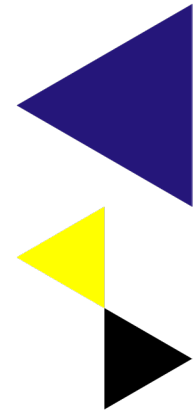




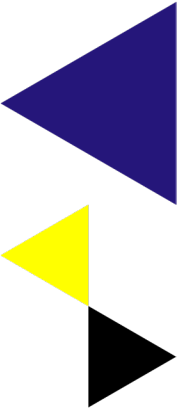
Effect of supplemental instruction on grades, well-being and belonging

- Izaak Dekker, PhD
- Merel Luberti, MSc
- Jantien Stam, MSc



Content

1. What is supplemental instruction / SI-PASS
2. What are the effects of SIPASS?
3. Why does it work?



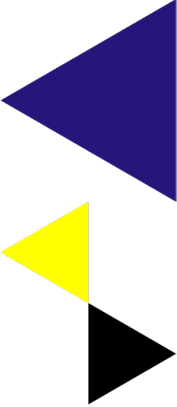
Supplemental Instruction

Peer assisted study sessions

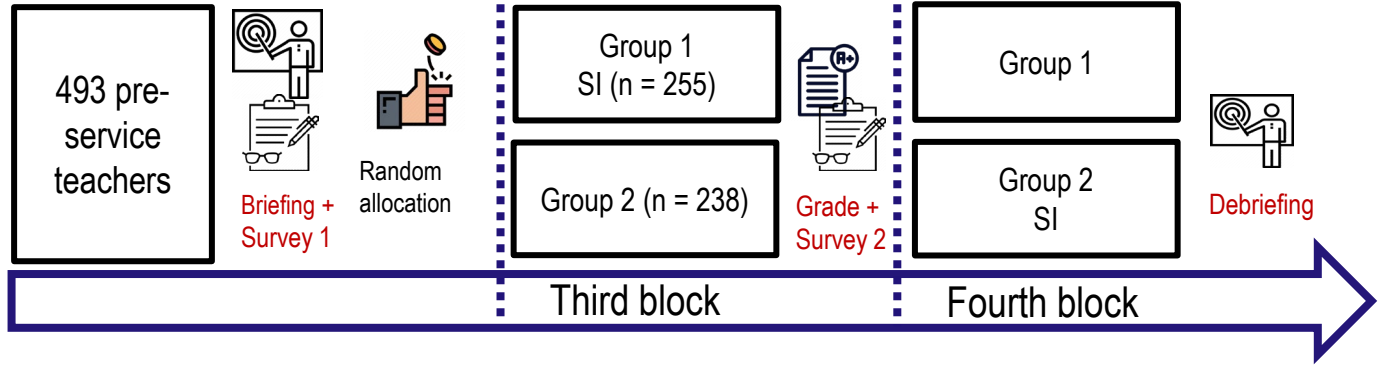


Example session

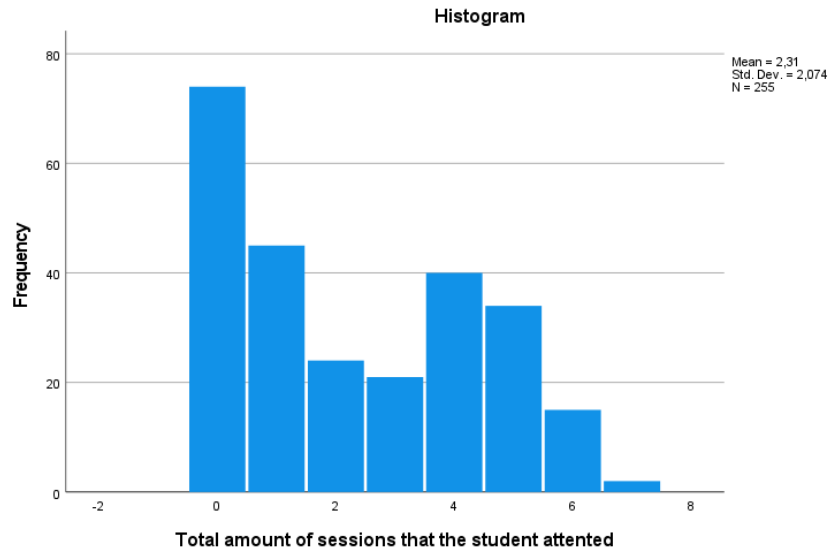
- Check in: rate 1-10 in Excel: *“How well do you understand Pascals triangle?”*
- Retrieve as much as you can from last lecture
- Randomly divide class in groups of 4 → Make assignments on the board
- Randomly allocate who presents solutions.
- Check out: rate 1-10 in Excel: *“How well do you understand Pascals triangle?”*
 - Calculate mode, median, average and the coefficient of the regression in groups.
 - What is the difference between pre- and post-test and why?



Study design



Participation



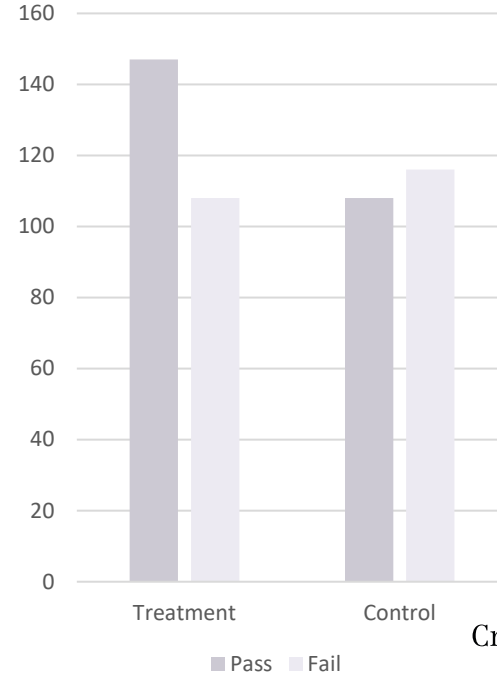
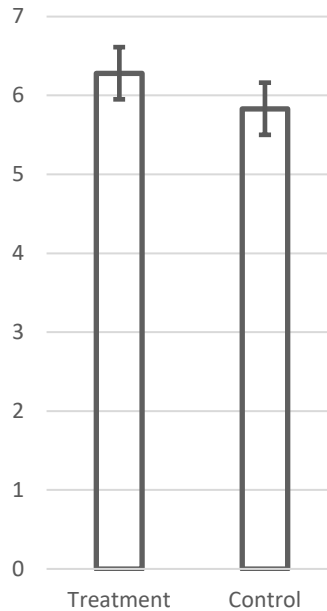
Session attendance.

Sessions	Students	%
0	74	29.0%
1	45	17.6%
2	24	9.4%
3	21	8.2%
4	40	15.7%
5	34	13.3%
6	15	5.9%
7	2	0.8%

Note. total amount of invited students is 255.

Results: Grades

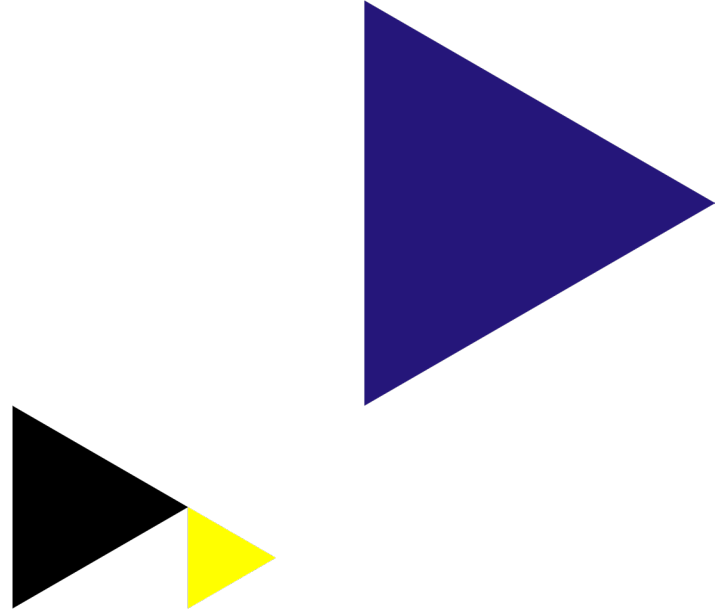
- Students who *received access* to SI averaged a **6.28**
- Control group average: **5.83**
- Highly significant ($p < 0.01$)
- 0.26 standard deviations effect
- No sig differences on mental well-being or sense of belonging



Why does it work?

A qualitative study into the mechanism

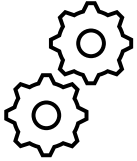
Izaak Dekker, Marie-Jose Koerhuis-Pasanisi, Martijn Koek



Method



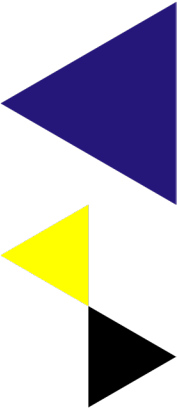
- Sample: 14 students



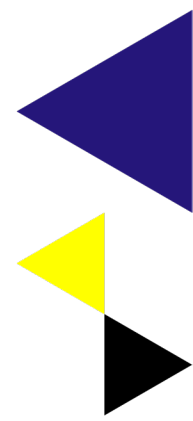
- Purpose: find explanatory mechanisms using learning theories

1. Read transcripts
2. Independent segmentation into cognitive and non-cognitive outcomes. Calibrate and segment again.
3. Coding causal mechanisms (85 codes)
4. Summarise mechanisms
5. Cluster 85 summaries into 15 labels and 4 categories
6. Independent coding and calibration
7. Independent assignment of a sub-sample of 45 codes by third author to measure inter-coder reliability

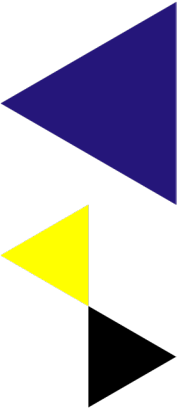
Cluster	Kappa	<i>p</i>	<i>n</i>
Pedagogical climate	0.83	< 0.001	45
Effective study techniques	0.74	< 0.001	45
Social learning	0.86	< 0.001	45
Attendance and schedule	1.00	< 0.001	45



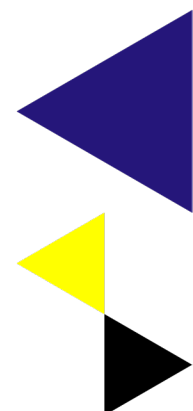
Category	Label	Summary	Example segment
Effective study techniques	Practice testing	In SI I learned to make flashcards which was helpful for retaining information.	Before, for me I thought the best way to learn is to make summaries. But for some courses like analyzing the English language this did not always work. I learned to make and use flashcards and this allowed me to retain the information.
	Distributed learning	Because of SI I learned to start studying earlier in the term and to repeat the content weekly in order to remember it better.	Start on time. That's it really. You really saw, when you start on time. If you attend classes on Monday and then repeated the content in SI on Thursday. Then you remember much more.
	Questions about learning	Because of SI I learned that support is available and that you can ask questions about learning.	For first-year students I think this should really be a standard part of the program. I came from a community college and it was a pretty big step. At the start I thought "shit how am I gonna do this all by myself". But when we were offered SI then I realized that there is support and that there is a possibility to ask questions about learning.



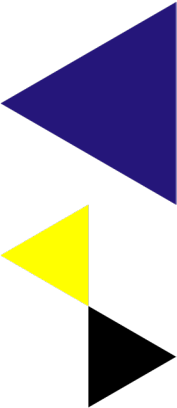
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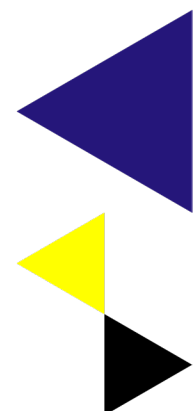
Category	Label	Summary	Example segment
Pedagogical climate	Small-scale	The small-scale of SI helped me get to know people I would otherwise not have approached.	All my life I had trouble to make the first move and talk to people, but because of the small setting I felt more comfortable to engage with others.
	Room for questions	SI allowed students to raise questions they had during or after class.	I thought it was really helpful and also because it was after classes. Not the same day necessarily, but then you could dive into the subject matter after the class, so if you had questions from the class then you could raise them during SI.
	SI leader	It is easier to talk with an SI leader than with a teacher, this positively influence the pedagogical climate.	Its easier to talk with a fellow student I think, they know what you are dealing with. ... This mostly impacts the pedagogical atmosphere in the class I think.
	Community	The students who attended SI became a team that keeps studying together and helps and motivates each other.	Because of SI we kind of became a team. [...] so now we preceded with our team for the next course. And we try to motivate each other. We try to help each other.
	More motivating than at home	At home there are more distractions compared to working in a group at SI.	And at home of course it is easier to get distracted of course, right? You can go to youtube, facebook, netflix, listen to music, while here you are really in a group and actively engaged.



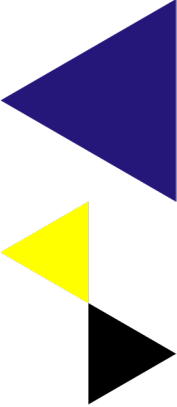
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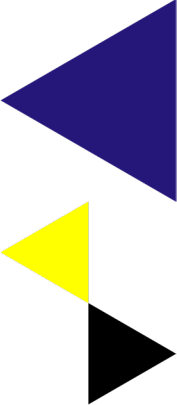
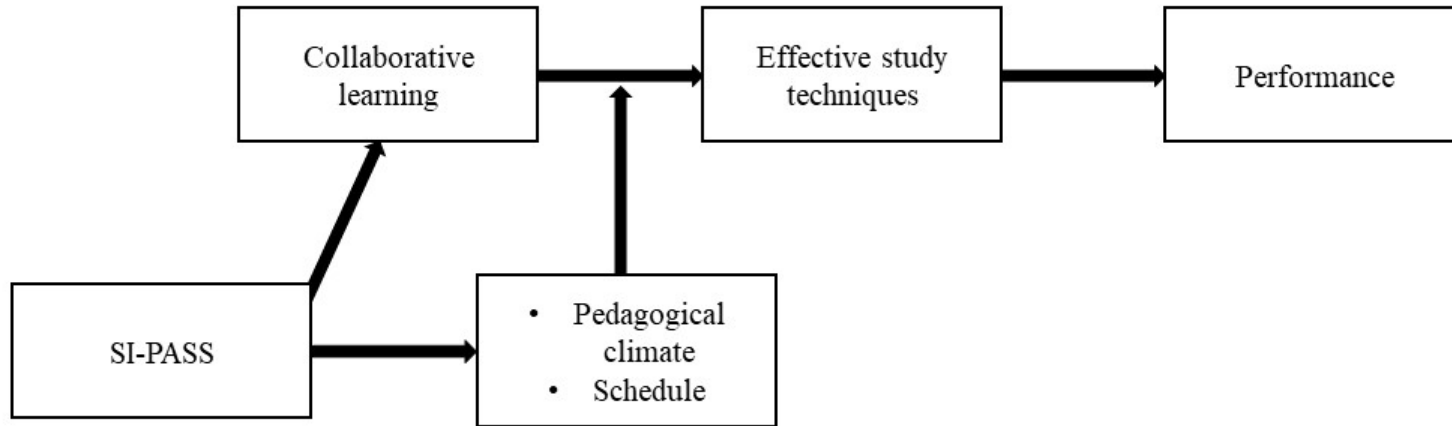
Social learning	Promotive interaction	You needed to prepare for the session. When I did not prepare for the SI class I noticed that I did not contribute to the group and lesson and felt bad. I did not slip up afterwards.	SI gave me an extra push to prepare. I have trouble planning. But you really have to do it, because I clearly noticed that it was not nice for the group and for me. Then you are attending but not learning as much, because I did not do my part. Then you don't help each other. I did not slip up afterwards.
	Collaborative learning strategies	We could complement each other as attendants because the SI leader asked us for our perspectives and stimulated us to engage with each other.	We often complemented each other. For example, when they asked us something then we could complement each other. Ok try and solve this together. What do you guys think is the answer, how do you think this should go. They gave us lots of opportunities to engage with each other about the subject, which was very nice.
	Peer feedback	Giving each other feedback helped me pass the course.	I think SI helped me pass the course because I remembered more words and because we had provided each other peer feedback on our letters.
	Jigsaw	Jigsaw allowed me to learn the topic from the perspective of the student instead of the teacher.	Everyone chose one topic. In this case there were five topics. And then we had to search information about our chosen topic and afterwards explain it to each other. That was very helpful because it provided insights in how others learn. Not from the teacher perspective but from the students themselves.
	Presenting to each other	Explaining subject matter to peers improved my understanding.	Well explaining to others. When you explain it to others, I think, you will understand it better yourself.
Schedule and attendance	Schedule and attendance	The scheduled time for SI influenced attendance rates.	I do not remember exactly, but first it was scheduled at 9 and later at 10:30. The later is was scheduled, the more people that showed up. At 9 o'clock some people just refuse to attend.



Category	Label	Summary	Example segment
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Model





<https://osf.io/rntcj/>

<https://doi.org/10.1016/j.learninstruc.2023.101805>

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