



Mutual Teaching

Yamanashi Prefectural Kofu First High School
Inquiry Course 2nd grade Group 12

1 Background of Research



Active Learning

What we think of as an active learning type class is

"A class where students can communicate their opinions through teaching each other."



3 points of our teaching

First

Experiment

→ To check whether it is effective or not

Second

Questionnaire

→ To ask opinion

Third

Get some advice

→ To contact an expert in mutual teaching

Hypothesis

By doing mutual teaching...

→ It becomes easier to acquire knowledge

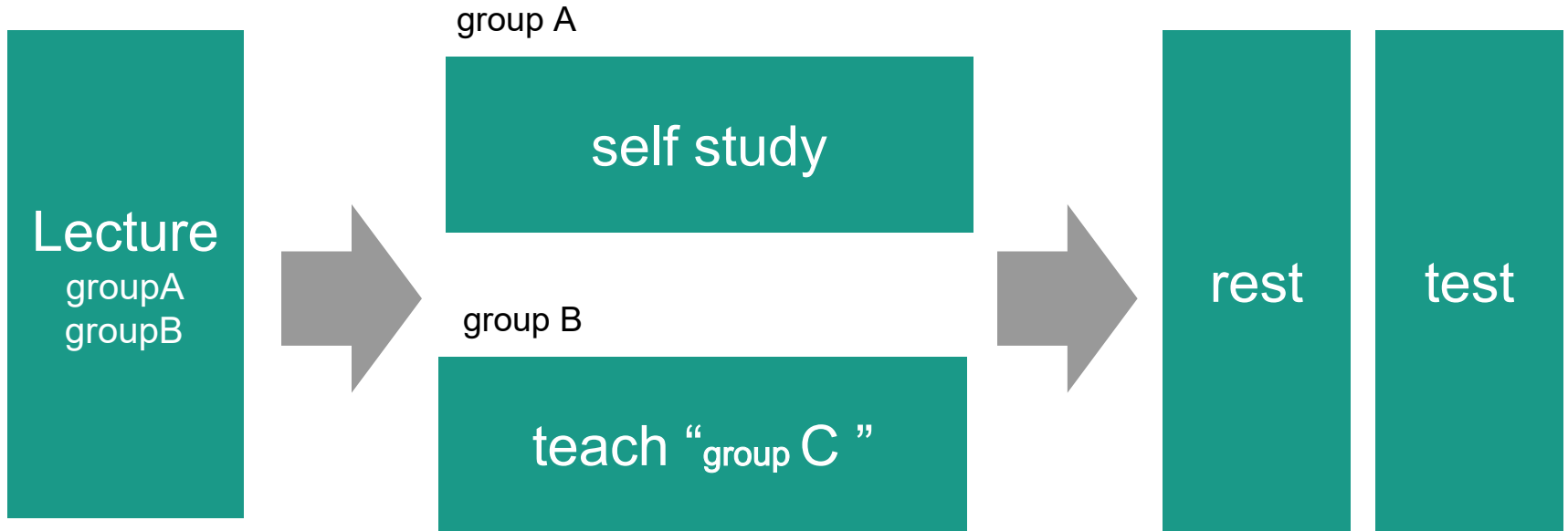
→ Students can take classes with a more proactive attitude


2 Contents of Research



① Effectiveness of Mutual Teaching

1st Experiment [math]





	average score	standard deviation
A (7participants)	7.57 /10	2.38
B (7participants)	8.50 /10	2.14


p-value 0.255

T-test

p-value < 0.05



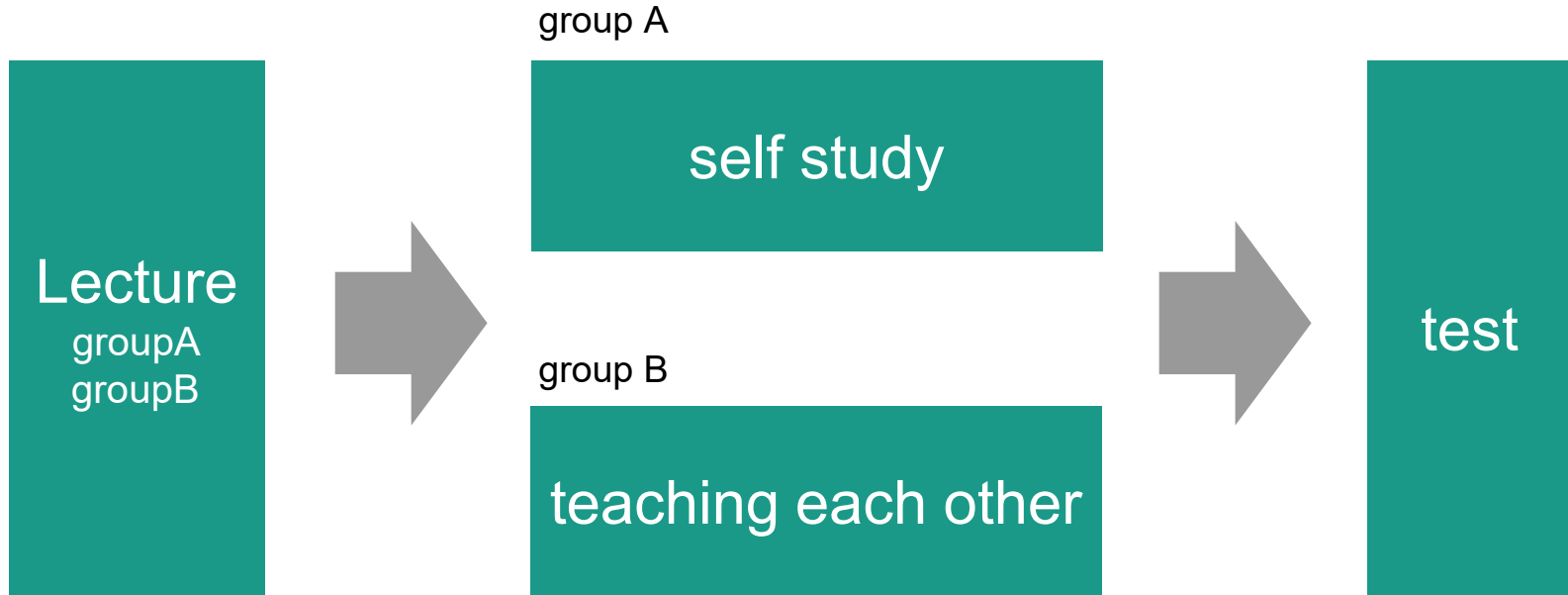
Our hypothesis is verified



	average score	standard deviation
A (7participants)	7.57 /10	2.38
B (7participants)	8.50 /10	2.14

p-value 0.255 > 0.05  Hypothesis no fulfilled.

2nd Experiment [math]



group B



Rules of mutual teaching

- **student teach as a pair**
- **You can ask people in other groups.**



	average score	standard deviation
A (15participants)	20.9 /50	15.1
B (15participants)	35.2 /50	12.4

p-value 0.006587 < 0.05  Hypothesis fulfilled.

Conclusion



It is better to teach each other because knowledge is more likely to be retained.

What people in Group B say

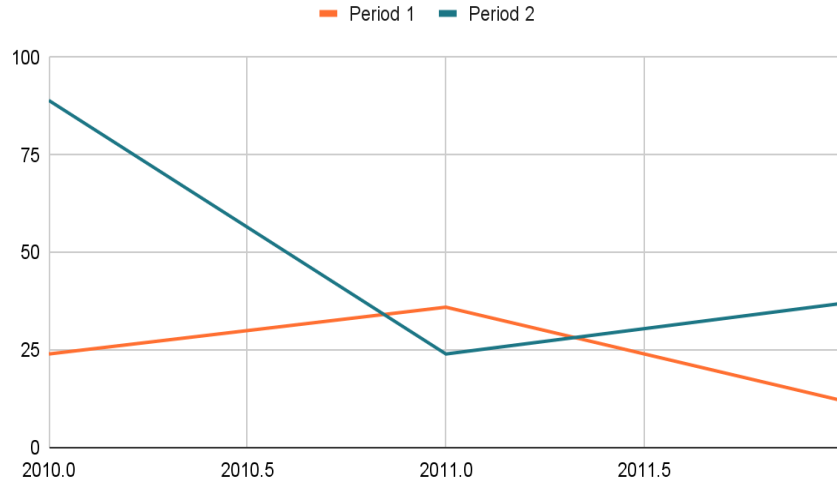


- Teaching others reveals what they don't understand.
- I could review information by teaching.
- I learned how to think from their explanations.

Other research data



The score of The National Center Test for University Admissions



Effectiveness of High School World History Classes

More students are learning not only by listening to the teacher, but also by actively thinking.



③ How to Spread Mutual Teaching



**Make mutual
teaching guideline**

To suggest



School-related educational institutions

Realization of proactive teaching

source

文部科学省（平成29・30・31年改訂学習指導要領の趣旨・内容を分かりやすく紹介）

https://www.mext.go.jp/a_menu/shotou/new-cs/1383986.htm

アクティブラーニング型高校世界史授業の効果と受験対応に関する一考察

https://ir.lib.shimane-u.ac.jp/files/public/4/45553/20190405111514908260/%E5%AD%A6%E6%A0%A1%E6%95%99%E8%82%B2%E5%AE%9F%E8%B7%B5%E7%A0%94%E7%A9%B6_2_41_59.pdf

対応のないt検定とは (human-relation.net)

<https://human-relation.net/psychology/independent-t-test/#>

統計の中でも最重要分野のひとつ、t検定について徹底... | Udemy メディア (benesse.co.jp)

https://udemy.benesse.co.jp/data-science/data-analysis/t-test_statistics.html

Thank you for listening