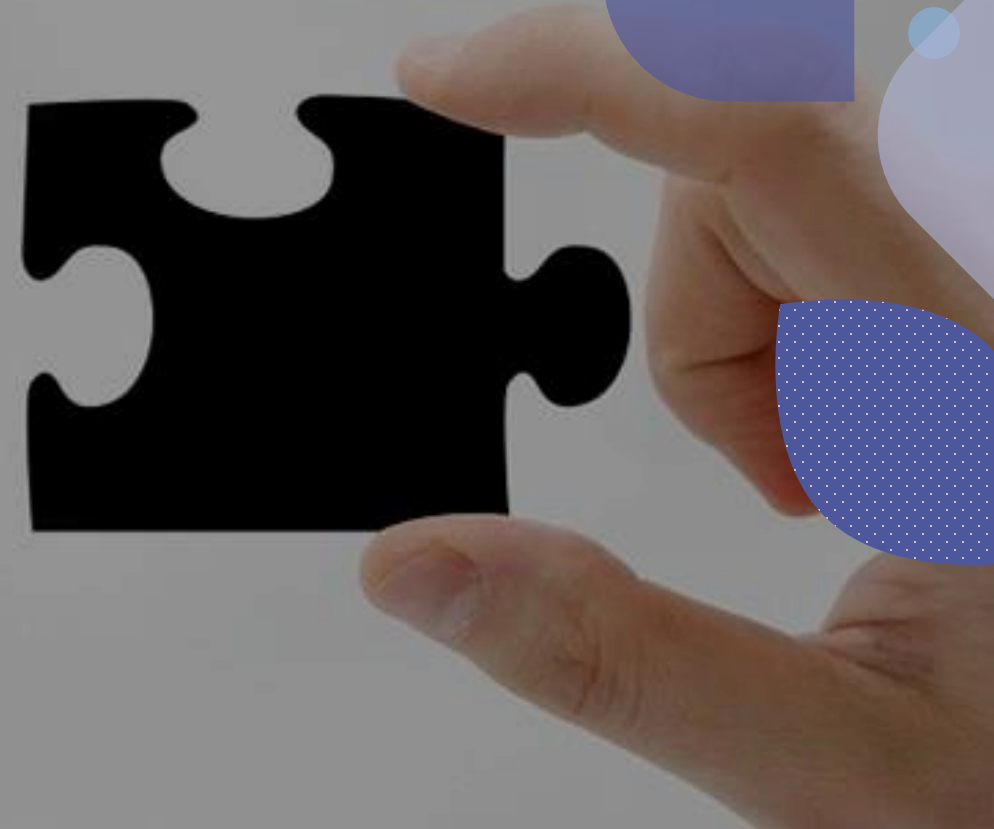


# Possible Productive Constituent elements of collaboration

- VOLUME
- EDITS OF OTHERS
- LOGINS
- EVENNESS



# Quality of collaborative work - Completeness





# The present study

- **RQ1:** How do within-group level productive collaboration behaviors, such as (a) volume of words, (b) edits of others, and (c) number of log-ins affect students' weekly course performance?
- **RQ2:** How do group-level collaborative behaviors such as (a) volume of words, (b) edits of others, (c) number of log-ins, and (d) evenness affect students' weekly group course performance?
- **RQ3:** How do group-level productive collaboration behaviors, such as (a) volume of words, (b) edits of others, (c) number of log-ins, and (d) evenness of volume affect the completion of weekly group notes?
- **RQ4:** How does the completion of group notes contribute to weekly student performance?



# Methodology



Graduate students taking an online academic writing class



273 students in 61 groups



Ten weeks of instructional videos, notes, and quizzes



Video lectures -> taking collaboration notes -> week performance



Google docs was used for the notes

# Instruments

Volume -> amount of words written

Edits of others -> keystrokes over another's work

Logins -> The amount of times they logged in and interacted with the document

Evenness -> log of the reciprocal variance

Completeness -> The degree to which the notes covered the contents of the lectures

Weekly performance -> Student performance on end of week multiple choice quizzes

# Results

**Table 3**  
Summary of effects from main multilevel temporal models for weekly group completeness and course performances.

Independent variables	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
<i>Initial online note-taking behavior effect on course performances [within-group effects]</i>										
Volume of words ( <sub>1</sub> )	0.085	0.147*	0.223*	0.081	0.122	0.110	<u>0.187***</u>	0.149*	0.137*	<u>0.229***</u>
Edits (of others) ( <sub>2</sub> )	−0.047	−0.083	−0.037	0.036	−0.063	−0.028	−0.068	0.041	−0.006	−0.083
Session logins ( <sub>3</sub> )	0.102	0.000	−0.104	−0.042	0.099	0.065	0.081	−0.006	0.000	−0.037
$R^2(f^2)$	0.021 (0.021)	0.022 (0.22)	0.041 (0.043)	0.009 (0.009)	0.029 (0.030)	0.017 (0.017)	0.039 (0.041)	0.028 (0.029)	0.018 (0.018)	0.044 (0.046)
<i>Initial online note-taking behavior effect on note completeness [between-group effects]</i>										
Intercept	0.004	−0.049	−0.015	−0.071	−0.030	0.011	−0.035	0.107	−0.035	−0.047
Volume of words ( <sub>8</sub> )	<b>0.331**</b>	<b>0.488**</b>	<u>0.637***</u>	0.215	<b>0.386**</b>	0.335*	<u>0.570***</u>	<u>0.525***</u>	<u>0.694***</u>	<u>0.841***</u>
Edits (of others) ( <sub>9</sub> )	−0.049	0.119	−0.145	0.122	−0.126	0.067	−0.129	0.073	−0.028	0.059
Session logins ( <sub>10</sub> )	0.118	−0.037	0.061	−0.148*	−0.022	0.137	0.116	0.066	0.001	−0.115
Volume evenness ( <sub>11</sub> )	<b>−0.392**</b>	−0.078	0.093	−0.306	−0.284	−0.046	0.132	−0.079	−0.022	0.061
$R^2(f^2)$	0.441 (0.789)	0.337 (0.508)	0.309 (0.447)	0.261 (0.353)	0.315 (0.460)	0.193 (0.239)	0.249 (0.332)	0.391 (0.642)	0.488 (0.953)	0.624(1.66)
<i>Note Taking completeness effect on course performance [between-group effects]</i>										
Intercept	0.008	−0.025	0.028	−0.030	0.041	−0.052	−0.088	−0.117	0.014	−0.056
Completeness( <sub>12</sub> )	0.108	0.444	0.109	0.358	0.466	0.441*	0.458*	−0.495*	<u>0.689***</u>	0.198
$R^2(f^2)$	0.012 (0.012)	0.197 (0.245)	0.012 (0.012)	0.128 (0.147)	0.217 (0.277)	0.194 (0.241)	0.210 (0.266)	0.245 (0.325)	0.475 (0.905)	0.039 (0.041)

Note.  $R^2$  = total variance explained in outcome variables;  $f^2 = R^2/(1-R^2)$ ; \* $p < .05$ , \*\* $p < .01$  in bold; \*\*\* $p < .001$  bold and underlined; all values, unless stated otherwise, represent standardized beta coefficients (see Fig. 1); group and student sample sizes per week given in Table 2.



# Results

- **RQ1: Effect of Collaborative Productive Behaviors on Within-group Student Performance ->** Within-groups effects suggest that only the volume of words had a statistically significant effect on student course performance twice in the first five weeks, and four times in the last five weeks.
- **RQ2: Effect of Collaborative Productive Behaviors on Between-group Course Performance ->** only Session Logins had a substantive effect in Week 1, and Edits of Others had a substantive effect in Week 5.
- **RQ3: Effect of Collaborative Productive Behaviors on Note Completeness ->** Results suggested that Volume of Words had substantive effects for nine of all ten weeks.
- **RQ4: Effect of Completeness on Course Performance ->** Results found that the subsequent between-group effect of note-taking completeness on group course performance was substantive for four of the last five weeks of the course.

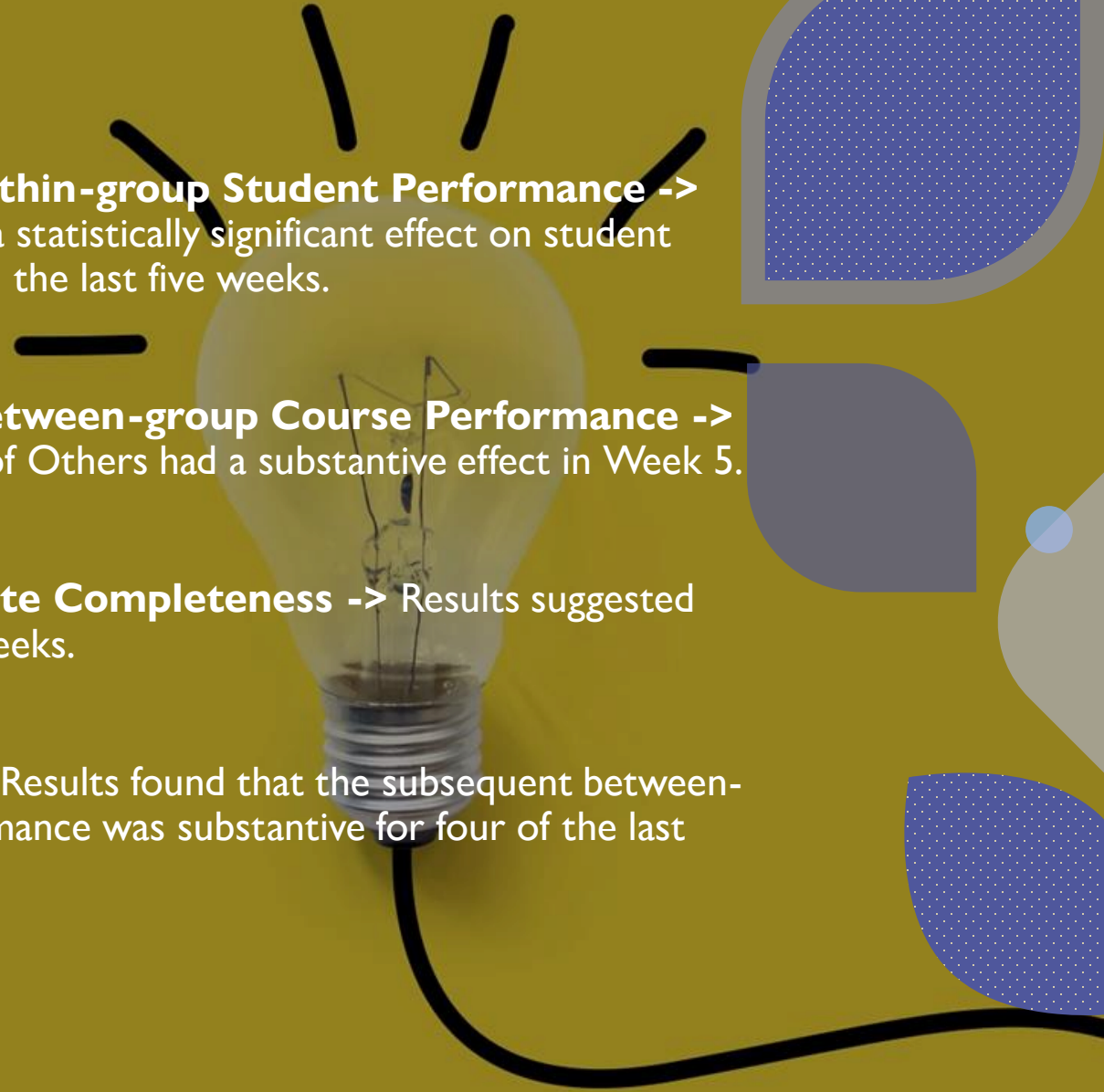
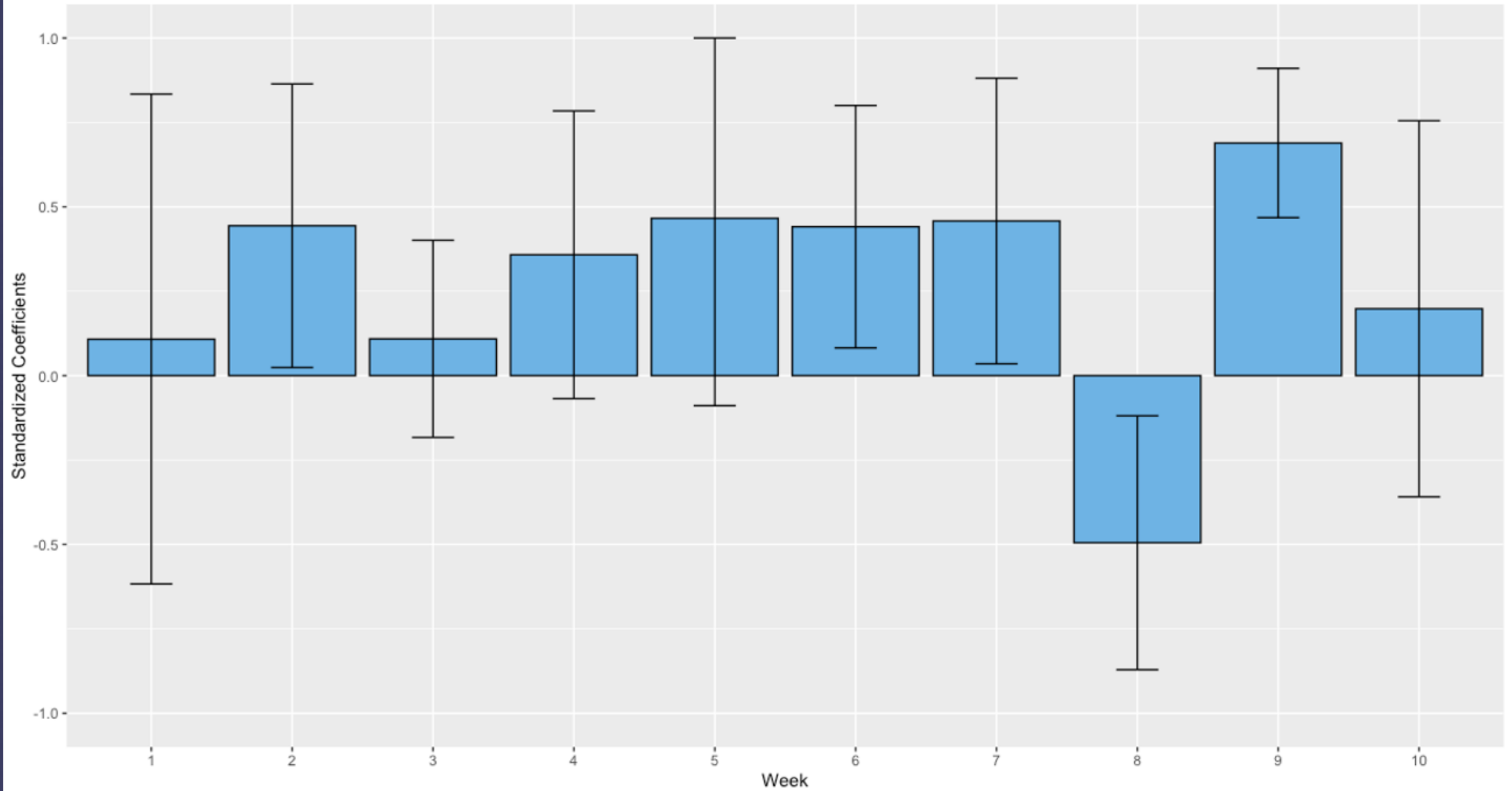


Figure 1. Effect of Between-Group Completeness on Test Scores across 10 Weeks

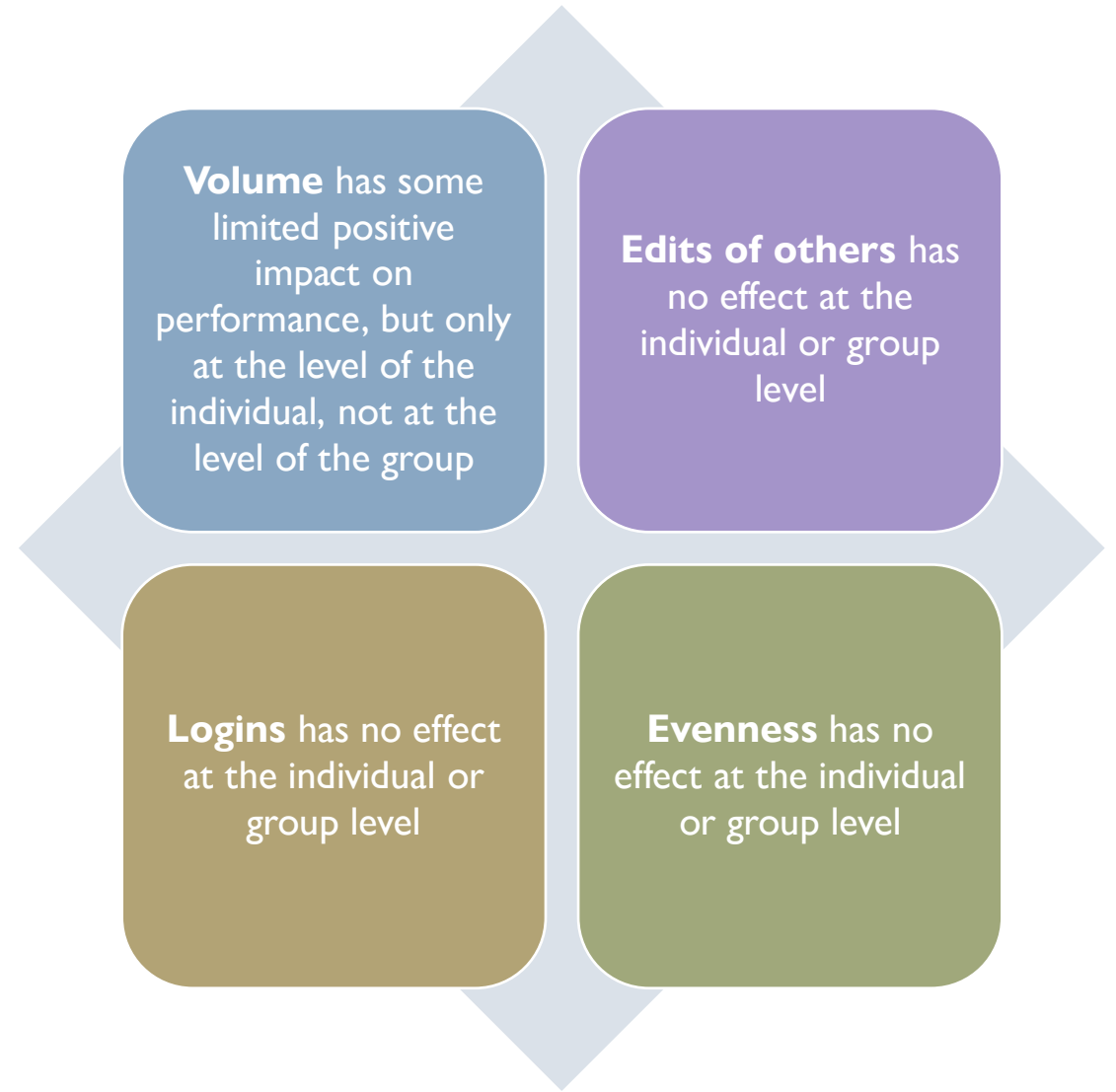


# DISCUSSION

- Our study falls in line with current research into the benefits of online collaboration and note-taking, but only to a certain degree as results herein suggest that
- (1) these benefits are not enjoyed across all elements of collaboration and
- (2) these effects are not consistent throughout the semester.



# The elements of collaboration



# The effect of time



# Pedagogical implications



# Conclusion



The background is a solid dark blue. It is decorated with several light blue and white geometric shapes. In the top left, there is a small white dot and a larger light blue shape with a dotted pattern. In the top right, there is a large light blue shape with a dotted pattern and a thick blue border. In the bottom left, there is a large light blue shape with a dotted pattern and a thick blue border. In the bottom right, there is a large light blue shape with a dotted pattern and a thick blue border, a medium-sized solid blue circle, and a small white dot.

# Thank you for listening

I am happy to try to answer and questions