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The Education University
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Department of
PSYCHOLOGY
心理學系



Department of
Curriculum and Instruction
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Department of
Early Childhood Education
幼兒教育學系

TEACHING DEVELOPMENT PROJECT: ENHANCING STUDENTS' LEARNING THROUGH TEAM-BASED LEARNING (TBL)

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OUTLINE

- TBL as an innovative pedagogy
- Findings of the TDG project
- Application of TBL in General Education Breadth Course
- Application of TBL in Psychology course
- Application of TBL in Teacher Education course

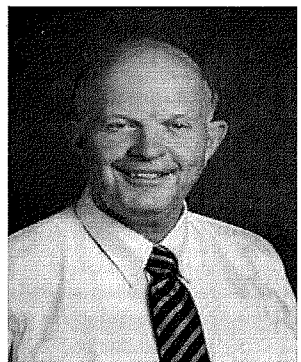


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WHAT IS TEAM-BASED LEARNING?

- Team-based learning (TBL) was developed in the 1970's by Prof. Larry K. Michaelsen, a Professor of Management at the University of Oklahoma
- His goal: to change the passive learning in his lectures into *active learning* by testing and assigning students to teams.



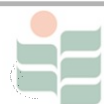
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PEDAGOGICAL MERITS OF TBL AS SUGGESTED BY EMPIRICAL LITERATURE

To date, the empirical findings about TBL effectiveness can be summarized as:

- lower failure rate (Anwar et al, 2012)
- enhanced emotional intelligence (Borges et al, 2012)
- interactive behaviors in teamwork (Chung et al, 2009)
- increased engagement (Drummond, 2012).



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IBI INSTRUCTIONAL ACTIVITY SEQUENCE

Phase 1:
Preparation
(pre-class)

Individual study:

- Textbook
- Journal articles
- PPT
- Video clips

Phase 2:
Readiness Assurance Process
(in-class)

Individual
Test
(iRAT)

Team
Test
(tRAT)

Appeal

Mini-
lecture

Phase 3:
Application of Course Content

4-S

- Same problem
- Significant problem
- Specific choice
- Simultaneous reporting



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TBL

Gain basic facts and concepts

Reading and readiness
Assessment

Apply concepts

Application activities

Traditional classroom

Gain basic facts and concepts

Lectures

Apply concepts

Application exercise /assessment



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FORMING GROUPS

TBL practitioners can refer to the following four principles to strategically form groups (Michaelsen, 2002).

- Transparent
- Heterogeneous
- Even
- Permanent



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PHASE 1 – PREPARATION (PRE-CLASS)

- Assigned pre-class reading
- Matched with learning objectives
- Supported by a study guide (one-page)



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PHASE 2 – READINESS ASSURANCE PROCESS (RAP)

- At the beginning of each instructional unit, students first take a short test in multiple-choice format (around 10 questions) on their understanding of pre-readings.
- Focus on fundamental key knowledge/concepts
- 65-80% questions correct on average (Sweet & Michaelsen, 2012)
- Closed-book exercise

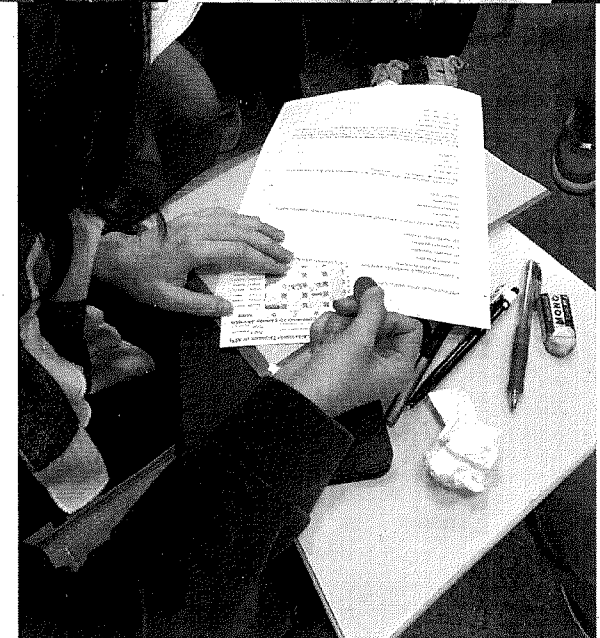
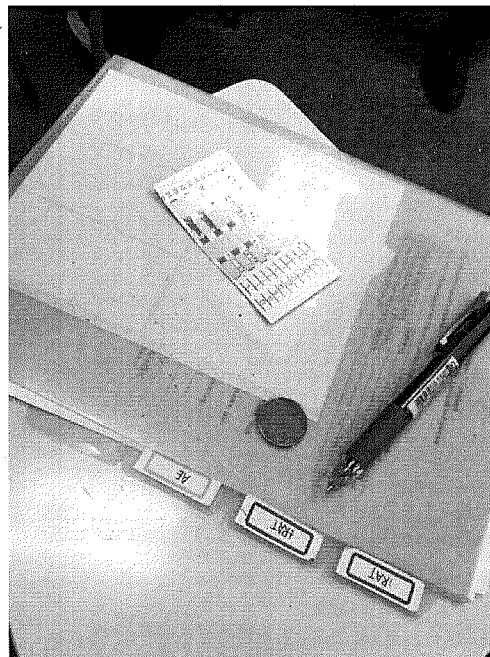


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PHASE 2 – READINESS ASSURANCE PROCESS: tRAT

- Right after iRAT, students retake the exact identical test as a team, which is entitled as team readiness assurance test (tRAT).



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MORE ABOUT tRAT

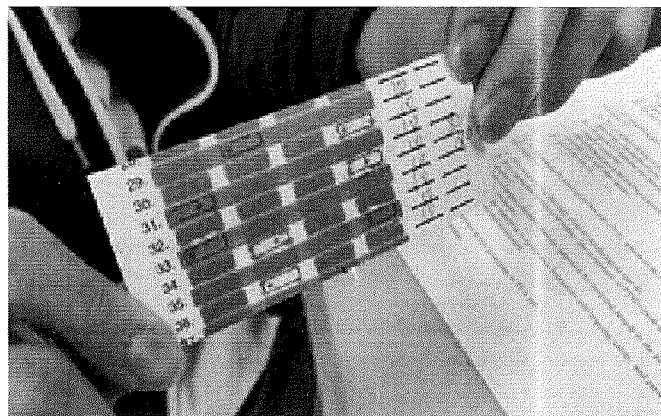
- tRAT scores are immediately open so that students can monitor their group performance.
- Partial credit is given for each attempt.
- Use of IF-AT

First attempt: 10 points;

Second attempt: 5 points;

Third attempt: 2.5 points;

Fourth attempt: 0 point.



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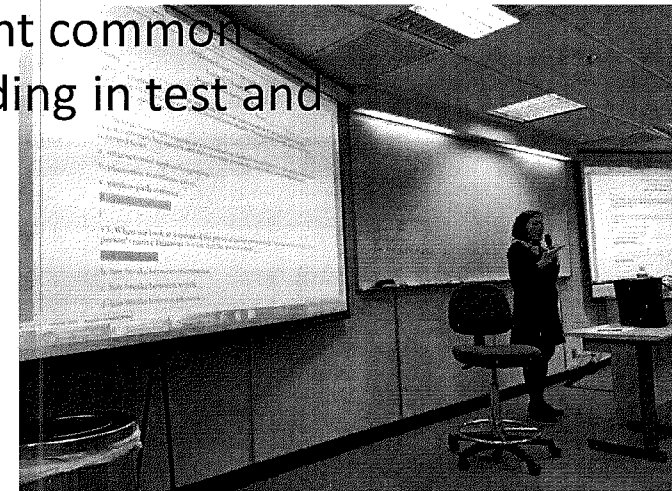
APPEAL AND MINI LECTURE

APPEAL

- If students find that they disagree with teacher's selection of best answer, or pose challenge to the validity of question, they can make a case for their argument supported by relevant evidence. This is an open book process, which asks for another round of review of pre-readings.

MINI-LECTURE

- Following RAT, the instructor is expected to give a highly-targeted corrective lecture to address student common misunderstanding in test and pre-readings.



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PHASE 3

APPLICATION OF COURSE CONTENT

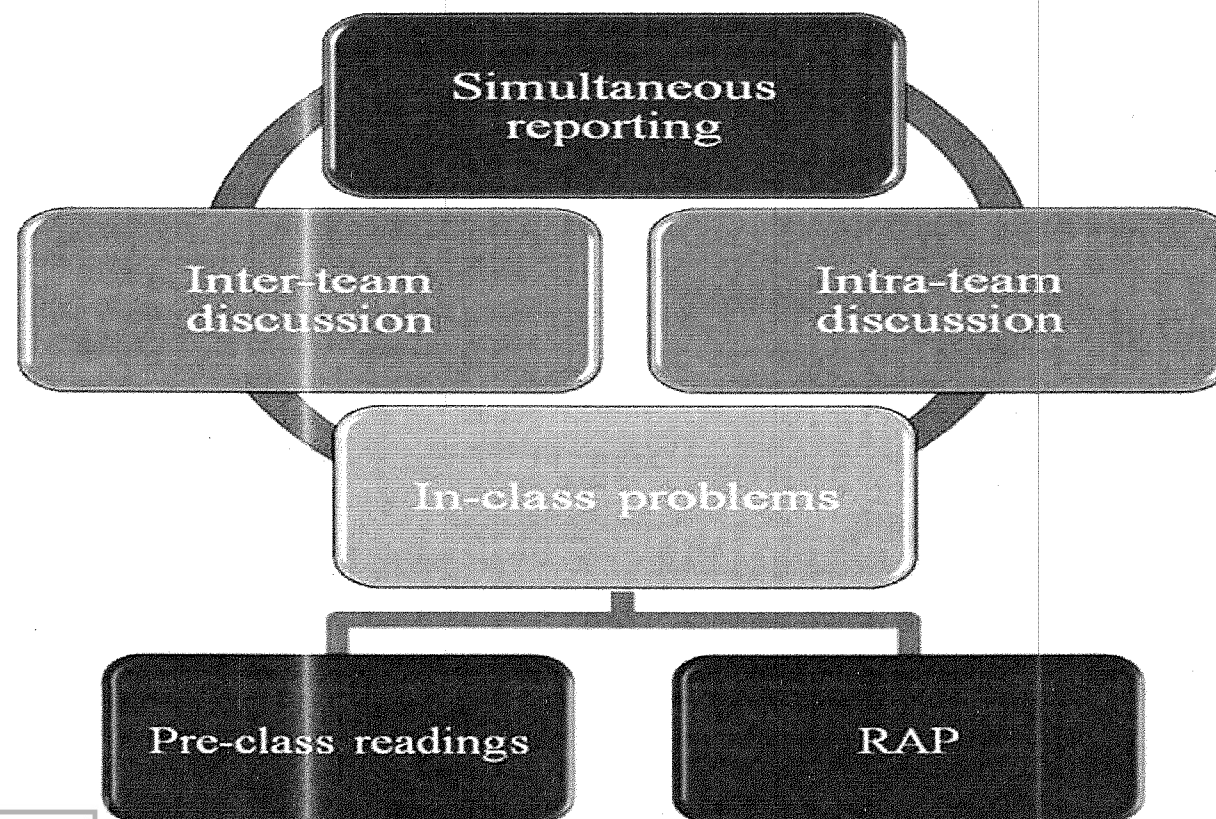
- Application exercise (AE) is the cornerstone to the success of Team-Based Learning (TBL). Its design must build upon core concepts that students have grasped during pre-class preparations and Readiness Assurance Process (RAP; Sibley, 2012).



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APPLICATION EXERCISE

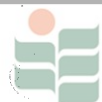
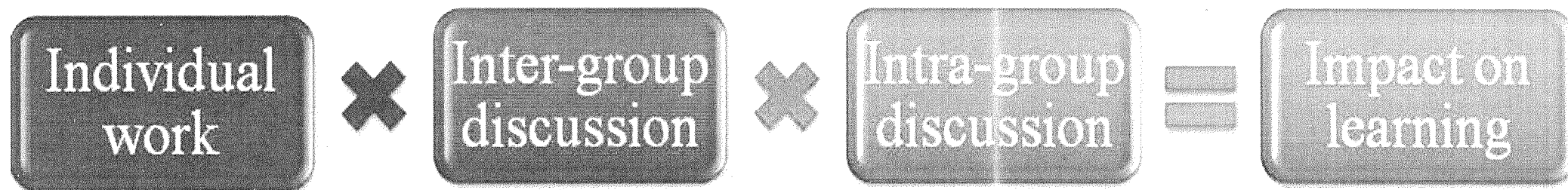


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FOUR CHARACTERISTICS OF GOOD AE

- 1. Significant problem
- 2. Same question
- 3. Specific choice
- 4. Simultaneous response



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BEST PRACTICES IN AE

- Teachers' scaffolding is crucial
- Well-defined AE asks for intensive collaboration and content-based discussion
- Presentation or producing a lengthy writing work may lead to division of labor.
- Time management. AE can be time consuming.



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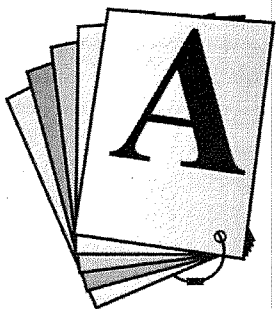
SIMULTANEOUS REPORTING

- To explore in-depth the differences of opinions among teams: how team decisions are different and why they came to different standpoints.
- When comparing inter-team answers, TBL practitioners should ‘focus classroom conversation through thoughtful questions, help students appropriately summarise their key points, support critical reflection, and provide positive feedback for participation.’ (Whitley et al, 2015, p.7).



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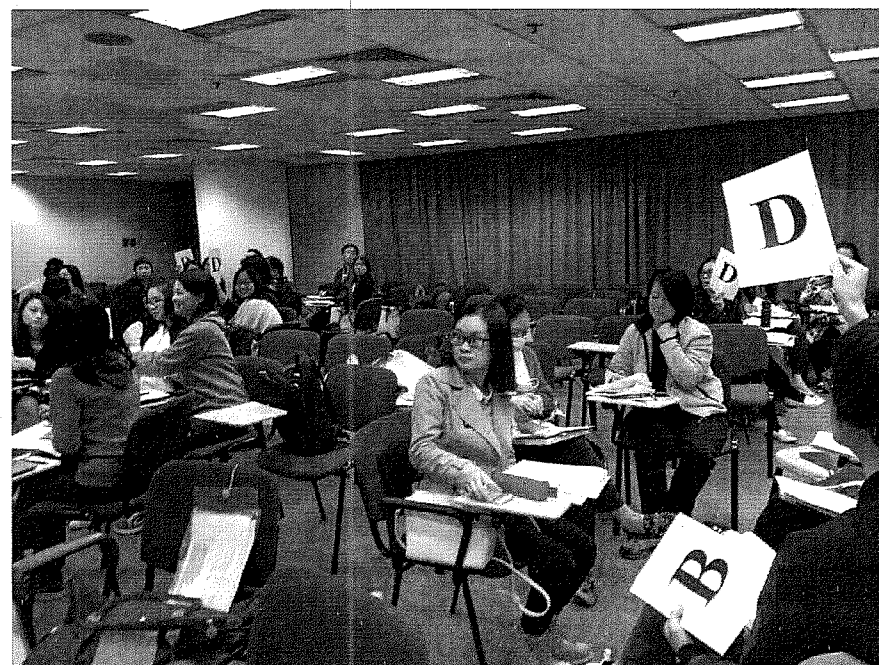
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SIMULTANEOUS REPORTING



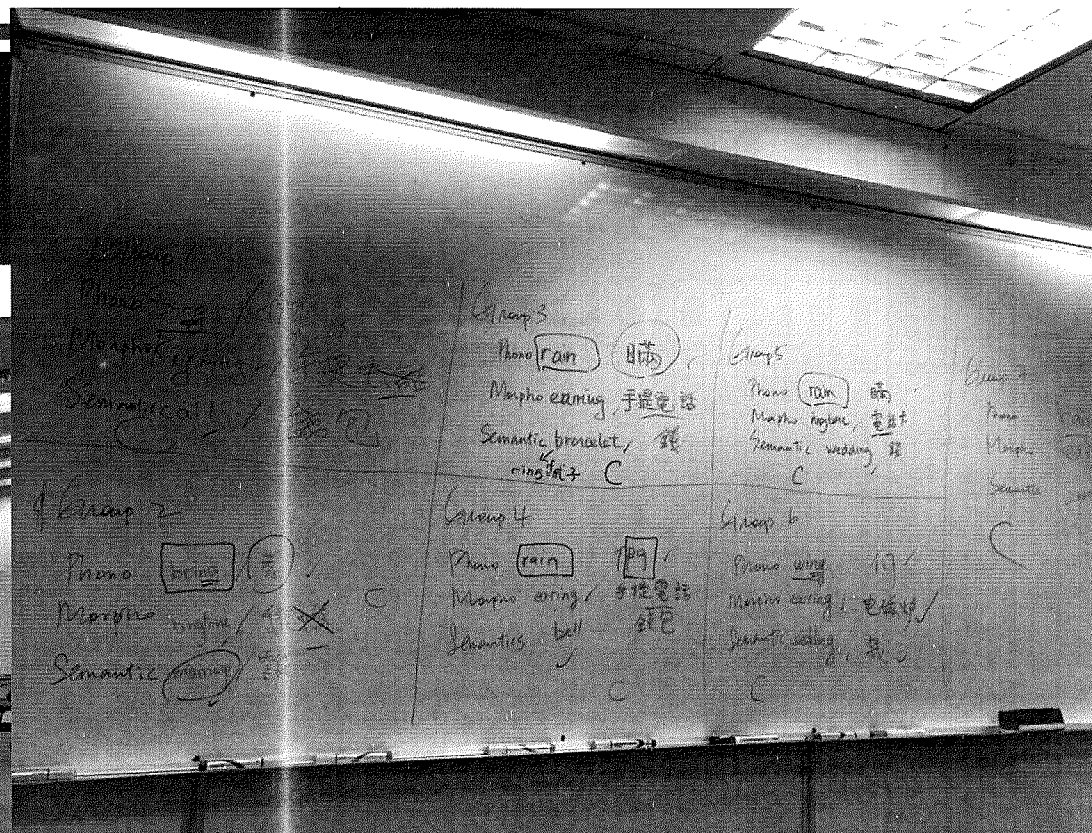
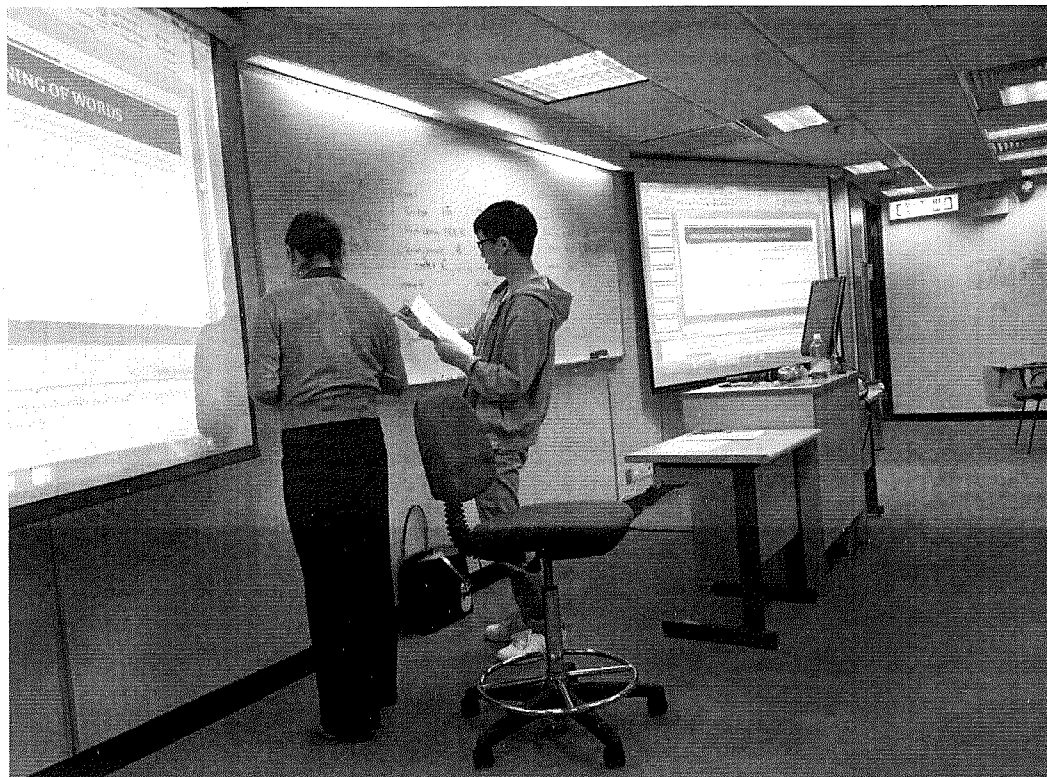
ABCD card



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SIMULTANEOUS REPORTING



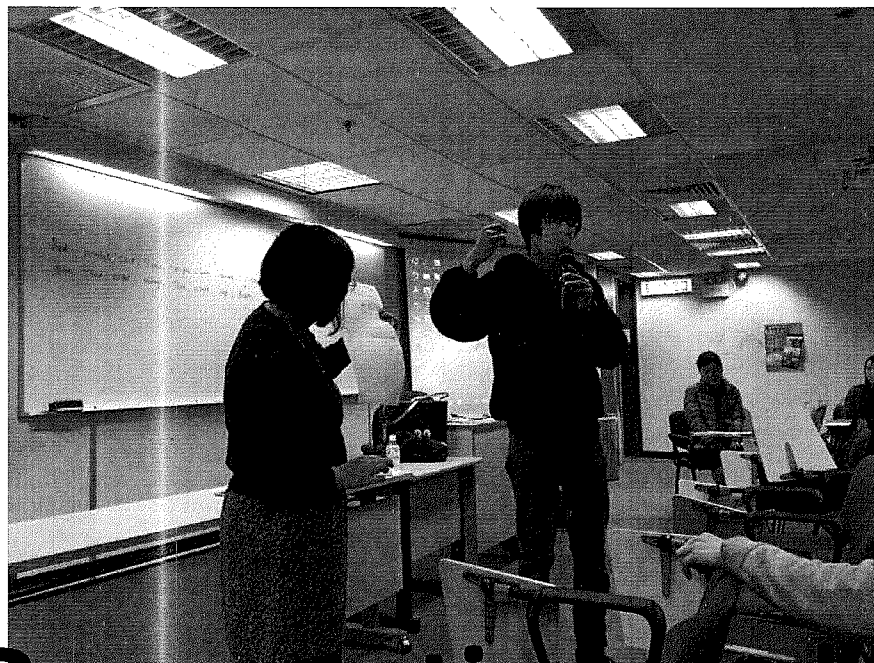
Whiteboard



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SIMULTANEOUS REPORTING



Verbal Presentation and A3 Paper



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PEER EVALUATION

1. Contribute a lot in discussion.
2. Willing to listen to disagreements
3. Prepare pretty well
4. She is so clever and can put forward some easy-to-understand examples in the discussions.
5. His answer is always right.
6. I think you help me a lot. You are always cheerful.
7. Brainstorm, ask questions and facilitate discussion.

1. Talk more, please
2. Go too fast. Please wait other groupmates.
3. Please try to be more confident.

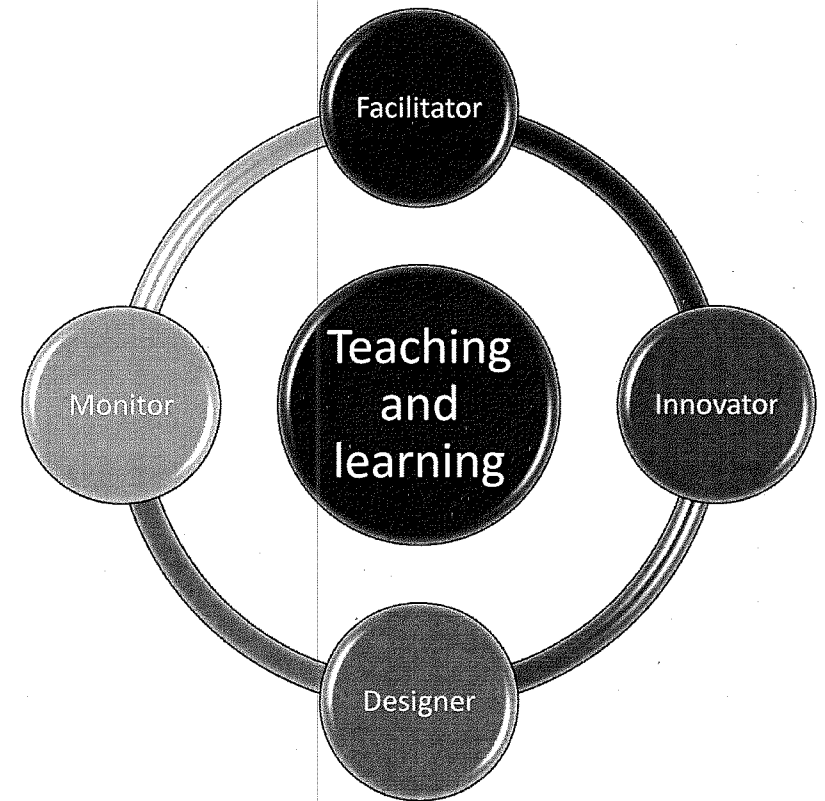


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TBL AS A MEANS TO TRANSFORM YOUR CLASSROOM

- A change in the role of educators: From 'the sage on the stage' to 'guide on the side'; from source of information to relying on students to agent of learning'.
- TBL practitioners should not focus on what and how to teach; instead, they should focus on how to facilitate student self-regulated learning, inspire their higher-order thinking, monitor their performance, provide highly-targeted scaffolding, encourage team discussion, give immediate and constant feedback and create a learning climate.



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EVALUATION OF TBL

Objective

To evaluate the effects of TBL as innovative pedagogy on students' learning among EdUHK students using both quantitative and qualitative methods.



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PARTICIPANTS

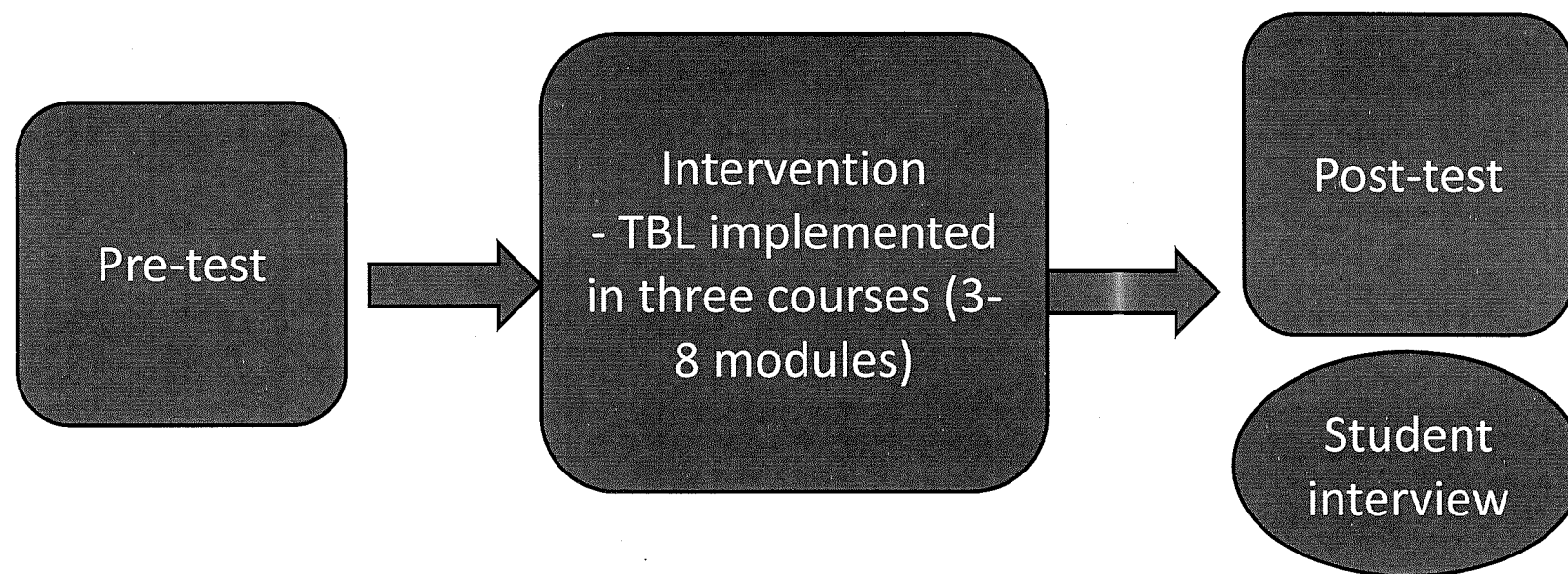
- TBL was implemented in three courses under different programs, namely Psychology- related, GE Breadth and Early Childhood Education course for one semester (2016/2017).
- Experimental group:
130 students in three courses implemented TBL
- Control group:
Students who enrolled in the same course but in different section/class/semester (n = 135)



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RESEARCH DESIGN



Pre-test & post-test:

Self-reported measures (47 items): Achievement emotions, peer feedback, school engagement and team experience.



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QUANTITATIVE EVALUATION

- Quasi-experimental design
- Two classes taught by the same teacher were randomly assigned to either experimental group or control group.



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RESULTS EVALUATION

- At pretest: no significant differences were found on the outcome measures.
- Intervention effects: to examine TBL effects, ANCOVAs were conducted to examine the differences in posttest scores between two groups with pretest scored statistically controlled.

Outcomes	Definition
Team Experience (TEQ; Curry et al., 2015)	Satisfaction with team learning; team impact on learning; satisfaction with peer evaluation; team impact on critical thinking and teamwork
School Engagement (Fredrick et al., 2005)	Cognitive and behavior school engagement
Learning related achievement emotion – positive (Yang & Sin, 2013)	Positive emotions that directly tied to achievement activities – enjoyment and hope
Learning related achievement emotion - negative (Yang & Sin, 2013)	Negative emotions that directly tied to achievement activities – boredom and anxiety
Perceived Usefulness of Peer Feedback(Gan, 2011)	The perception of peer feedback in learning



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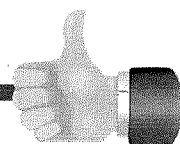
TBL IN THE THREE COURSES

Courses	Level	Number of TBL cycles	Comparison Class
PSY 6008: Cognitive Psychology	Postgraduate (Master)	8	Cognitive Psychology in BSocSci (Mass lecture and tutorial)
GEH 1021: Natural Hazards and Post-Disaster Recovery	Undergraduate	4	Same course in Sem 1 2016/17
ECE0189: Developing a Play-based Curriculum	Higher Diploma	3 (in 5 lessons)	Same course in Sem 2 2016/17



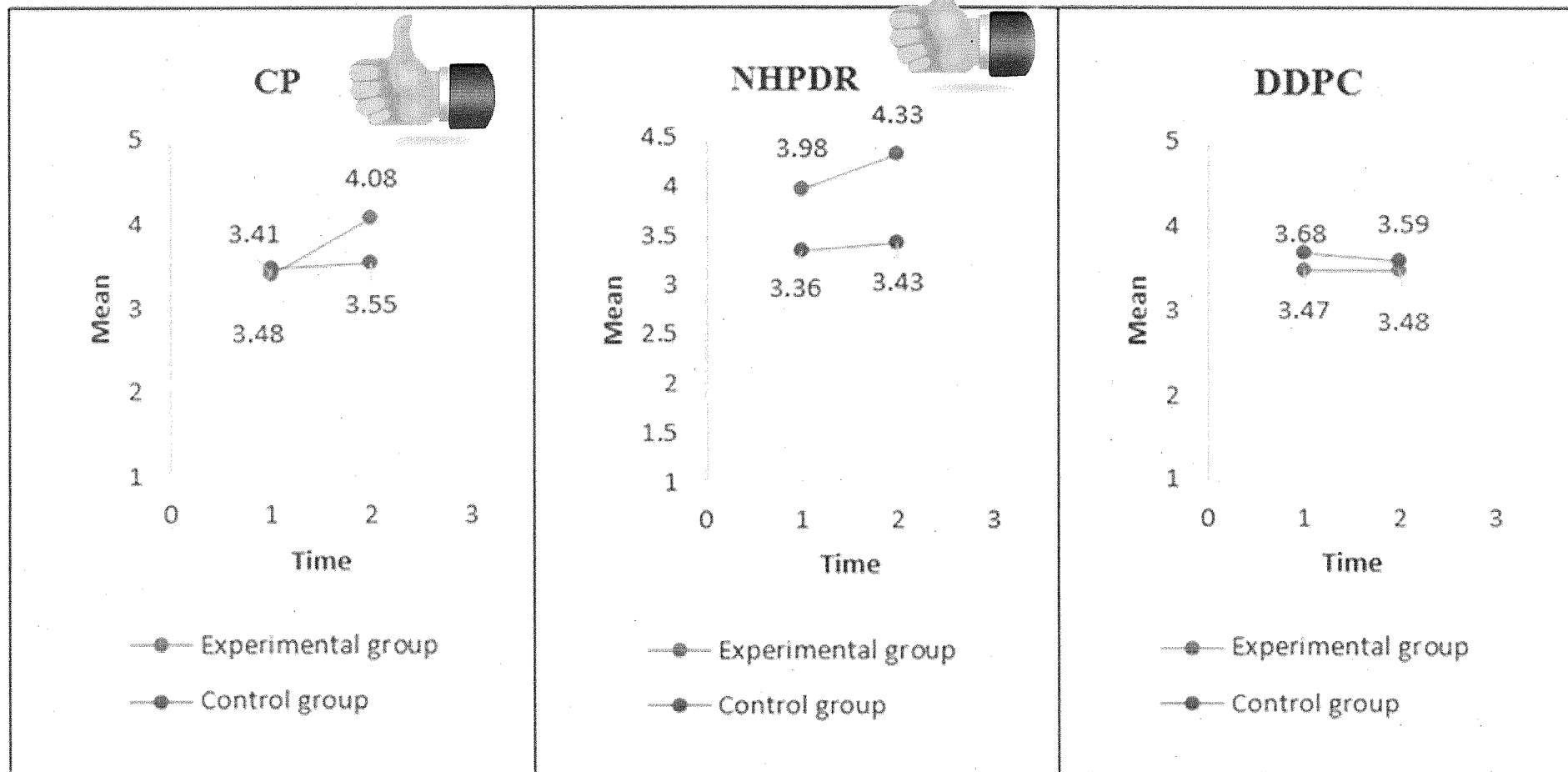
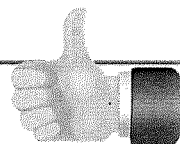
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significant
difference

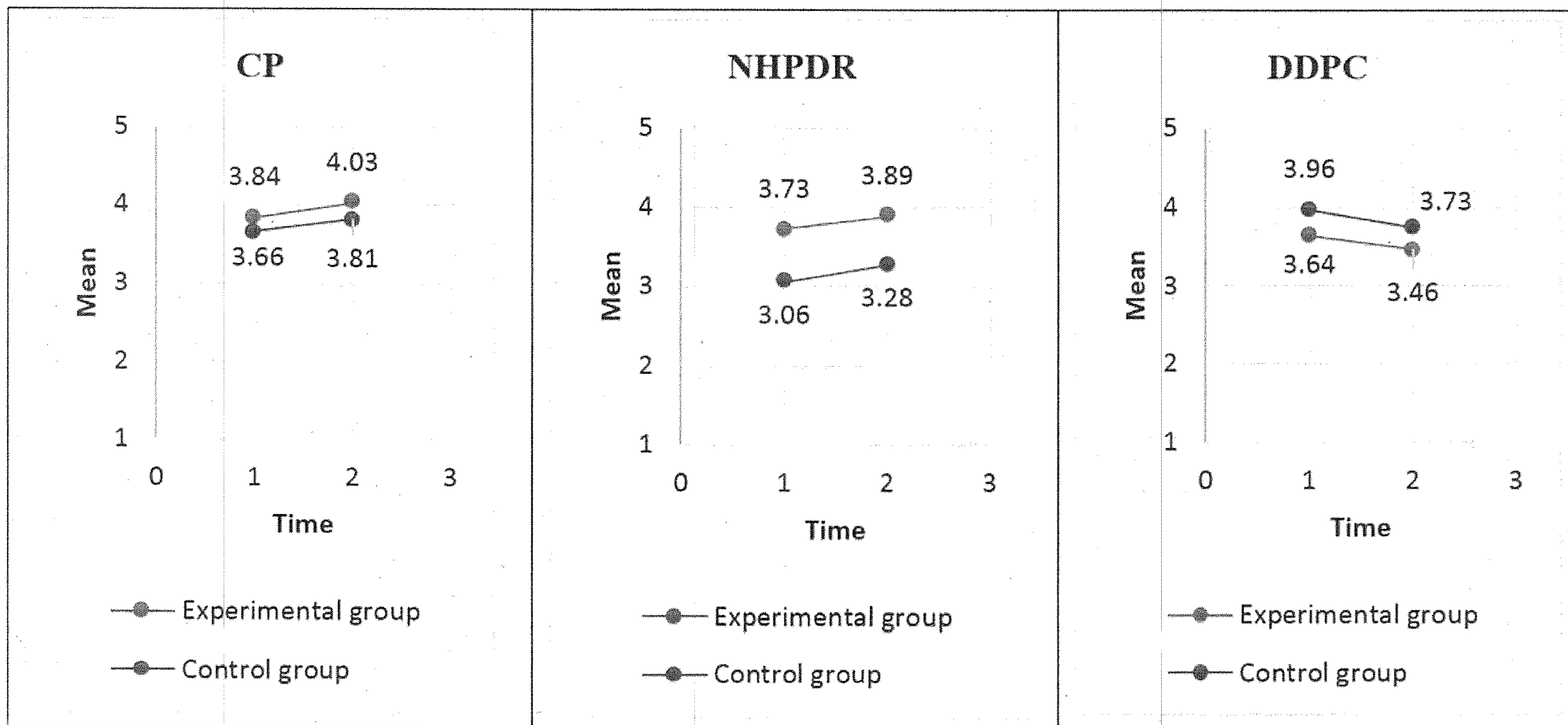
RESULTS – TEAM EXPERIENCE



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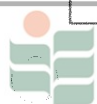
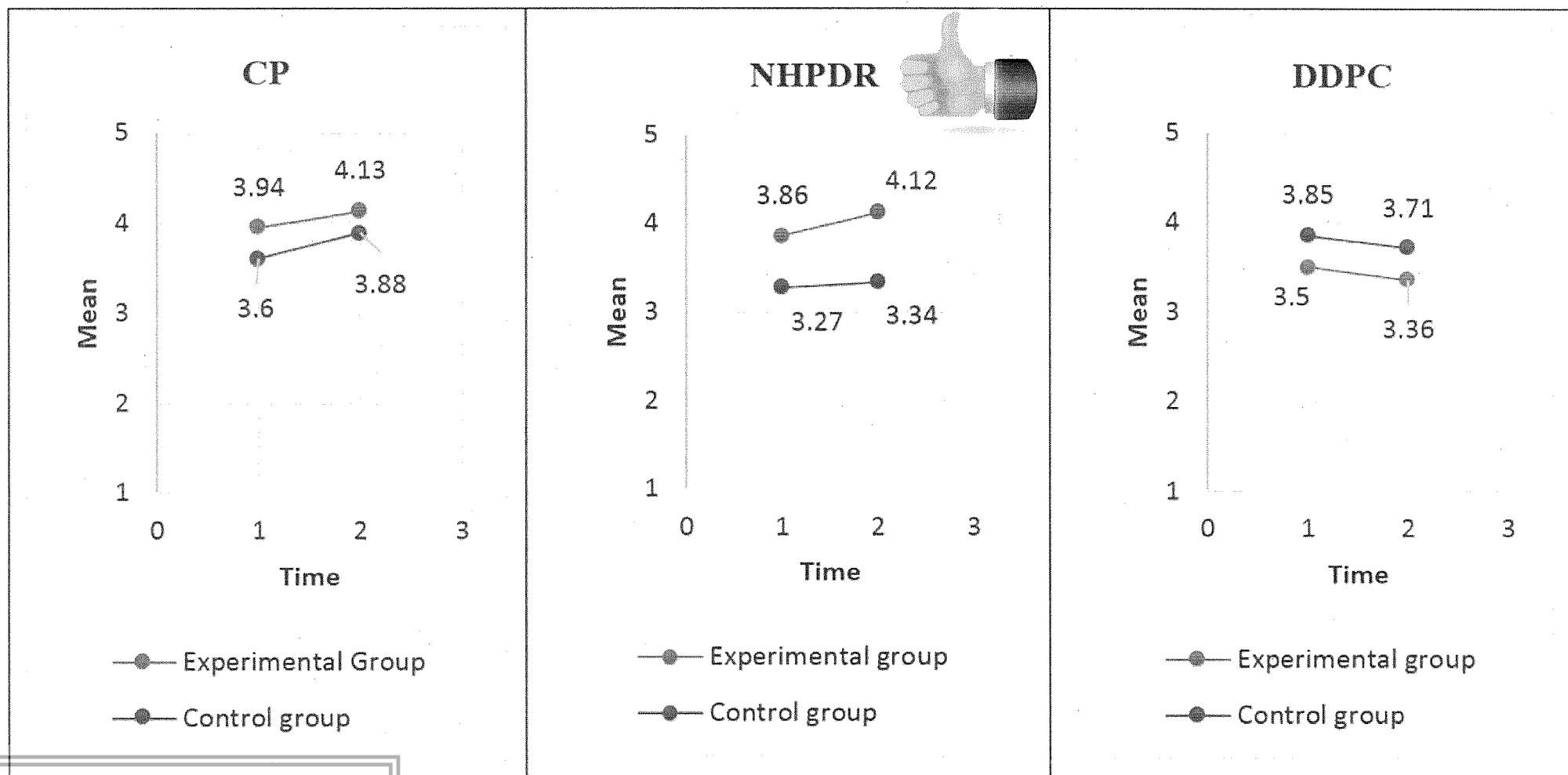
RESULTS – SCHOOL ENGAGEMENT



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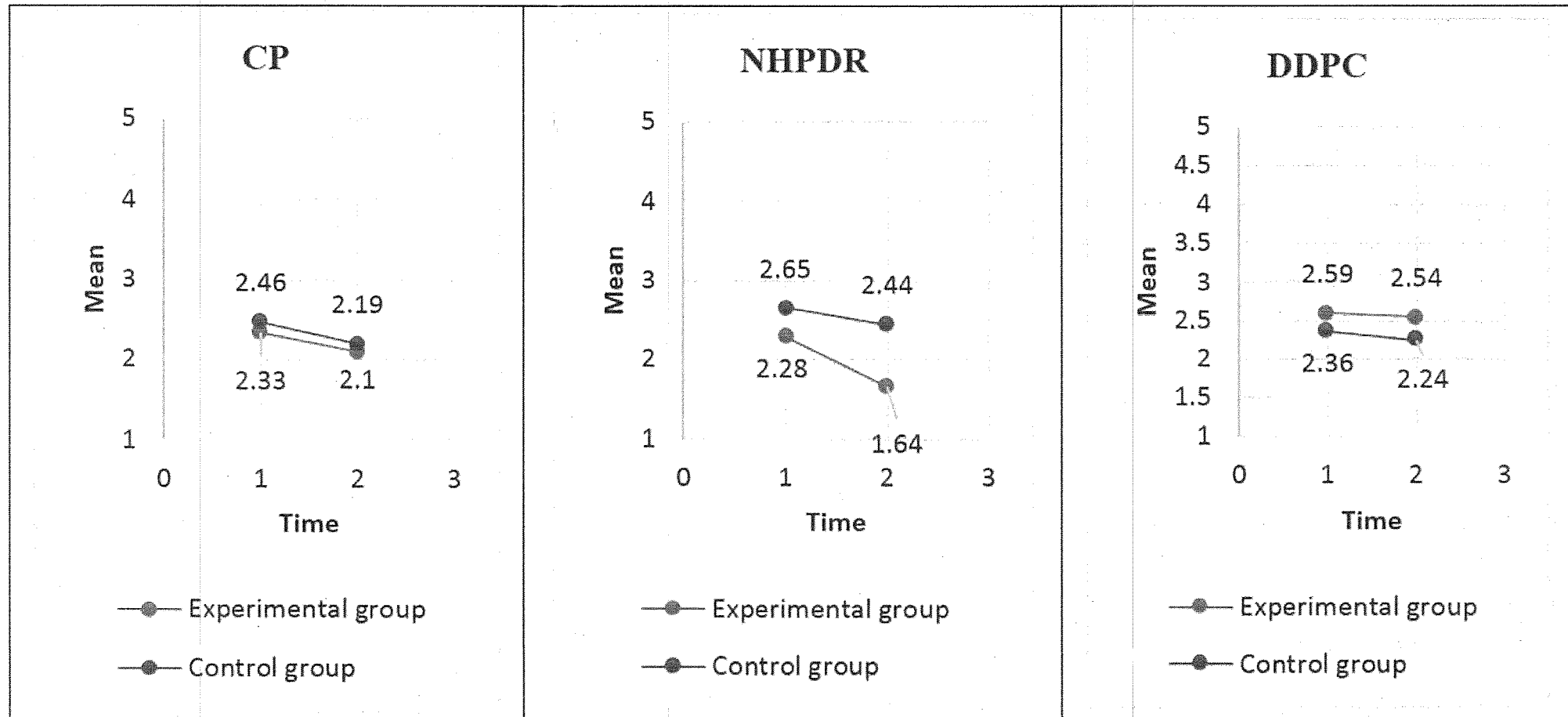
RESULTS – POSITIVE EMOTION



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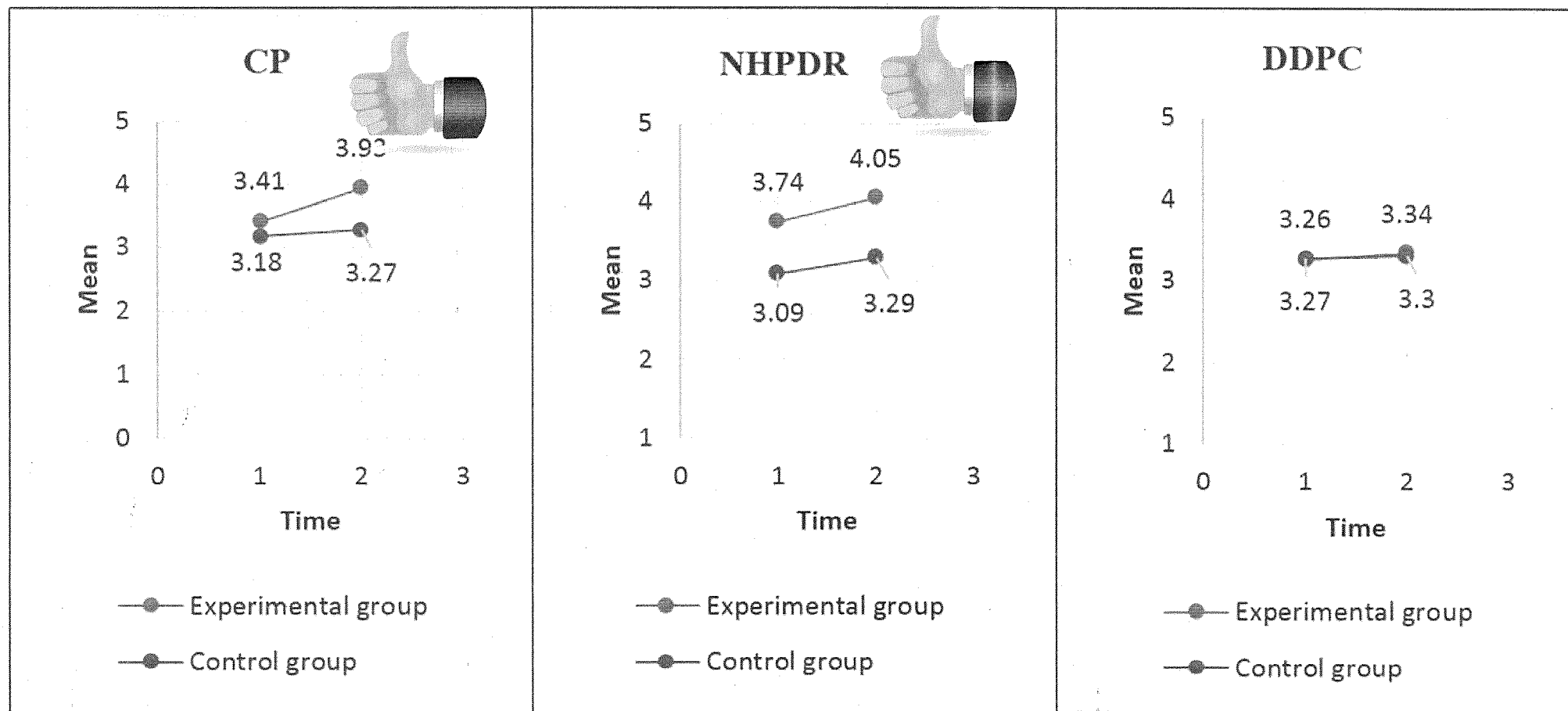
RESULTS – NEGATIVE EMOTION



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RESULTS – PERCEIVED USEFULNESS OF PEER FEEDBACK IN LEARNING



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INTERPRETATION

- TBL has significant positive effects on team experience and perceived usefulness of peer feedback in undergraduate and postgraduate courses but no significant effect on school engagement and negative emotion.
- TBL has a positive effect on positive emotion in GE Breadth course.
- TBL has no effect on sub-degree classes – maybe due to small number of TBL cycles and students' characteristics.



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QUALITATIVE EVALUATION

- TBL我是欣賞的，因為小組討論有多角度，自己一個人只有一個角度，透過討論對理論，看法，實驗有更多的理解。
- 我們的小組合作很順利，很開心，因為我們的背景不同，有full time 有part time，我們讀書背境不一樣，正因如此，我們有多角度思考，所以在過程中多元化學習，我們很樂意思考分享。
- 因為我們讀好concept的東西，有這些exercise會比較容易visualise和apply到我們真實的環境，如果不是这样，只是普通的學和上lecture不會太了解到的，特別是那些人生經歷少的同學。
- TBL不同的地方在上課之前會逼你做預習先，这和傳統老師講完之後你再做discussion是不同的，因為你上課前已經開始記得很多理論。這樣老師講完對理論有更深入的了解。



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