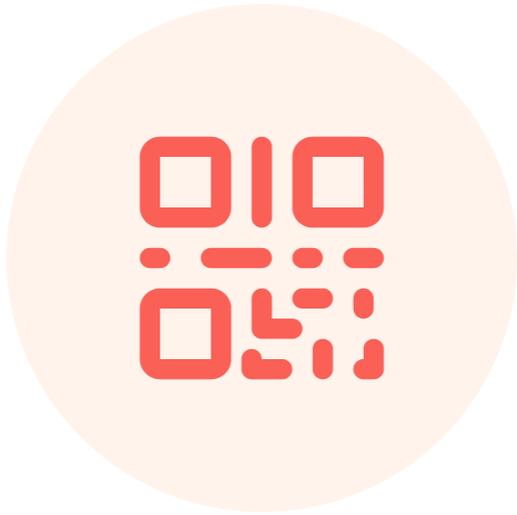


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Flipping the EMI Classroom (with Videos and Classroom Experiments)

(用影片與課堂實驗)來顛覆全英教室

Joseph Tao-yi Wang (王道一)

1/27/2022

How I Started Flipping at NTU? (前言：我如何開始的?)

- ▶ 2007: Teach **Principles of Microeconomics** at NTU
 - ▶ Design one corresponding classroom experiment per week
 - ▶ (2007年回台大教書，配合大一「經濟學一/經濟學原理與實習上」每週進度設計課堂實驗)
- ▶ 2008: Teach **graduate Microeconomic Theory in English**
 - ▶ "I commit not to understand Chinese both in class and when **grading**" (2008年研一「個體經濟理論一」用英語授課，當作自己「不懂中文」)
- ▶ 2009: Teach **Principles of Microeconomics in English**
 - ▶ Large Class: 169 (Fall 2013); NTU OCW (2021 in English)
 - ▶ (2009年系上請我「經濟學原理與實習上」也用英語授課，2013年選課人數169人；2021年為台大開放式課程錄製英語授課的「個體經濟學原理與實習」)

How I Started Flipping at NTU? (前言：我如何開始的?)

- ▶ 2013: Flip **graduate Microeconomic Theory** with videos
 - ▶ (2013年用事前錄影來顛覆英語授課的研一必修「個體經濟理論一」)
- ▶ 2014: Turn **Experimental Economics** into MOOCs
 - ▶ **Coursera (2014); NTU OCW (2015 in English)** (2014年為台大 Coursera錄製線上「實驗經濟學I: 行為賽局論」；2015年為台大開放式課程錄製英語授課的版本)
- ▶ 2020: iPad Screen Record **Principles of Microeconomics**
 - ▶ (2020年在英語授課的「個體經濟學原理與實習」因應疫情使用iPad螢幕錄影記錄課程)
- ▶ 2021: Hybrid **Principles of Microeconomics in English**
 - ▶ **Online and In-person interaction with Sli.do and MobLab**
 - ▶ (2021年「個體經濟學原理與實習」用Sli.do和MobLab進行實體與線上混合英語授課因應疫情起伏)

Wait a Minute... (等一下...)

Why Teach in English?

(為什麼要英語授課?)

-EMI Experience at NTU

(呆呆英語授課經驗)

(英語授課本來應該是要用來裝備學生出國留學/工作)

EMI Helps Prepare Students to Study/Work Abroad

▶ Study/Work Abroad After Using English in Class

▶ 學生上課用英語，無縫接軌出國留學工作

▶ Universities Provide EMI to Attract Better Students

▶ 大學提供英語學程，吸引更多好學生

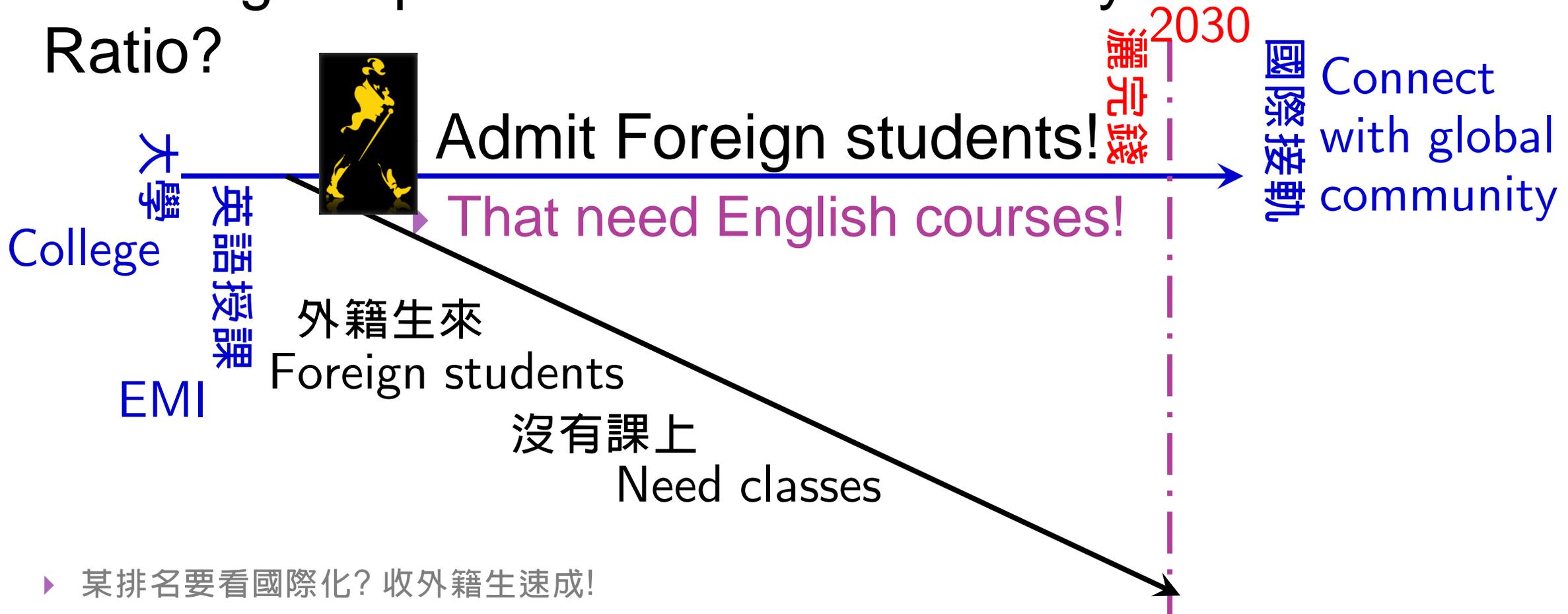
大學
College
EMI
英語授課



國際接軌
Connect with global community

A Detour... (岔出去...)

- ▶ Ranking Requires International Faculty/Student Ratio?



- ▶ 某排名要看國際化? 收外籍生速成!

Results of This Detour... (岔出去的結果...)

▶ Encourage (~~Force?!)~~ Faculty to teach in English

▶ 只好鼓勵(誤)強制(正)老師英語授課

▶ But People Respond to Incentives, So

▶ 上有政策，下有對策的結果是...



Turning Back... (岔回來...)

▶ Could Hire Foreign Faculty (Who Don't Speak Chinese)

▶ 其實可以聘不懂中文的外籍教師

▶ EMI for Real... (要玩就真的...)

College

EMI

大學
英語授課

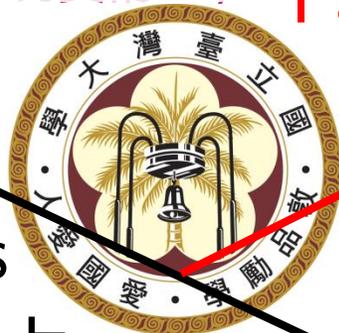
外籍生來
Foreign students

沒有課上

Need classes

欺負新兵

Exploit Newbies



Foreign Faculty

聘真正的外師

來玩真的!!
For real!!

灑完錢

2030

國際接軌

Connect with global community

應付了事

Lip Service

Joseph Tao-yi Wang

(投資學生=投資未來...)

Investing in the Students = Invest in the Future!

▶ Alumni Reciprocate!

▶ 校友要有感才會回饋/投資自己

▶ Invest in Yourselves!

Equip the Students

裝備學生

2030

國際接軌

Connect with global community

大學
College
EMI
英語授課

聘真正

外籍生來
Foreign students

沒有課上

Need classes

欺負新兵

Exploit Newbies

來玩真的!!
For real!!

灑完錢

應付了事

Lip Service



(其實不必等到外師到任，你現在就可以自己「玩真的」!)

You Can Start Even Without Foreign Faculty Here...

But Face Challenges:

- ▶ 但你即將面對挑戰：
- ▶ Go Against the Crowd
 - ▶ 隨波逐流(別人都這樣...)
- ▶ Need Clear Goals
 - ▶ 沒有目標(不知為何而戰...)
- ▶ Need Discipline
 - ▶ 缺乏紀律(我就是做不到!)



Teaching in English @ NTU: Pros & Challenges

- ▶ Students **Self-Select** to Your Class (學生自我選擇)
 - ▶ Lazy Taiwanese students won't come (想混的學生不會選全英授課)
 - ▶ Foreign students are forced to come (外籍生會想來選但不一定會留下來)
- ▶ Teaching is **Path Dependent** (英語授課有路徑依賴)
 - ▶ Easier for new faculty or a new course (對新老師或開新課比較容易)
- ▶ **How to Foster Discussion/Interaction?** (但如何鼓勵學生發問/互動?)
 - ▶ Taiwanese students are shy in English (台灣學生不太發言/用英文更不敢)
 - ▶ Rural kids handicapped listening English (鄉下孩子有英聽障礙/上課霧煞煞)

How to Foster Discussion & Interaction?

- ▶ **Ask People to Vote** (請大家投票，然後點選選擇某個選項的同學起來解釋理由)
 - ▶ Then ask people who voted for X to explain why
- ▶ **Which Would You Choose?** (如果只能二選一，你寧願選擇哪一個?)
 1. **Spend 4 Years Studying at the world's best university, but must keep attendance a secret.** (念全世界最好的大學，但是拿不到畢業證書)
 2. **Get an Official Degree from the world's best university, but cannot actually study there.** (拿全世界最好大學的畢業證書，但不能去念)
- ▶ **Clickers are Similar** (用表決器也有類似效果，但用英語思考對台灣學生還是很大的挑

Wisdom of The Past:

(老祖宗的智慧)

Tell me and I'll forget;
show me and I may remember;
involve me and I'll understand.

Chinese Proverb

見之不若
知之，
知之不若
行之，
學至於行之
而止矣。
行之，明也。

(荀子·儒效)

(推動經濟學實驗教學的大哉問：時間哪夠啊?)

Not Enough Time?

- ▶ I get this question every time: (每次介紹經濟學實驗教學一定被問)
- ▶ How could I have time for experiments when I can't even finish my lectures? (講課的時間都不夠了哪有時間做實驗)
- ▶ I used to stress that **Involve me, and I'll understand.**
 - ▶ 荀子說：「行之，明也」 (比老師說破了嘴還要有用)
- ▶ Now You Can **Flip the Classroom with Videos,**
- ▶ So There is No Excuse! (發現可以用錄影顛覆教室之後，就不用怕講不完囉!)
- ▶ And it's even more beneficial if it's in English!
(而且不用怕英文聽力不好，因為可以一聽再聽!)



But... (九把刀: 人生就是有這個But...)

- ▶ Instructors Face Their Own Challenges (每個老師面對的挑戰不同)
- ▶ "You don't know how awful XYU students are." (你不了解X大學生...)



- ▶ "NTU students can do this, but not ours!" (Really?!)
 - ▶ 橘逾淮為枳: 台大學生可以, 不代表我們學生也可以(真的嗎?!)

But... (九把刀: 人生就是有這個But...)

▶ Every Divorce is different, but **Marriage Counseling** is possible since there are: (家家有本難念的經, 為什麼還有人可以幫別人做婚姻協談、諮商輔導? 因為婚姻有:)

1. General Principles (共通原則)

2. Case Studies (可觀摩案例)

3. Inspiration (能觸類旁通)

▶ Can Learn from Analogy

▶ What About **Teaching**?

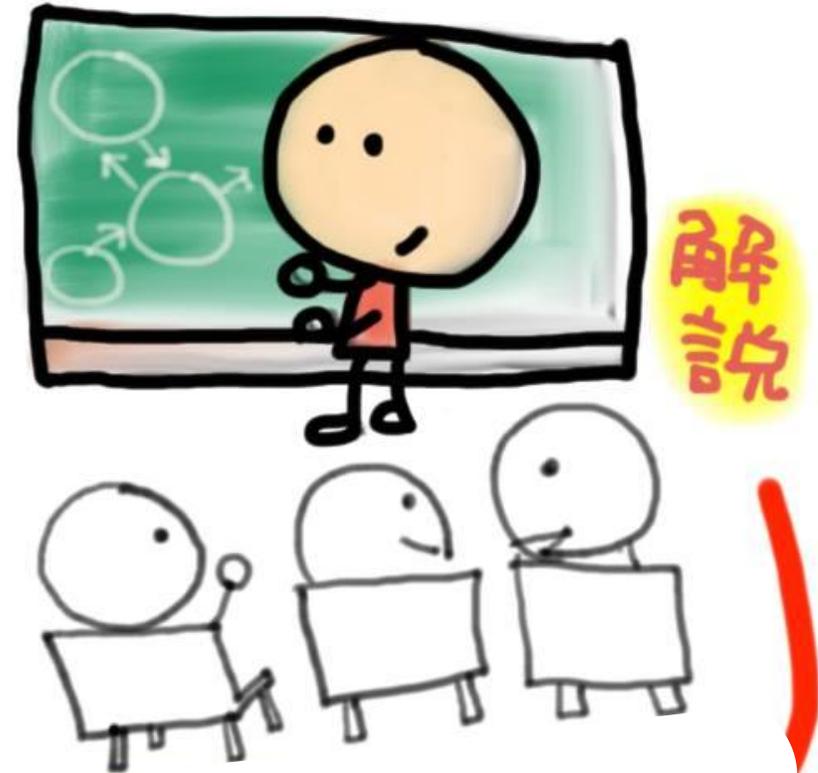
▶ 那教學呢?



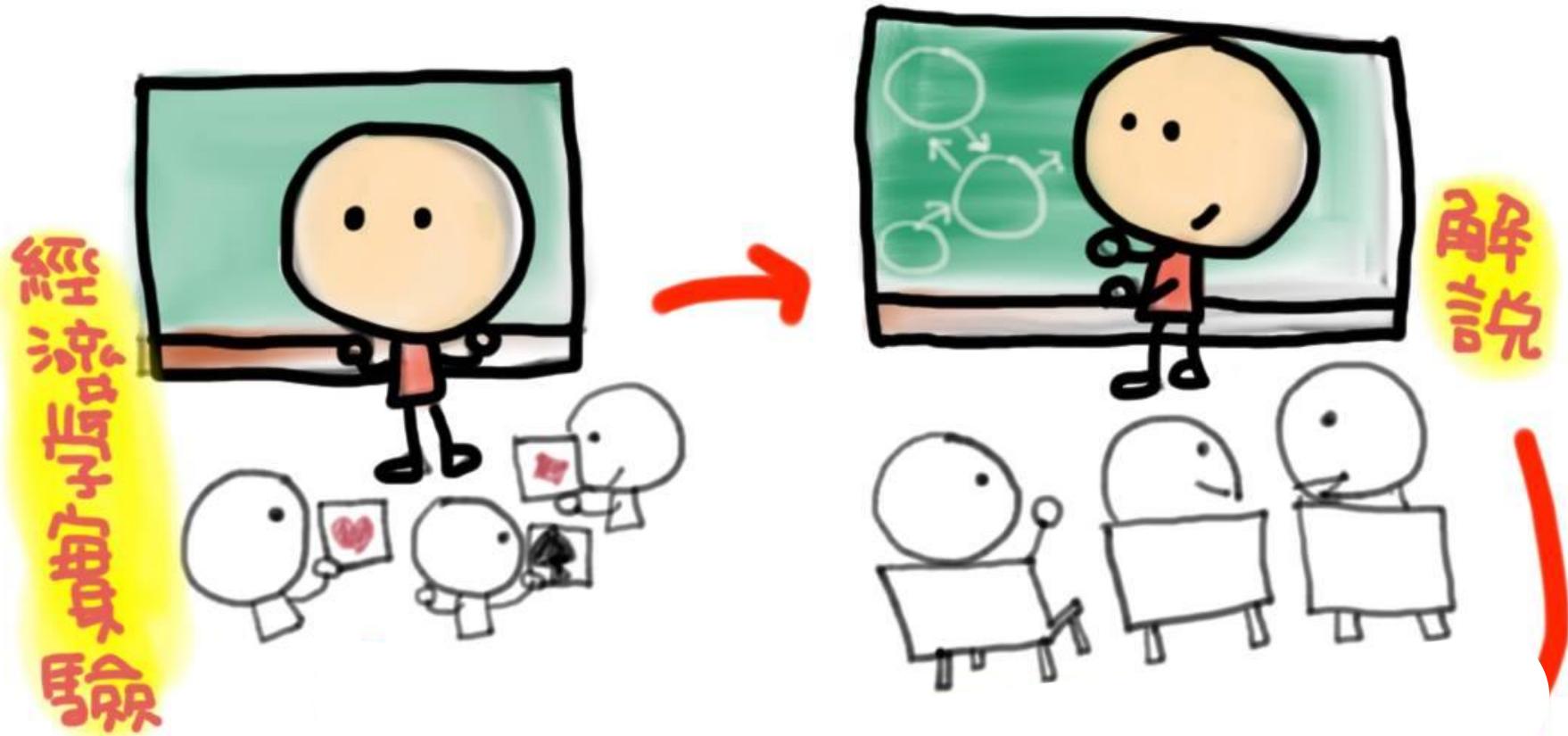
In a Flipped Classroom, You Can... (在顛覆的全英教室裡，你可以...)

1. Force Students to **Preview** with Videos
 - ▶ (利用錄影來逼學生預習和事後複習、克服語言障礙)
2. Encourage **Questions in Class** (鼓勵學生上課問問題 因事前有做功課)
3. Use **Sli.do** to ask questions/see where they get stuck
 - ▶ **Do Homework (=Quiz) in Groups so they teach each other**
 - ▶ 善用科技問問題(如sli.do)實地觀察學生學習瓶頸，甚至分組做習題(其實是隨堂小考，一定要算分!)
4. **Run Experiments** to Foster Discussion (設計課堂實驗來促進課堂討論與互動)
 - ▶ **"Involve Me, and I'll Understand. (行之，明也)"** (荀子儒效)

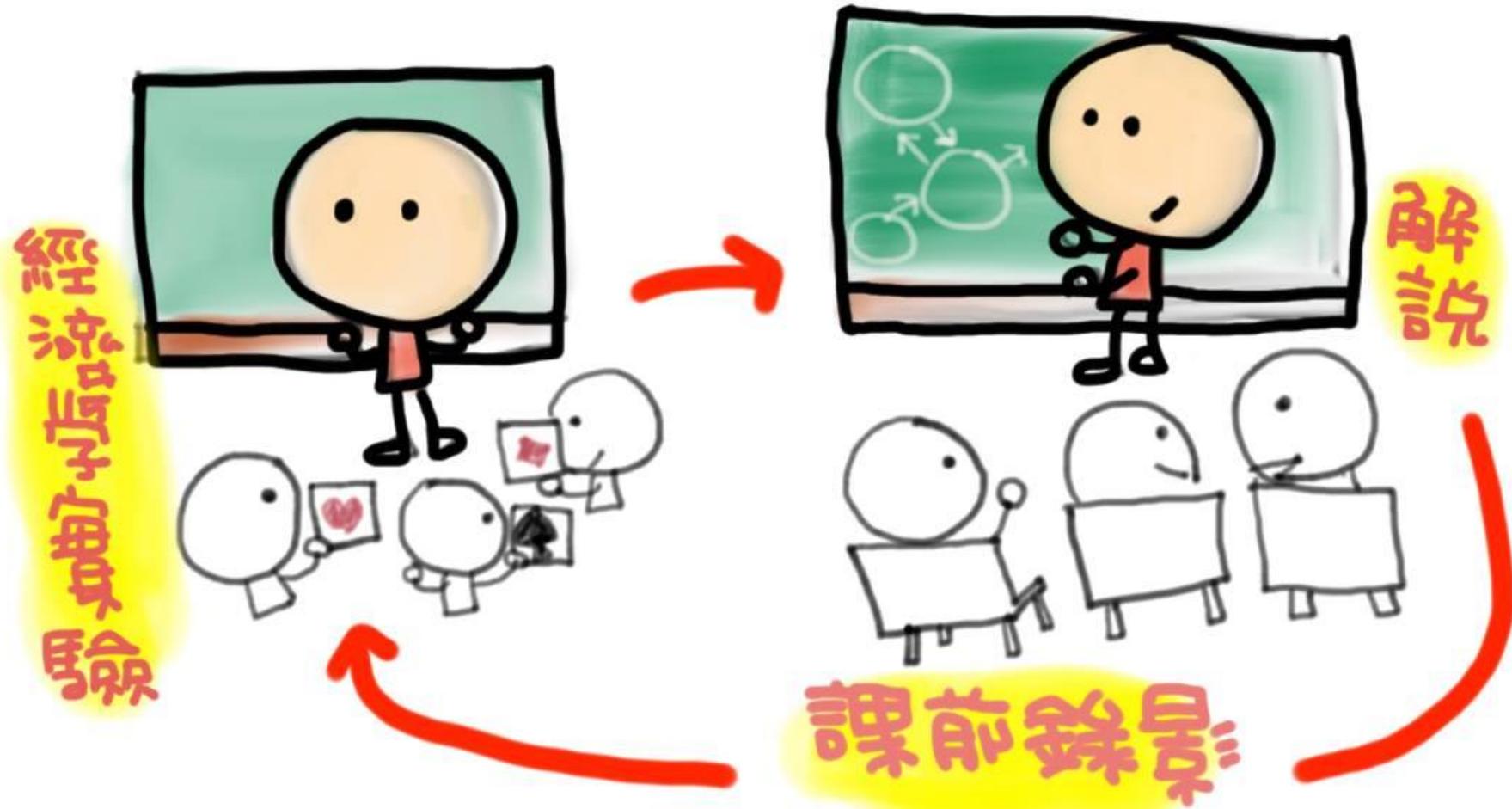
3MT – One Slide Summary



3MT – One Slide Summary



3MT – One Slide Summary



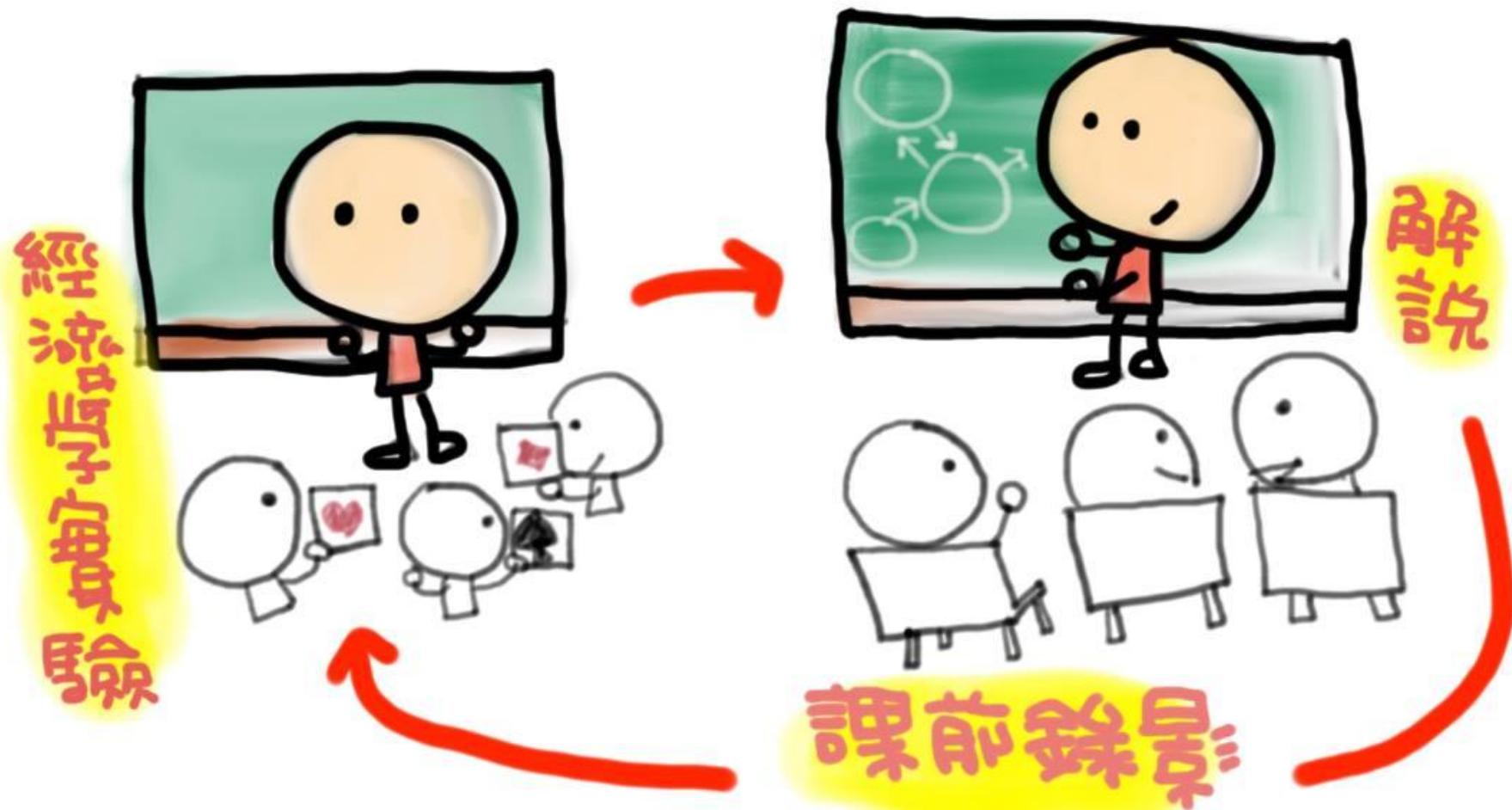
Flipping the EMI Classroom: Screening and Signaling

顛覆全英教室示範：篩選與認證機制

Joseph Tao-yi Wang (王道一)

1/27/2022

Involve Me, and I'll Understand (for 3MT)



Necessary Conditions to Change

- ▶ (「改變」有三個必要條件...)
- ▶ To Push for Reform, You Need:
 - ▶ 要推動改革，你需要：
- 1. Understand the Status Quo (How the System Works)
 - ▶ 瞭解現況的邏輯：知道為甚麼現在是這樣的光景
- 2. Wisdom from God (on How to Fine Tune the System)
 - ▶ 有從上帝而來的智慧：知道如何微調現有制度讓大家更好
- 3. Convince Key Person (to Make the Change)



To Flip the Classroom, You Need: (因此，要顛覆教室，你必須)

1. Understand **Prior Expectations** (瞭解學生對這門課原本的預期)
 - ▶ Understand the Status Quo (瞭解現況的邏輯)
2. **Design Unexpected Classes** (針對此預期設計超乎預期的課堂內容)
 - ▶ Wisdom from God (to Fine Tune) (有從上帝而來的智慧，知道如何微調現況)
3. Flip **3 Classes** as a **Frist Step** (踏出第一步，嘗試顛覆三堂課)
 - ▶ Convince Key Person to Change
 - ▶ (說服有能力改變的人來改變)
 - ▶ Flip Half Semester in 3 years!
 - ▶ (每年顛覆兩三堂，教三年就半學期了!)



(一般學生對大一經濟學的預期是...)

Student Expect Principles of Economics to

- ▶ **Have Big Classes** (大班授課)
- ▶ **Cram/Memorize** (講光抄、背多分)
- ▶ **Unrealistic** (模型假設脫離現實)
 - ▶ **Blackboard Economics?!**
- ▶ **So They Forget:** (黑板經濟學?!)
 - ▶ **Frequently** (經濟：經常忘記)
 - ▶ **Quickly** (會計：快快忘記)
 - ▶ **Completely** (統計：通通忘記)



Classroom Experiment 12:

Screening and Signaling

Classroom Experiment Example: Screening (篩選機制)

- ▶ "稀ㄟ取踢" Inc. Offers 2 Cell Phone Plans:
 - ▶ Plan A: \$1 per minute
 - ▶ Plan B: \$168 monthly for 300min, then \$1.5/min
- ▶ Based on Last digit of student ID# (or card drawn),

you:

- ▶ ♠ 13: Use 0-100min/mo
- ▶ ♥ 24: Use 200-300min/mo
- ▶ ♦ 680: Use 400-500min/mo
- ▶ ♣ 579: Use 600-700min/mo

電信業者	亞太電信	中華電信	台灣之星	LINE MOBILE
方案	168(12.12限定)	469	288	399
月租費	168	469	288	399
上網優惠	21M吃到飽	21M吃到飽	21M吃到飽	21M吃到飽
網內語音	免費	前五分鐘	免費	免費
網外語音	30分鐘	25分鐘	0分鐘	30分鐘
市話		10分鐘		40分鐘
其他優惠	百萬好禮抽獎	無	無	200點+2%
漫遊優惠	無	無	無	指定國家月租抵漫遊
綁約期限	24個月	24個月	12個月	12個月
網內費率	免費	\$3/分鐘	免費	免費
網外費率	\$2/分鐘	\$6/分鐘	\$6/分鐘	\$6.6/分鐘
市話費率	\$2/分鐘	\$6/分鐘	\$6/分鐘	\$6/分鐘
申辦通路	亞太直營/特約門市	網路門市	全通路	官網

▶ Which plan is cheaper for you?

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Which Plan is the cheaper for you?

Plan A: \$1 per minute

Plan B: \$168 monthly for 300min, then \$1.5/min

ⓘ Start presenting to display the poll results on this slide.

Screening (篩選機制)

1. A Set of Rules

- ▶ Different cell phone plans

2. Individuals Optimize

- ▶ Which saves me the most money?

3. You React to Others Optimizing

- ▶ Want a free iPhone 13? Get a new line!

4. What Should Aggregate Data Look Like?

- ▶ The separating equilibrium says ♠13♣579 choose plan A, while ♥24♦680 choose plan B

Screening (篩選機制)

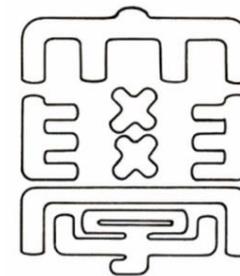
5. Does Empirical Data Match the Theory?
 - ▶ How many ♠13♣579 (♥24♦680) did choose plan A(B)?
6. Can Individual Differences be Explained?
 - ▶ If you are different, what were you thinking?
7. How Can the Institution (Rules) Improve?
 - ▶ What would you do as a marketing manager?
8. Where Did this Institution Come From?
 - ▶ Copied from other countries? Only one approved?

Applications of Screening (篩選機制的應用)

- ▶ Screening Devices designed to **Differentiate**
 - ▶ Let some choose Plan A, others **Plan B**
- ▶ **Ex: Marketing Campaigns Target Specific Groups**
 - ▶ Student/NP plans of cell phone companies
 - ▶ BOGO, 2nd pair 50% off, 2nd bottle 41% off...
- ▶ **HR Screen CVs Based on Certain Criteria**
 - ▶ Ivy League, GPA, extra-curriculum activities, GIS
 - ▶ Students try their best to satisfy those criteria

Signaling (認證標籤)

1. Expected Salary if you graduate from:
 - ▶ ♡24♦680: National iDaiwan University: 35k/mo
 - ▶ ♠13♣579: Private Salty Chicken University: 22k/mo
2. If you go to graduate school at NiDU:
 - ▶ Expected salary 40k/mo, but need to repay student loans @ 5k/mo
3. Would you (advise your friend or your son to) apply for NiDU graduate school? Why?



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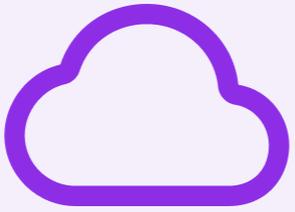
BA@NiDU earns 35k/mo

BA@SaltyChickenU earns 22k/mo

MA@NiDU earns 40k/mo (but need to repay student loans@5k/mo)

Would you apply for NiDU's MA program?

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If you are a BA@NiDU (♥24♦680) and you DID apply for graduate school, list reasons why you did apply.

① Start presenting to display the poll results on this slide.

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If you are a BA@NiDU (♥24♦680) and you did NOT apply for graduate school, list reasons why you did NOT apply.

① Start presenting to display the poll results on this slide.

slido



Which do you think would enhance your future earnings more?

① Start presenting to display the poll results on this slide.

Applications of Signaling (認證標籤的應用)

- ▶ Revisit the question previously raised...
- ▶ Which Would You Choose? (mutually exclusive)
 1. **Spend 4 Years Studying** at the world's best university, but must keep attendance a secret.
 2. **Get an Official Degree** from the world's best university, but cannot actually study there.
- ▶ Answer Reveals which do you think is the more important reason Education Increases Salary

Your **Human Capital** vs. **Your Signal**

Signaling (認證標籤)

1. A Set of Rules

- ▶ Credentialism on the job market (and society)

2. Individuals Optimize

- ▶ Which choice is better for my job market?

3. You React to Others Optimizing

- ▶ Would salary be the same if everyone has a MA?

4. What Should Aggregate Data Look Like?

- ▶ Pooling equilibrium says all should get a MA, though NiDU undergrads (♥24♦680) are indifferent

Signaling (認證標籤)

5. Does Empirical Data Match the Theory?

- ▶ How many ♠ 13♣ 579(♥ 24♦ 680) actually applied for MA?

6. Can Individual Differences be Explained?

- ▶ If you are ♥ 24♦ 680, what were you thinking?

7. How Can the Institution (Rules) Improve?

- ▶ What would you do as employers? As Minister of Education?

8. Where Did this Institution Come From?

- ▶ The Imperial Examination System (科舉制度)?

Applications of Signaling (認證標籤的應用)

- ▶ Signals Let You **Stand Out (鶴立雞群)**
 - ▶ Convince others you (your products) are better
- ▶ Examples:
- ▶ Consumers Demand **Certificate of Origin**
 - ▶ Credentials, Recommendation Letters, MIT, ISO
- ▶ Demonstrate Qualification in **Job Interviews**
 - ▶ Hire me, because...
 - ▶ Should I go for MBA immediately after college?

What Course Are You Taking?

- ▶ Your GPA serves two purposes:
 - ▶ Signal you are a smart and responsible student
 - ▶ Reflect the knowledge and abilities accumulated in college
- ▶ But what does **sweet and cheap GE** indicate?
 - ▶ **What if I get a C in a tough course?** Isn't that worse than taking easy sweet and cheap ones?
 - ▶ Next year, should you take the **road to heaven (天堂路線)** or the **deadly triangle (必死鐵三角)**?

Some Personal Recommendations

- ▶ 2nd year, take Intermediate Micro from 古慧雯 or 駱明慶
- ▶ 3rd and 4th year, take:
 - ▶ 市場與台灣經濟發展(吳聰敏): Capstone on Presentation and Writing
 - ▶ 賽局理論與策略思考(馮勃翰): Game Theory & Strategic Thinking
 - ▶ English Composition (2 yr) or other languages
 - ▶ Apply for BESAP, SAPFS (人社學術人才跨國培育計畫)
- ▶ Thinking about Graduate School?
 - ▶ Try out 1-2 graduate Micro/Macro/Econometric Theory or Master-level electives (駱明慶, 陳虹如, 李怡庭, ...)

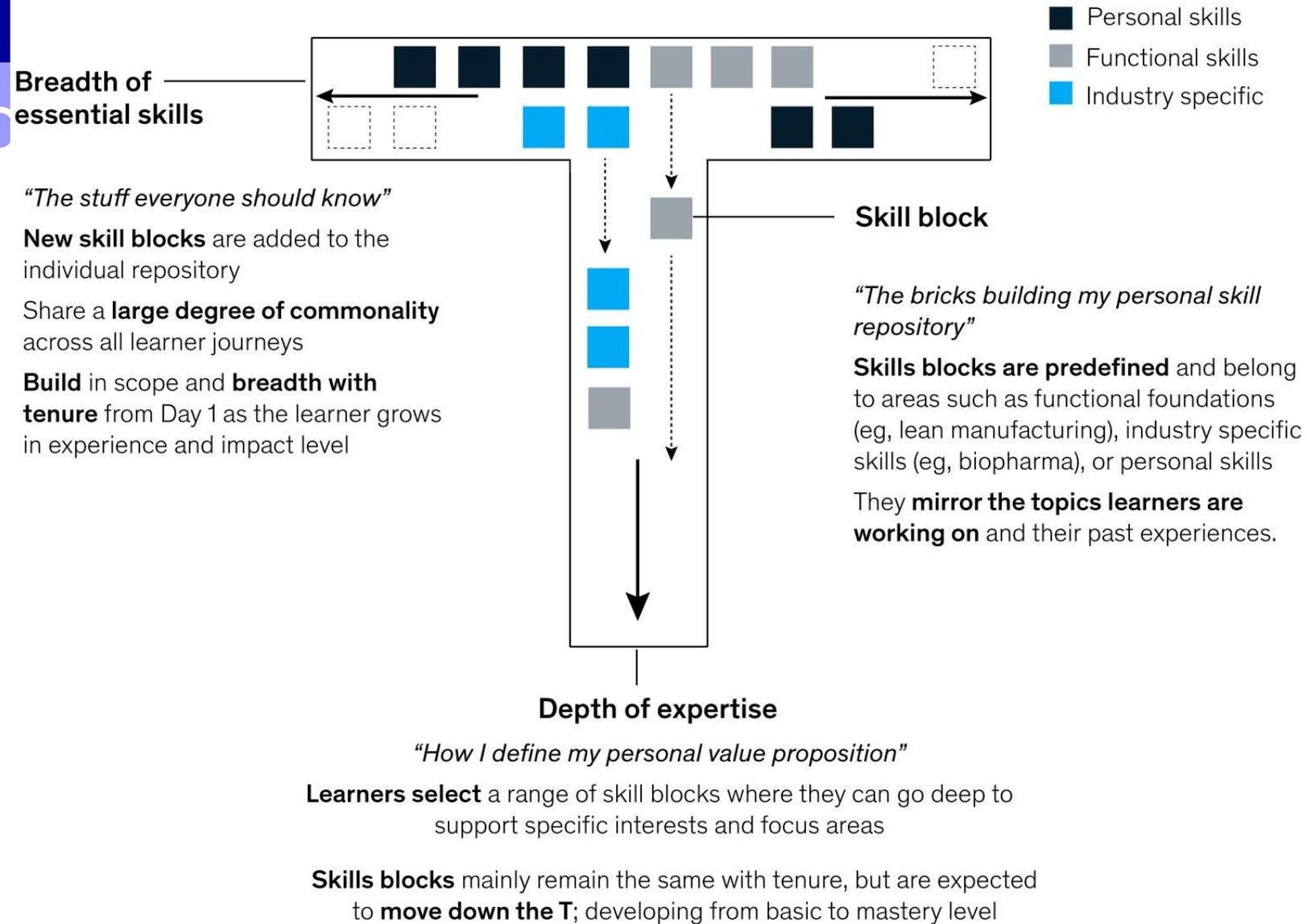
Some Personal Recommendations

- ▶ Find your interest by taking electives broadly
 - ▶ Try **Summer** interns (industry) or RAs (academics)
- ▶ Focus on **one** field to sharpen your skills
 - ▶ Forge **secret weapons** (吃飯的傢伙) with tough core courses (required by other majors)
- ▶ Develop **General Skills** as well:
 - (英文作文二/分析導論一二)
 - ▶ Logical Reasoning (**English Composition/Intro to Real Analysis**)
 - ▶ Communication (writing and oral presentation)
 - ▶ Programming Skills (**C++/Python/Matlab/R, etc...**)

Recommendation

- ▶ Ops 4.0—The Human Factor:
A class size of 1
- ▶ The T-shaped skills profile

Every learner builds a unique, personalized T-profile with relevant skill blocks.



Some Personal Recommendations

- ▶ Interested in micro-economics?
 - ▶ Take **Calculus 4: With Applications to Economics**
 - ▶ Master **Intermediate Micro** and take **Micro Theory I**
- ▶ Like the experiments I run? Signup for TASSEL
 - ▶ Take **Experimental Economics** + start to do research with me
- ▶ If you want to apply for graduate school in Econ:
 - ▶ Take **Introduction to Real Analysis (2nd yr)**, **Linear Algebra (1st yr)**; then **Advanced Statistical Inference (grad.)@NTU**

Q & A

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Audience Q&A Session

① Start presenting to display the audience questions on this slide.

The End

Classroom Experiment 7: Public Goods Contribution

經濟學實驗七：公共財自願捐獻

台大經濟系 王道一老師
Joseph Tao-yi Wang

A Water Purification Project

- ▶ **Overview**
- ▶ Each round, each group member receives same amount of money
- ▶ Each simultaneously chooses how much to contribute to water purification project
- ▶ **Each** individual's benefit from project:
 - ▶ **Total Group Contributions x Rate of Return**

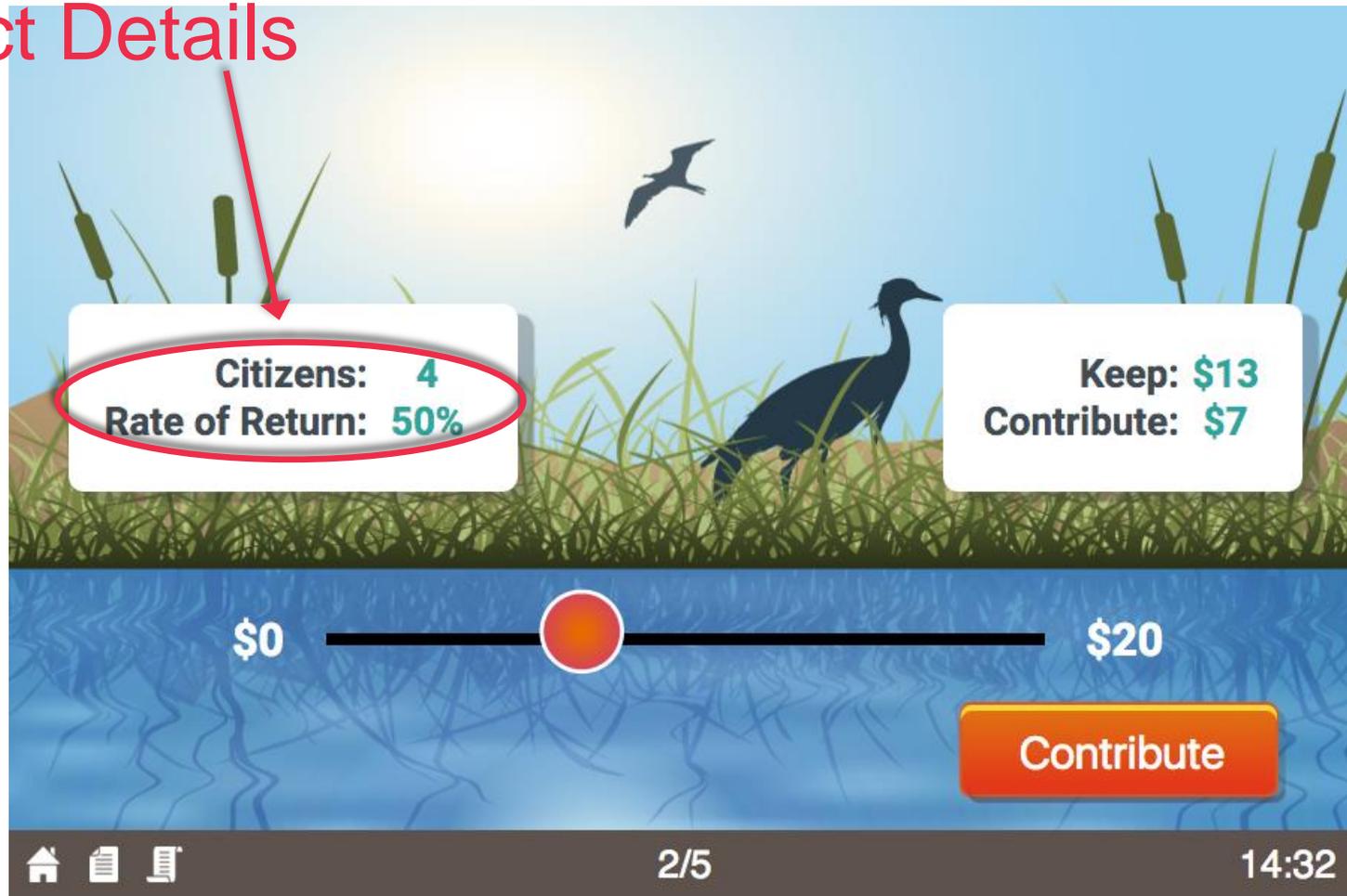
Your Game Screen

Current Round/Total Number of Rounds

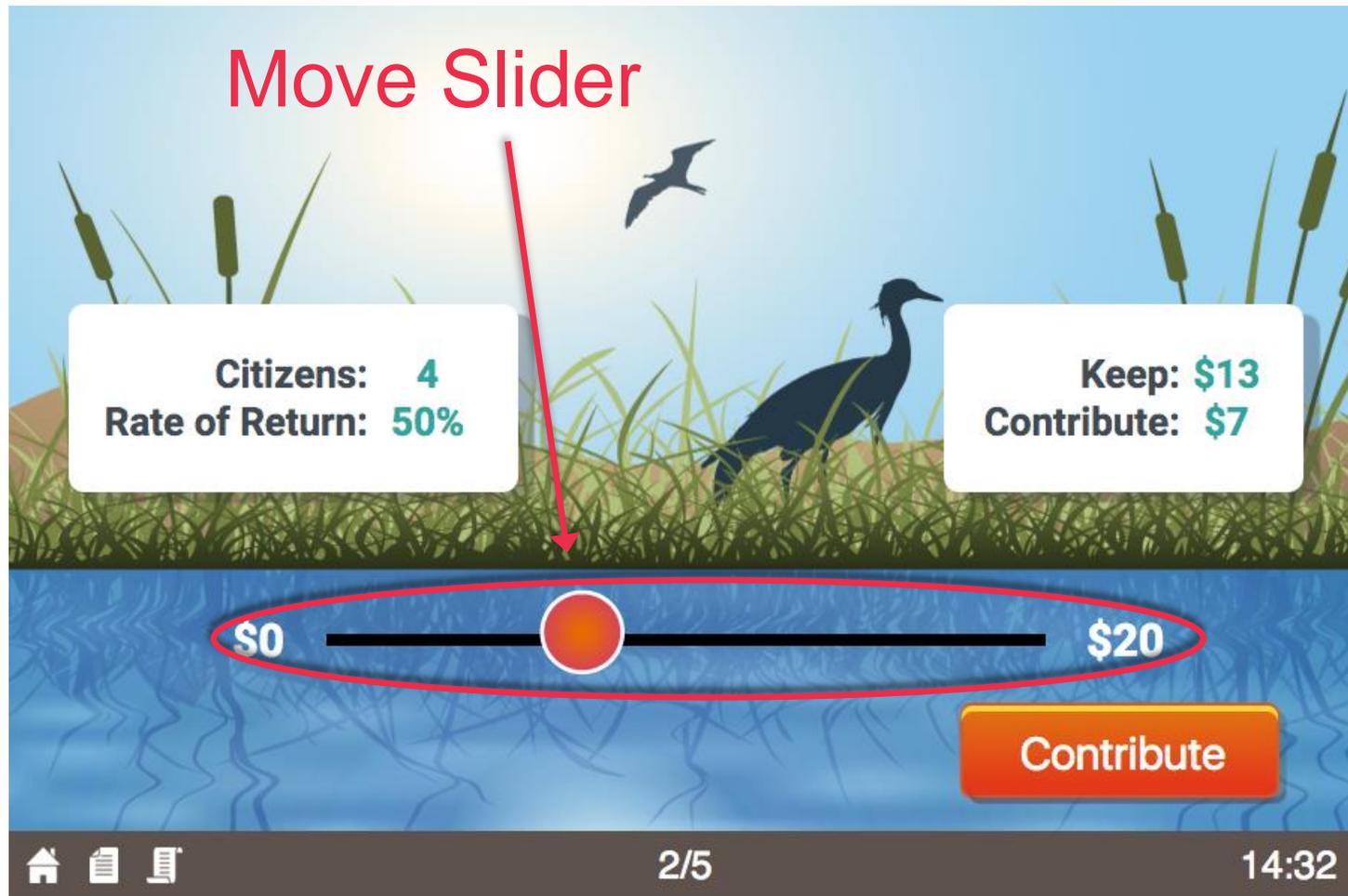


Your Game Screen

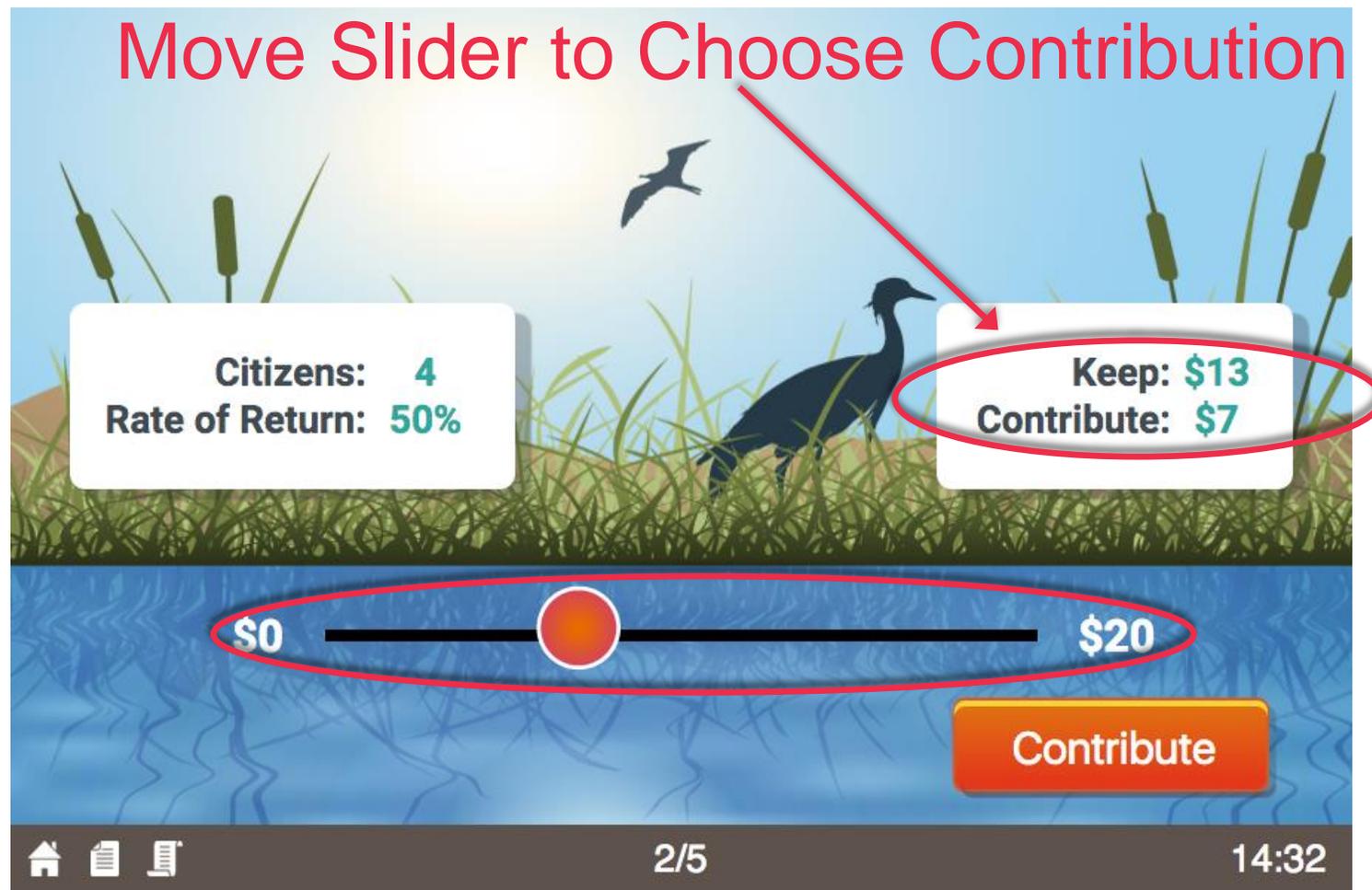
Project Details



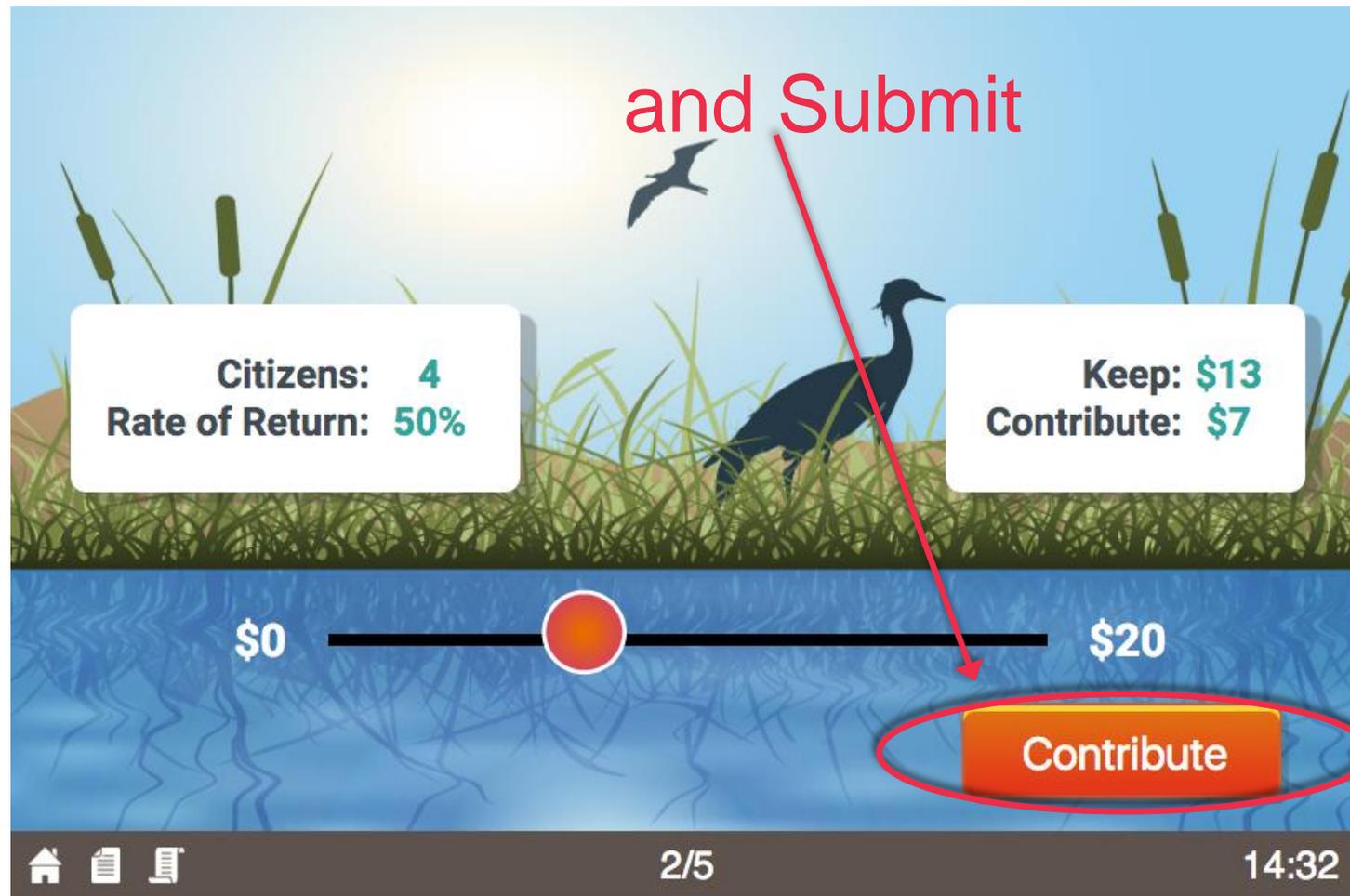
Your Game Screen



Your Game Screen



Your Game Screen

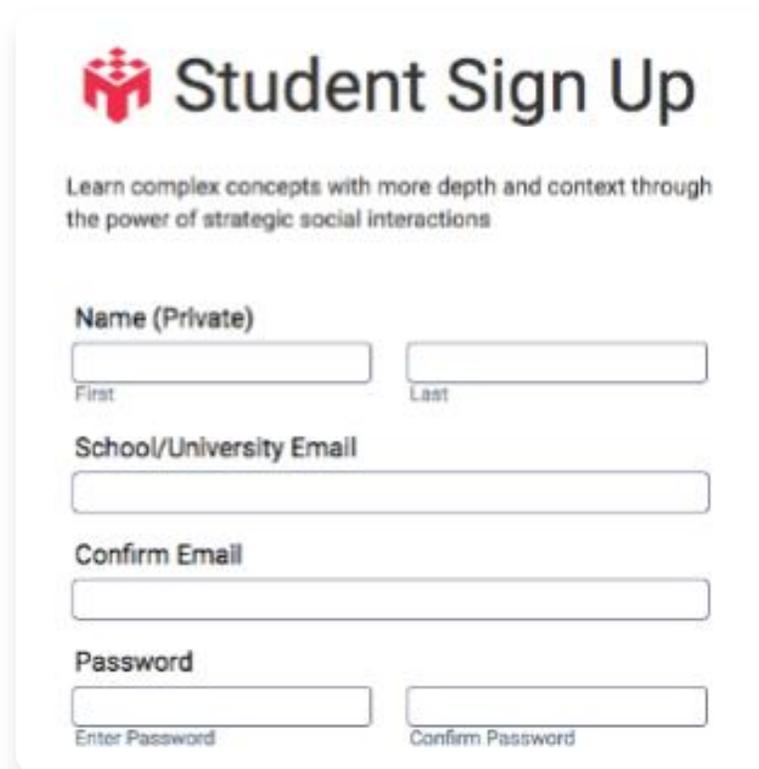


Your Game Screen



Sign Up www.moblab.com or Download the App

- 1 Sign up as a student using your [NTU student Email](#)



Student Sign Up

Learn complex concepts with more depth and context through the power of strategic social interactions

Name (Private)

First Last

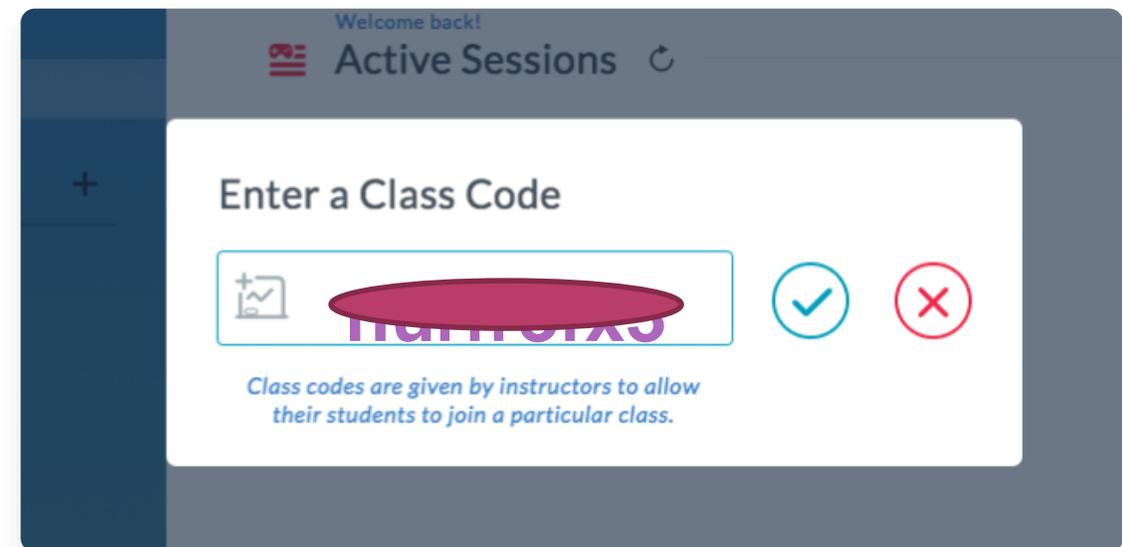
School/University Email

Confirm Email

Password

Enter Password Confirm Password

- 2 Join the class



Welcome back!

Active Sessions

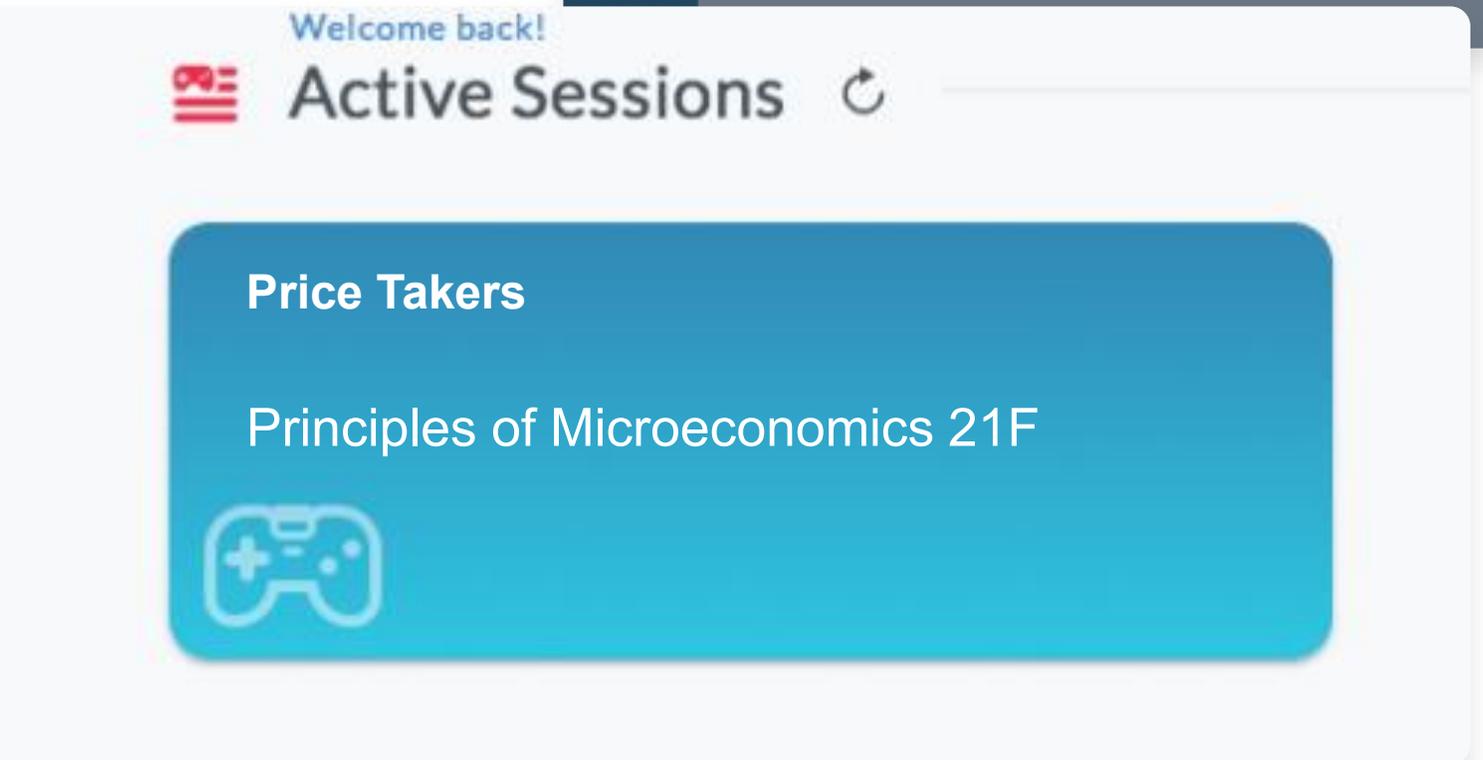
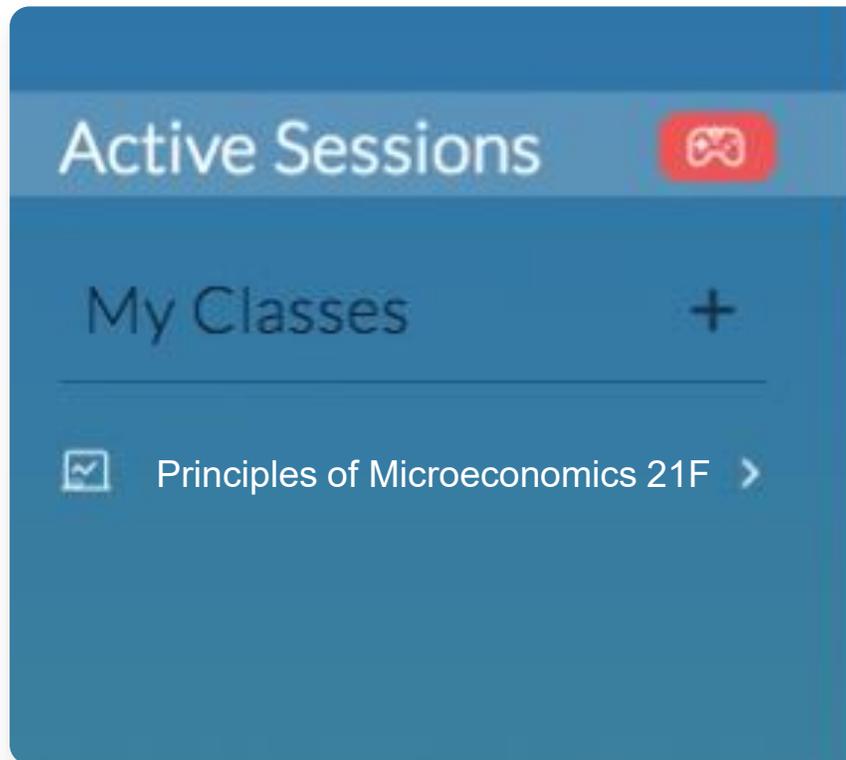
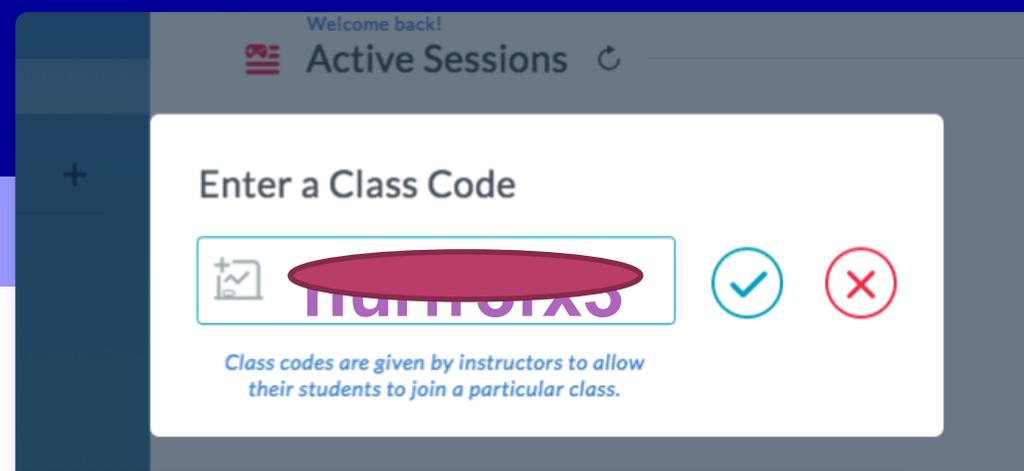
+

Enter a Class Code

✓ ✗

Class codes are given by instructors to allow their students to join a particular class.

Enter the Activity



Payoff

Happy Playing!

- ▶ Overview
- ▶ Depend on your contributions and contributions of other group members
- ▶ Another Example
- ▶ Start with \$20; rate of return is 40% = 2/5
- ▶ Contributed \$12 of \$40 group contribution

$$\begin{array}{l} \text{payoff} = \text{start} - \frac{\text{your contribution}}{n} + \text{rate of return} \times \text{total group contributions} \\ \$24 = \$20 - \frac{\$12}{5} + 40\% \times \$40 \end{array}$$

Experiment 7-2: Irrigation Game

- ▶ Do people cooperate after group discussion?
- ▶ **What if** we now play the irrigation game?
 - ▶ Same rule as before, except
- ▶ Members claim from the pool in order:
 - ▶ Member 1 can take whatever s/he wants
 - ▶ Then, Member 2 can take from what is left
 - ▶ Etc.
- ▶ Order is known before contribution

Public Goods Contribution (公共財自願捐獻)

1. A Set of Rules

- ▶ Everybody can contribute, but equally divided

2. Individuals Optimize

- ▶ The Selfish Gene? (拔一毛以利天下而不為?)

3. You React to Others Optimizing

- ▶ You React to Others Optimizing

4. What Should Aggregate Data Look Like?

- ▶ Nash equilibrium = nobody contributes = **Tragedy of Commons!**

Public Goods Contribution (公共財自願捐獻)

5. Does Empirical Data Match the Theory?
 - ▶ How many contributed zero? Give to Pool = ?
6. Can Individual Differences be Explained?
 - ▶ Why did some contribute, but others not?
7. How Can the Institution (Rules) Improve?
 - ▶ How can you induce more contribution?
8. Where Did this Institution Come From?
 - ▶ Social norms solved Tragedy of Commons
 - ▶ What about Global Warming?

Applications of Public Goods Contribution

- ▶ Team Work Requires Preventing **Free Riders**
- ▶ Better if all contribute, but you never know if...
- ▶ Examples:
- ▶ Project Management
- ▶ Design Reward Schemes To Induce Effort
- ▶ **Disclosure** (Good Way to Encourage Donation!)



Would Pre-play Communication Help?

▶ Watch this Video:

▶ https://www.youtube.com/watch?v=7FbkwrhW_0I&t=225s

▶ Two Players Each Choose to **Split** or **Steal**

1. **Split** the Money If Both Choose to **Split**

2. If One Chooses to **Split**, the Other Chooses to **Steal**, the **Steal** Guy Gets All the Money

3. If Both Choose to **Steal**, Both Get Nothing

Would Pre-play Communication Help? (事先溝通有用)

- ▶ How Would You Convince the Other Guy to Split (as One of the Players)?
 - ▶ British TV Program: Golden Balls
 - ▶ How Many People Really Choose to **Split**? Why?
 - ▶ How to Prevent Being **Stolen**/Both Get Nothing?
- ▶ How Can You Make Both of You Better Off?
 - ▶ An Unexpected Twist...
 - ▶ <http://www.youtube.com/watch?v=S0qjK3TWZE8>
 - ▶ 中文字幕版: <https://youtu.be/W5qz8SNO7Wc>

Would Pre-play Communication Help? (事先溝通有用)

- ▶ Cooperation is Good, But He **May Betray You**
 - ▶ Though Consumers Look Competition
- ▶ Examples of Pre-play Communication:
- ▶ WSJ: Airlines Ticket Sales On Monday Night
 - ▶ Opponents Forced to Match Tuesday Morning
 - ▶ Best Online Airfares Occur @ Tuesday 3pm EST
- ▶ Will Airlines Honor Agreements Not to Sale?
 - ▶ If Books.com.tw offers 21% off, so will TAAZE!

slido



Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.