



12月13日, 14:15 - 14:45 HKT

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使用虛擬考察和實地考察的混合式學習

InnoSTEMer

虛擬學習環境

德育及國民教育

廣東話

概覽

實地考察的學習效益已被多個研究證實。近年來，由於技術進步、對電子學習和混合學習的推廣，以及因疫情帶來的學習環境的轉變，令虛擬考察更普及。這個項目旨在探索虛擬考察如何能在不同教學情境下應用。項目團隊藉助VR CAVE、ArcGIS StoryMaps和360虛擬導覽等工具，以中國大灣區製造業轉移和工業遺產保育為案例，製作了虛擬考察的教材套。是次研討會將分享項目的內容，並探討所設計的教



香港教育大學

The Education University
of Hong Kong



Department of
Social Sciences and Policy Studies
社會科學與政策研究學系

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Outline



Introduction



Project Brief

- Tools and Technologies
- Development of the Teaching Package
- Work-in-progress Teaching Package



Research Design



Preliminary Analysis

- From the perspective of secondary teachers
- From the perspective of university students



Concluding remarks

Introduction

The Learning Benefits of Field Trips

- Field trips as effective tools for experiential learning.
- Real-world connections enhance engagement and understanding.
- Increasing reliance on virtual alternatives due to the pandemic and tech advances.

Shift Toward Virtual Field Trips

- Popularity of virtual inspections due to e-learning integration and blended learning models.
- Advances in VR and immersive technologies support virtual field trip experiences.
- Opportunities to overcome logistical and geographical limitations.

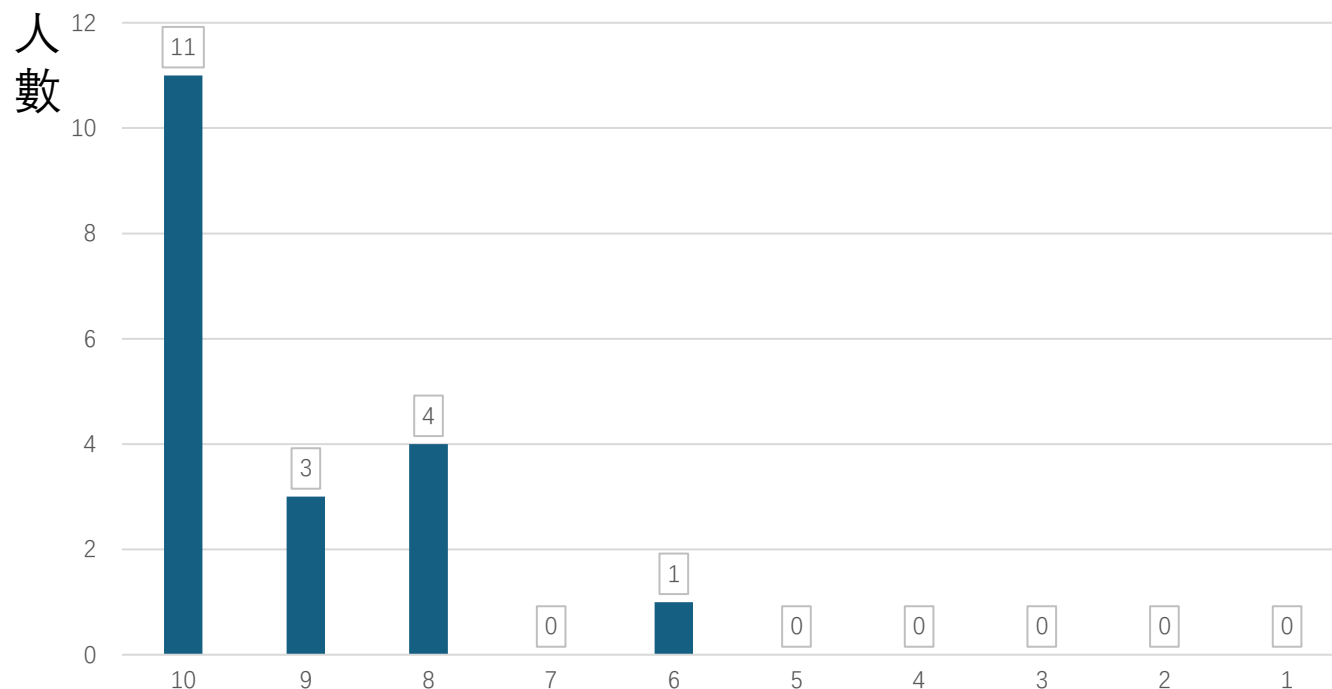
How do
geography
teachers perceive
virtual and real
field trips?



**From the perspective of
secondary teachers**

From the Perspective of Secondary School Teachers...

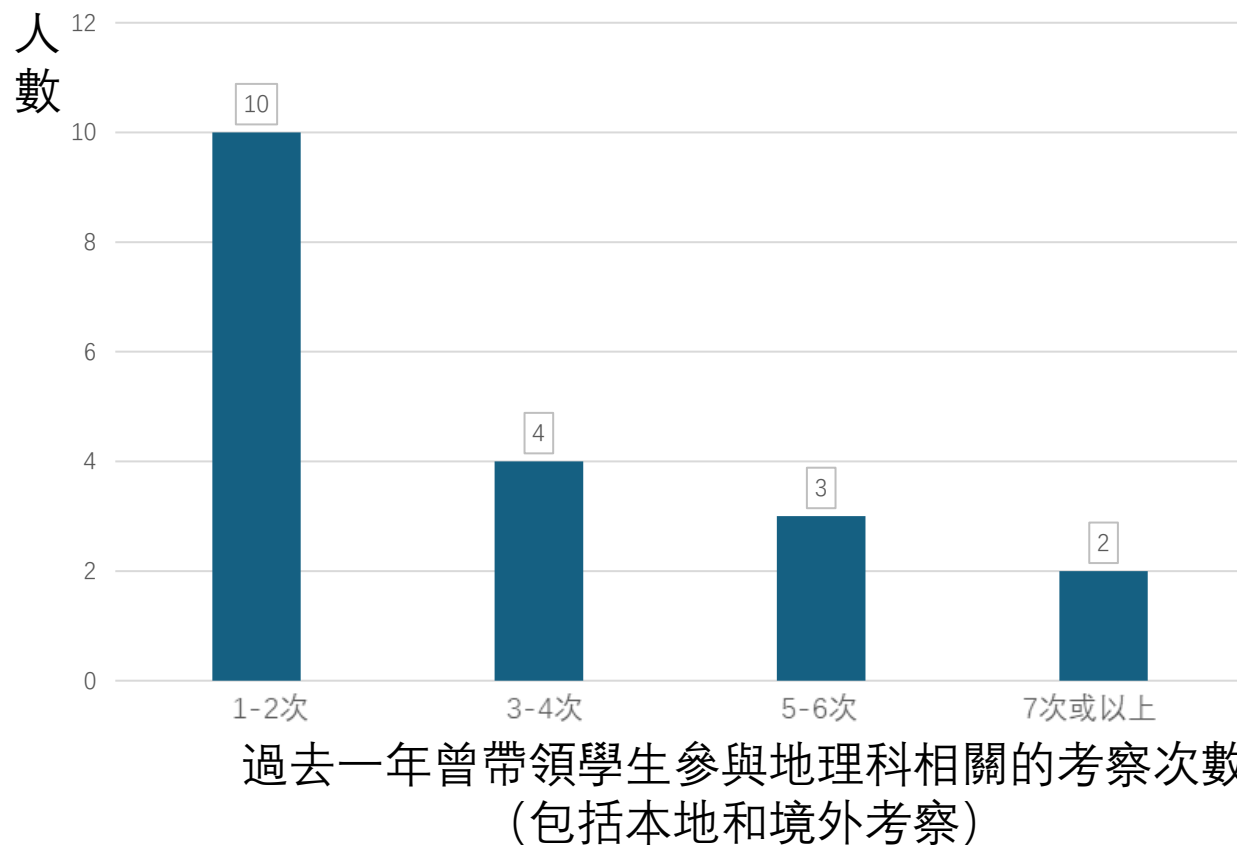
- 實地考察對於地理學習的重要性： Mean=9.21



實地考察對於地理學習的重要性
(請以1-10分進行評價，1分表示完全不重要，10分表示非常重要)

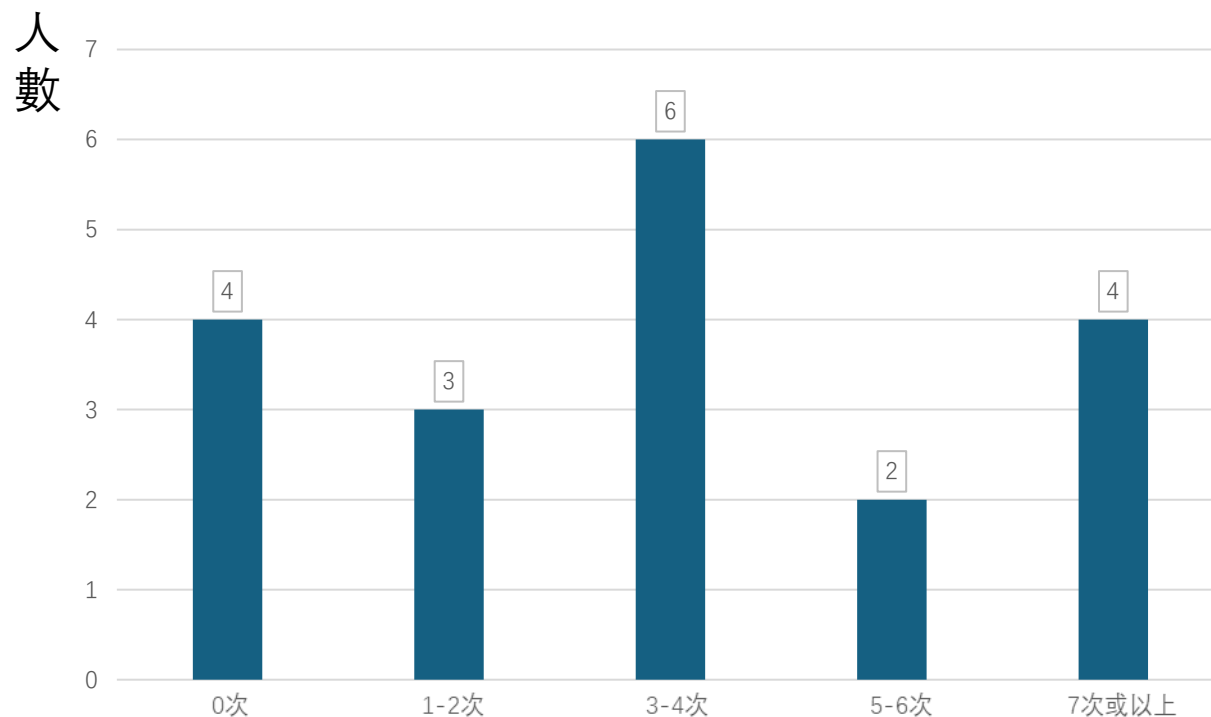
From the Perspective of Secondary School Teachers...

- 過去一年曾帶領學生參與地理科相關的考察次數



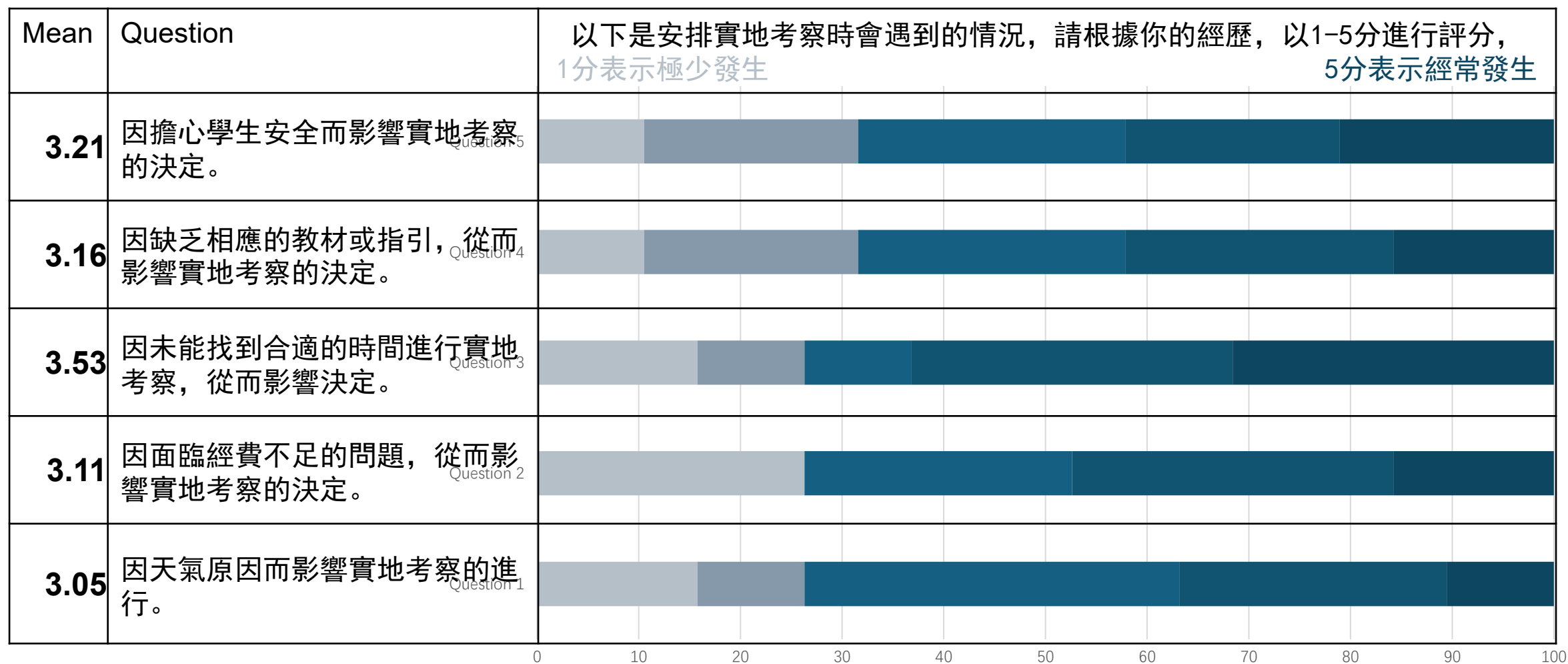
From the Perspective of Secondary School Teachers...

- 過去一年曾在地理科課堂使用**虛擬考察**進行教學的次數

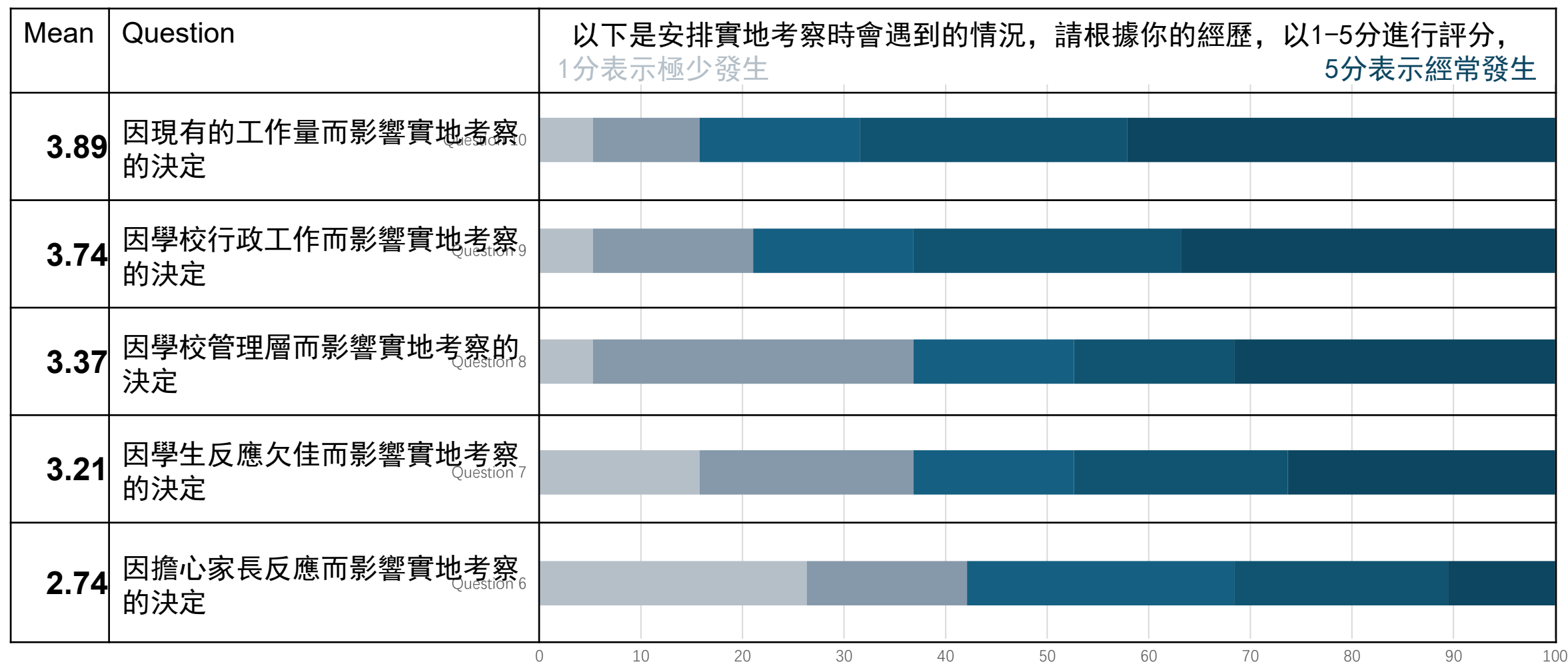


過去一年曾在地理科課堂使用**虛擬考察**進行教學的次數
(包括使用Google Map實景、Google Earth、ArcGIS/QGIS、VR或其他**虛擬考察**工具)

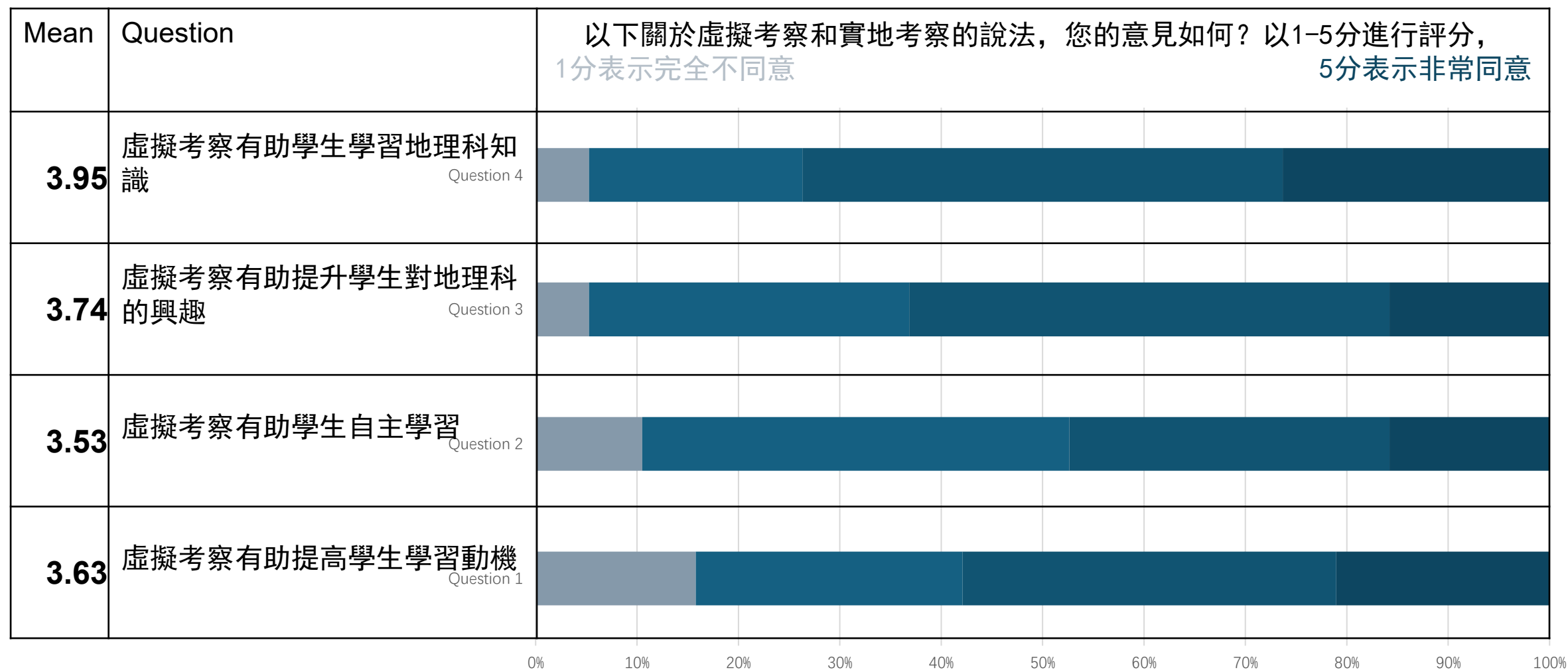
From the Perspective of Secondary School Teachers...



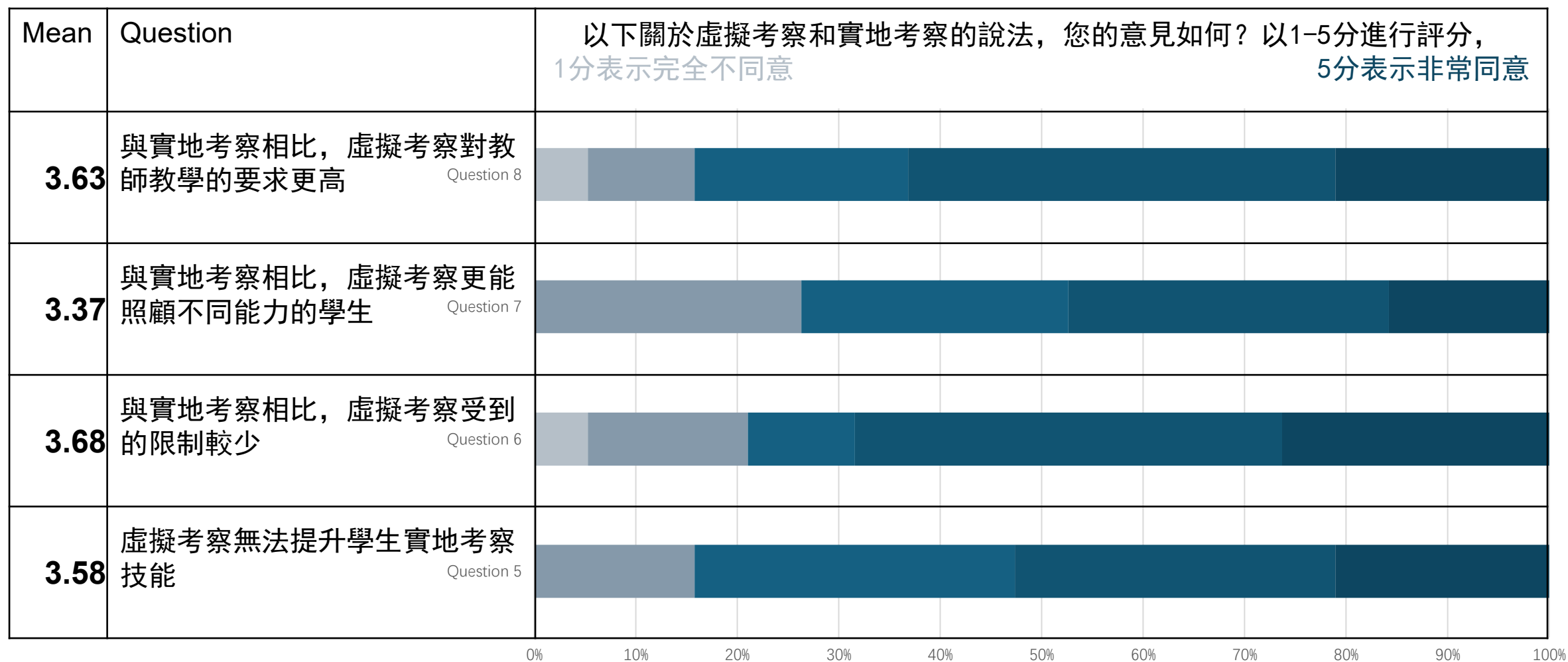
From the Perspective of Secondary School Teachers...



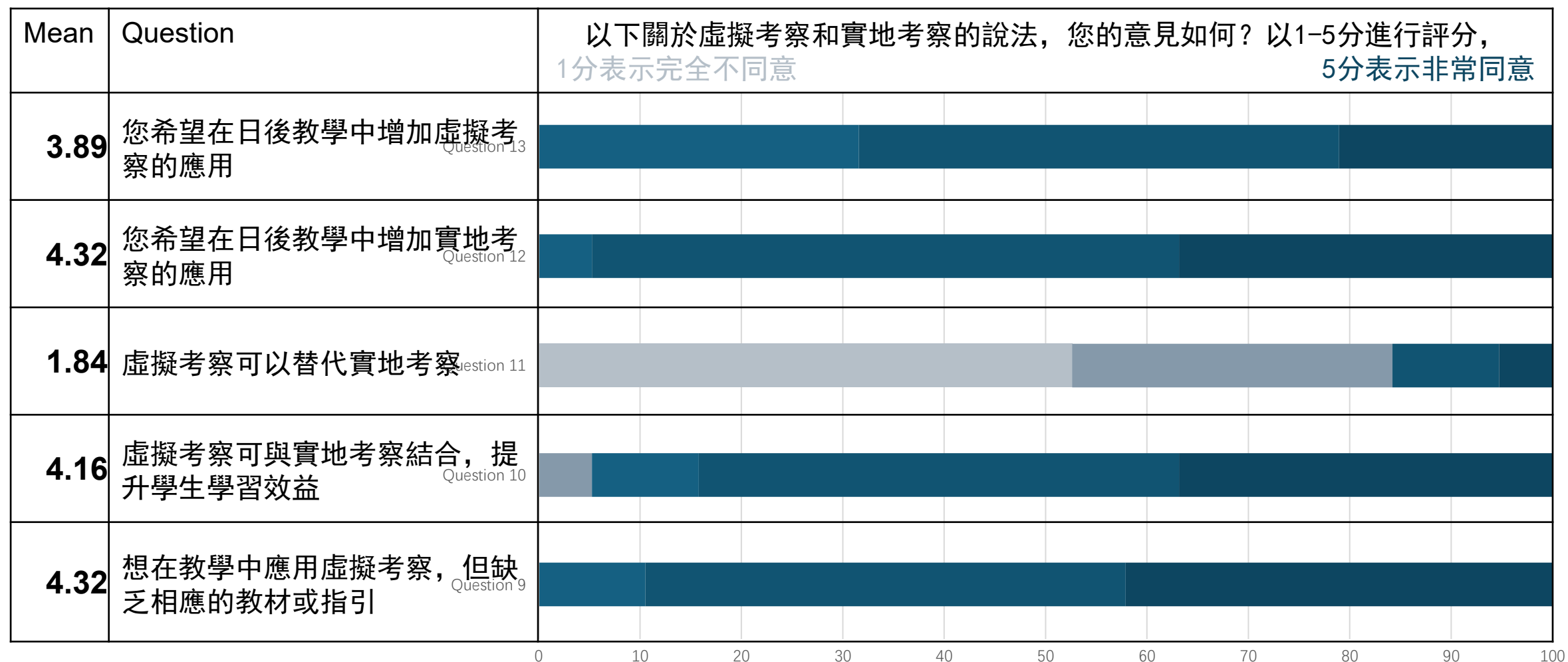
From the Perspective of Secondary School Teachers...



From the Perspective of Secondary School Teachers...



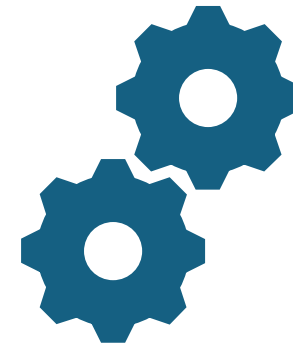
From the Perspective of Secondary School Teachers...



Project Brief



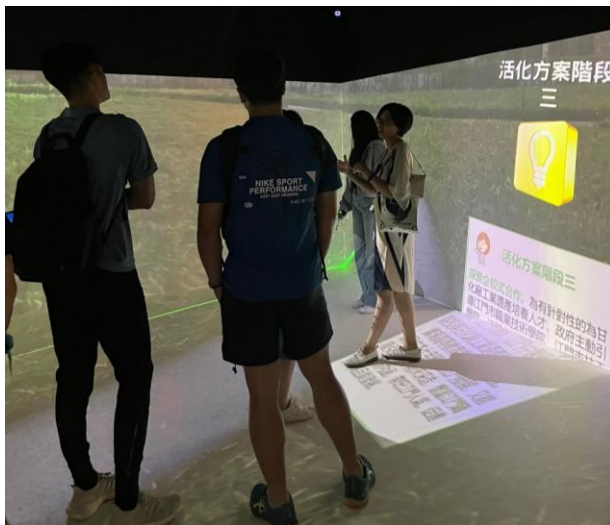
- ✓ Design teaching packages for virtual field trip.
- ✓ Utilize technological tools to simulate real-world field experiences.



- ✓ Focus on manufacturing transfer and industrial heritage in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA hereafter).

Tools and Technologies

VR CAVE: Immersive virtual environments for a realistic field trip experience.

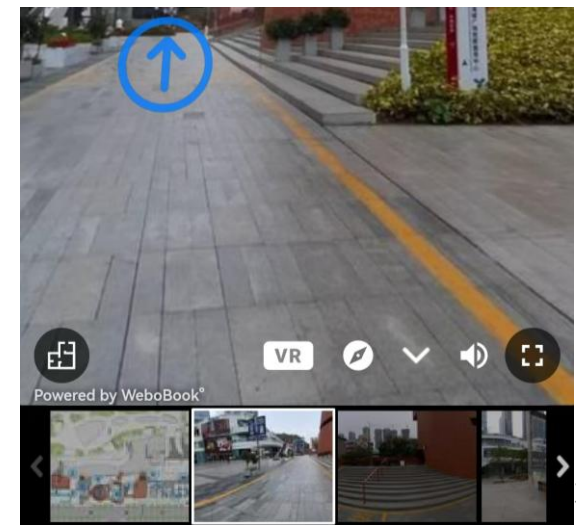


ArcGIS StoryMaps: Interactive storytelling tool linking maps and multimedia.



图为改造前后金威啤酒厂城市更新单元地块卫星图对比

360 Virtual Tours: High-quality, panoramic views for virtual navigation of locations.



Development of the Teaching Package



Identification of key industrial heritage sites.



Content creation using VR, StoryMaps, and 360 tours.



Integration of interactive elements to enhance engagement.

Work-in-progress Teaching Package

- Kingway Brewery (金啤坊) VRCAVE 360

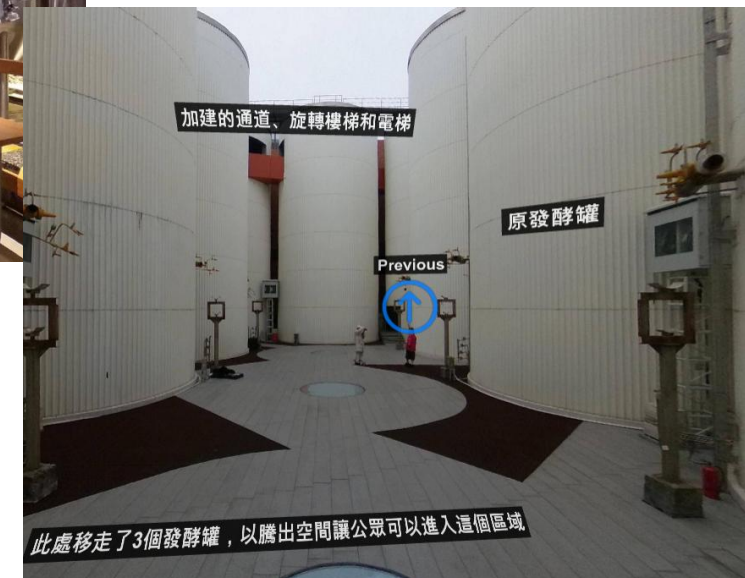


The VR CAVE at The Education University of Hong Kong is one of the largest CAVE in Hong Kong, providing 360-degree interactive 4-side and floor projections, as well as surround sound system.

Work-in-progress Teaching Package

- Kingway Brewery (金啤坊) 360 Virtual Tour

<https://webobook.com/public/667e7c56969e476735476ae2,en>



Work-in-progress Teaching Package

• Kingway Brewery (金啤坊) ArcGIS StoryMaps

<https://storymaps.arcgis.com/stories/16376492b3aa44cb88e07bfa3cf6a684>



Part1——初识遗存 Part2——活化更新 Part3——追溯时空 Part4——

Part1——初识遗存



图为改造前后金威啤酒厂城市更新单元地块卫星图对比

1.1 区位分析

金威啤酒厂更新单元位于深圳市罗湖区布心片区东南部，位于罗湖区东晓街道东昌路9号。紧邻水贝珠宝产业园，距水贝珠宝产业园区和罗湖中心“金三角”分别为2公里和4公里，属于核心区的辐射范围，区位条件良好。金威啤酒厂城市更新单元，南临布心路，东侧为东昌路，太白路穿过项目内部，对外交通联系紧密，处于地铁环中线太安站和布心站500米范围内，交通区位显著。



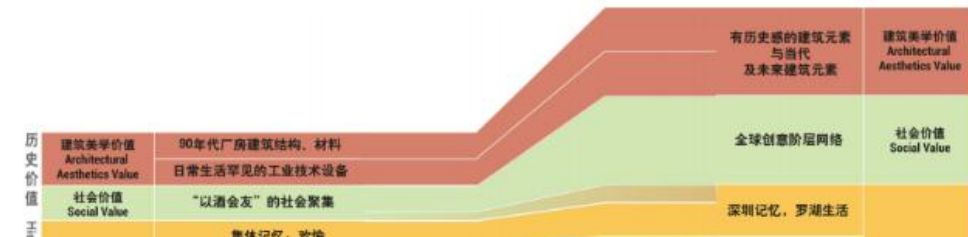
图为深圳主要工业遗存区位

周边有天河城购物中心、深圳市围岭公园、深圳市仙湖植物园、深圳市东湖公园等配套服务设施。

1.2 现状概况

2.2 价值重构

金威啤酒厂作为深圳唯一的本土啤酒品牌，见证了深圳人奋斗的历程，成为几代人的共同记忆。虽然金威啤酒厂的大部分被拆除，但保留下来的原金威啤酒厂的核心建筑，如啤酒发酵罐、易拉罐生产、污水处理等标志性建构物的物质价值及场地精神和地方文化认同等精神价值在活化更新时如何重构值得我们思考



Research Design

- **Virtual Field Trip + Real Field Trip:**

Pre-test --> Virtual Field Trip --> Worksheet (Q1-9) --> Post-test (VFT)
--> Real Field Trip --> Worksheet (Q1-10) --> Post-test (AFT)

EdUHK, HKMU

- **Virtual Field Trip only:**

Pre-test --> Virtual Field Trip --> Worksheet (Q1-10) --> Post-test (VFT)

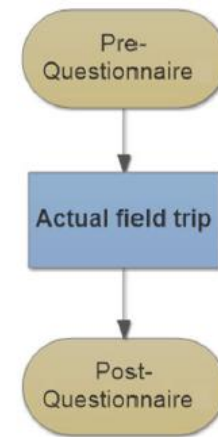
GDUT

- **Real Field Trip + Virtual Field Trip:**

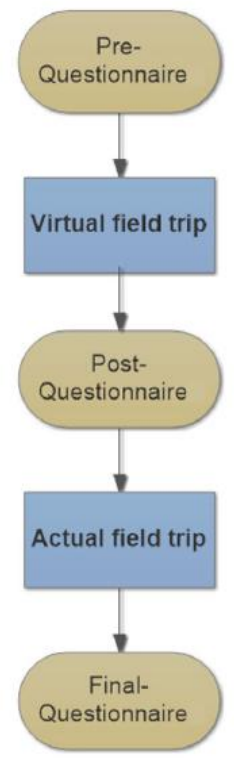
Real Field Trip --> Virtual Field Trip --> Worksheet (Q1-10)
--> Post-test (VFT)

SZPU, GDUT

AFT group



iVFT group



Sample profile

Sample	Size	Remarks	University	Major
Group1	n=132	Virtual Field Trip (VFT) first and then Actual Field Trip (AFT)	EdUHK	Geography
			HKMU	Heritage , Tourism
Group2	n=88	VFT only	GDUT	Urban Planning, Landscape
Group3	n=85	AFT first and then VFT for memory recall	GDUT	Architecture
			SZPU	Smart Cities Management

Preliminary Analysis

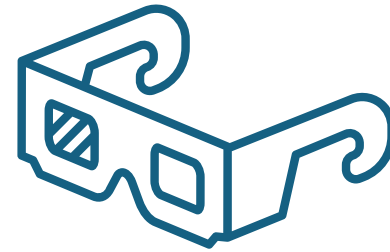


**From the perspective of
university students**

Pre-test and Post-test Overview



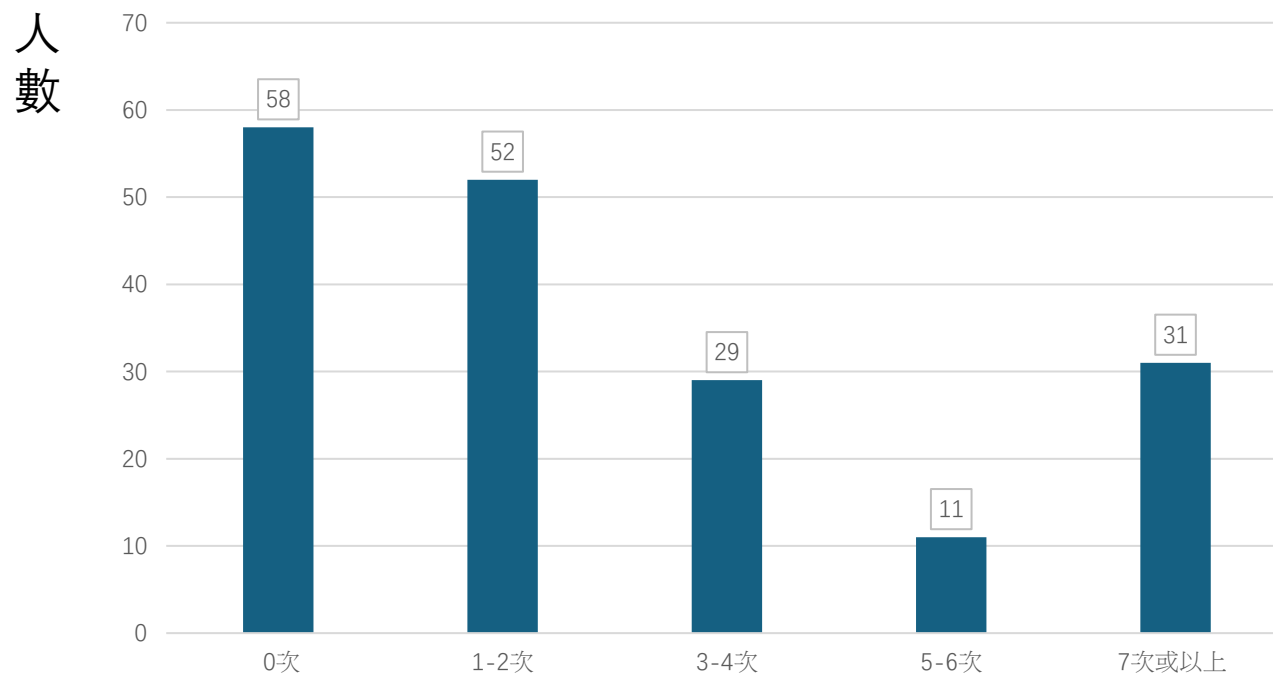
Pre-test overview



VFT post-test overview

From the Perspective of University Students...

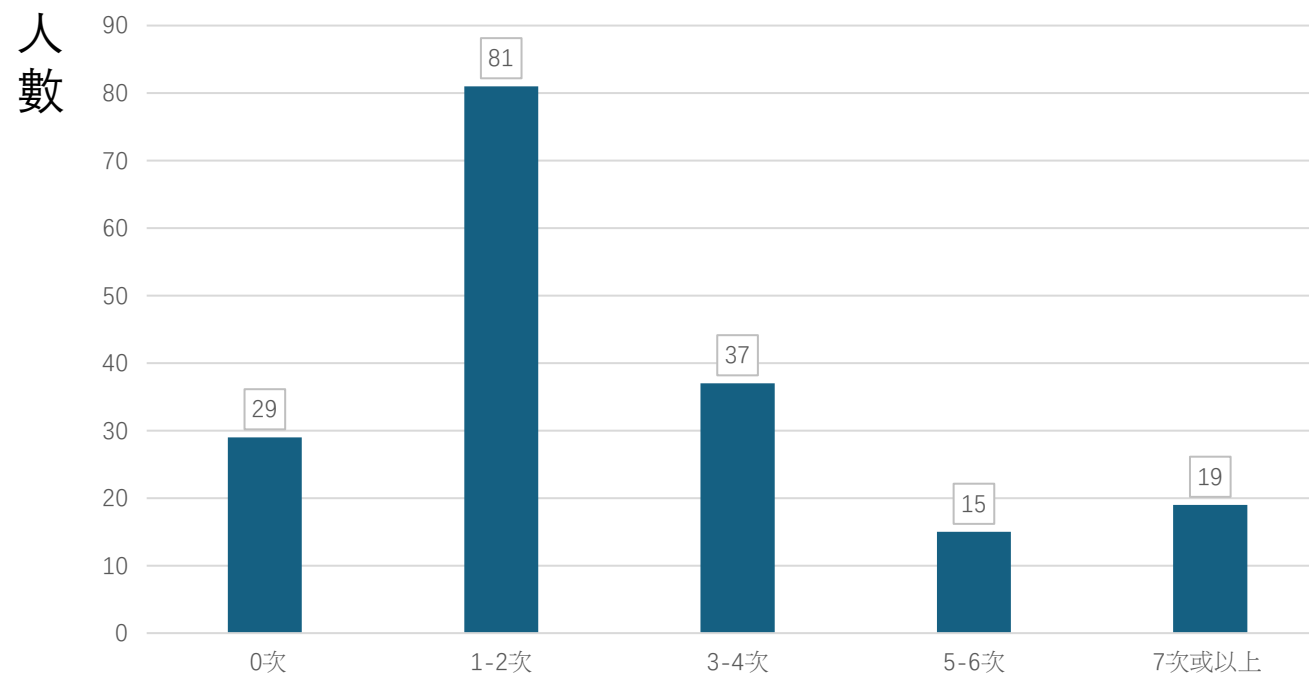
- 過去一年曾在課堂或課外使用**虛擬考察**的次數



過去一年曾在課堂或課外使用**虛擬考察**的次數
(包括使用Google Map實景、Google Earth、ArcGIS/QGIS、VR或其他**虛擬考察**工具)

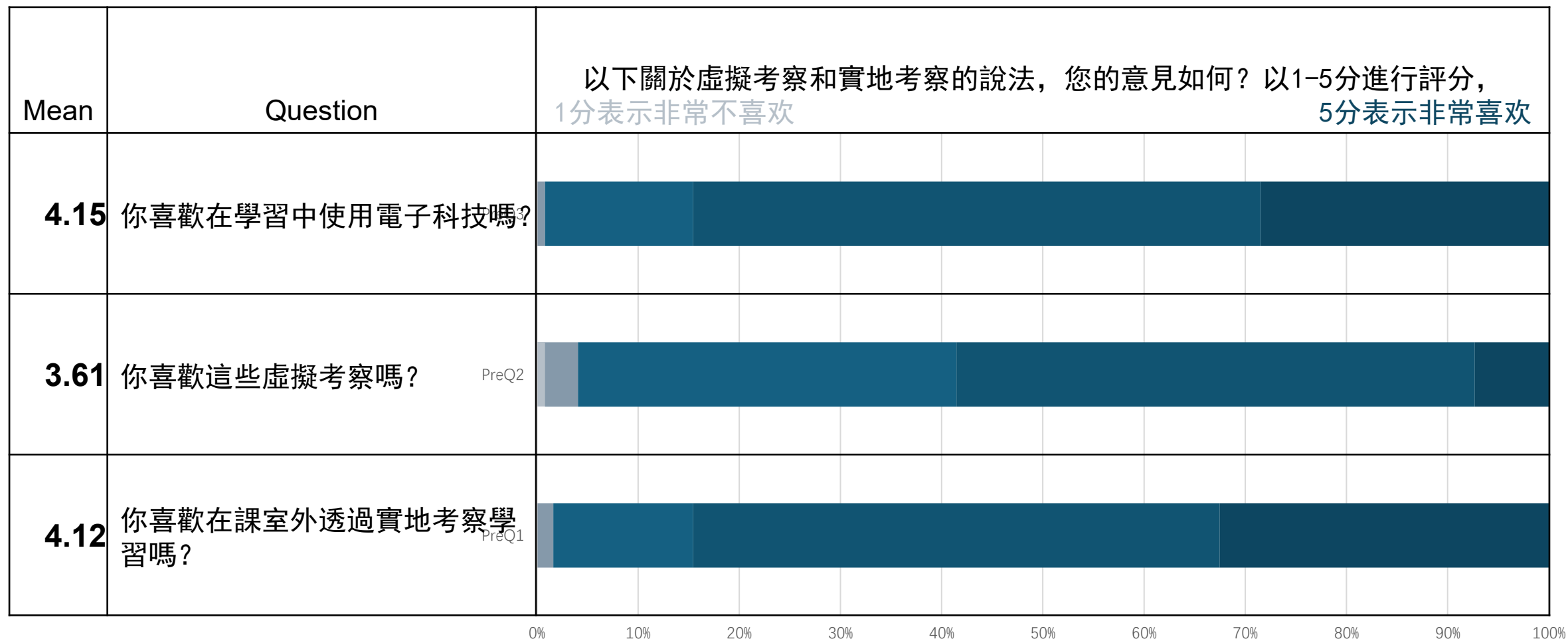
From the Perspective of University Students...

- 過去一年參加與學科相關實地考察的次數



過去一年參加與學科相關實地考察的次數

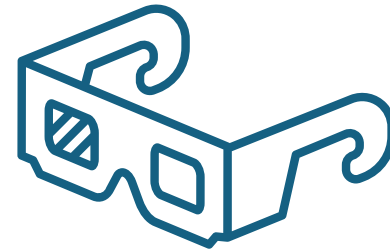
From the Perspective of University Students...



Pre-test and Post-test Overview

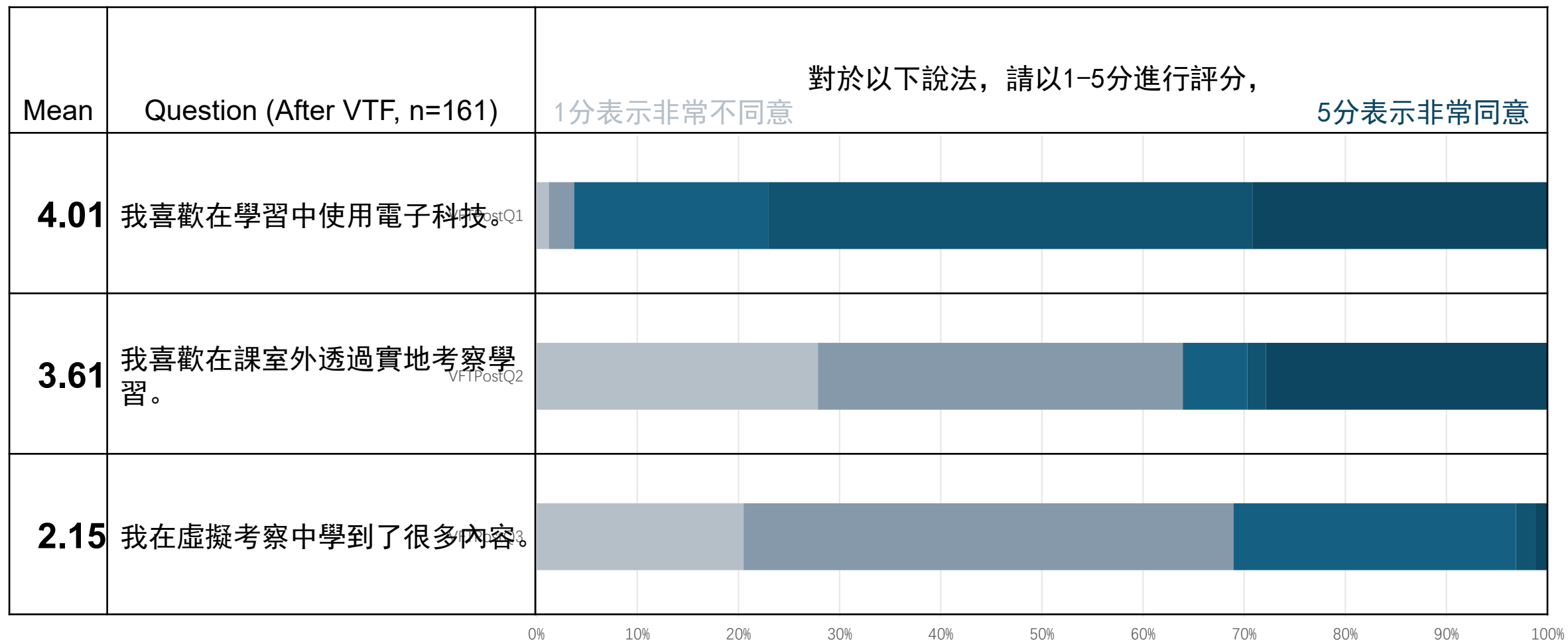


Pre-test overview

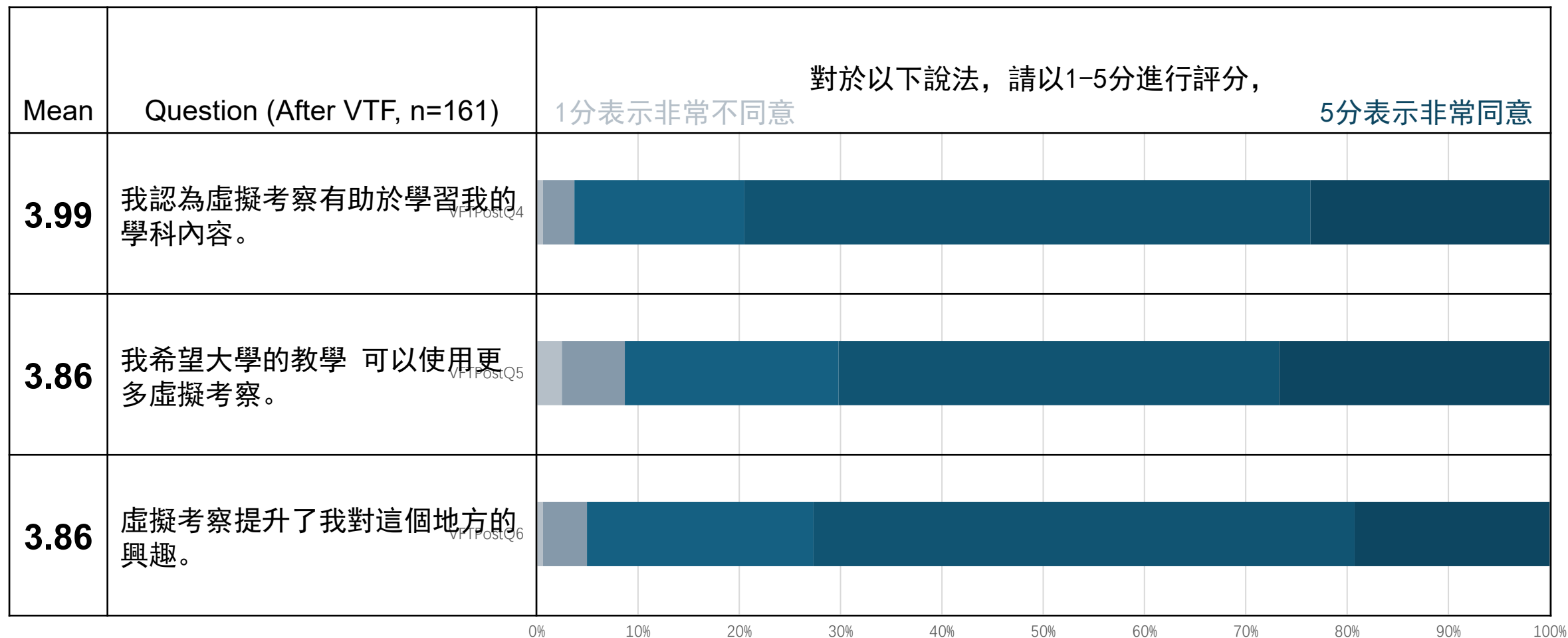


VFT post-test overview

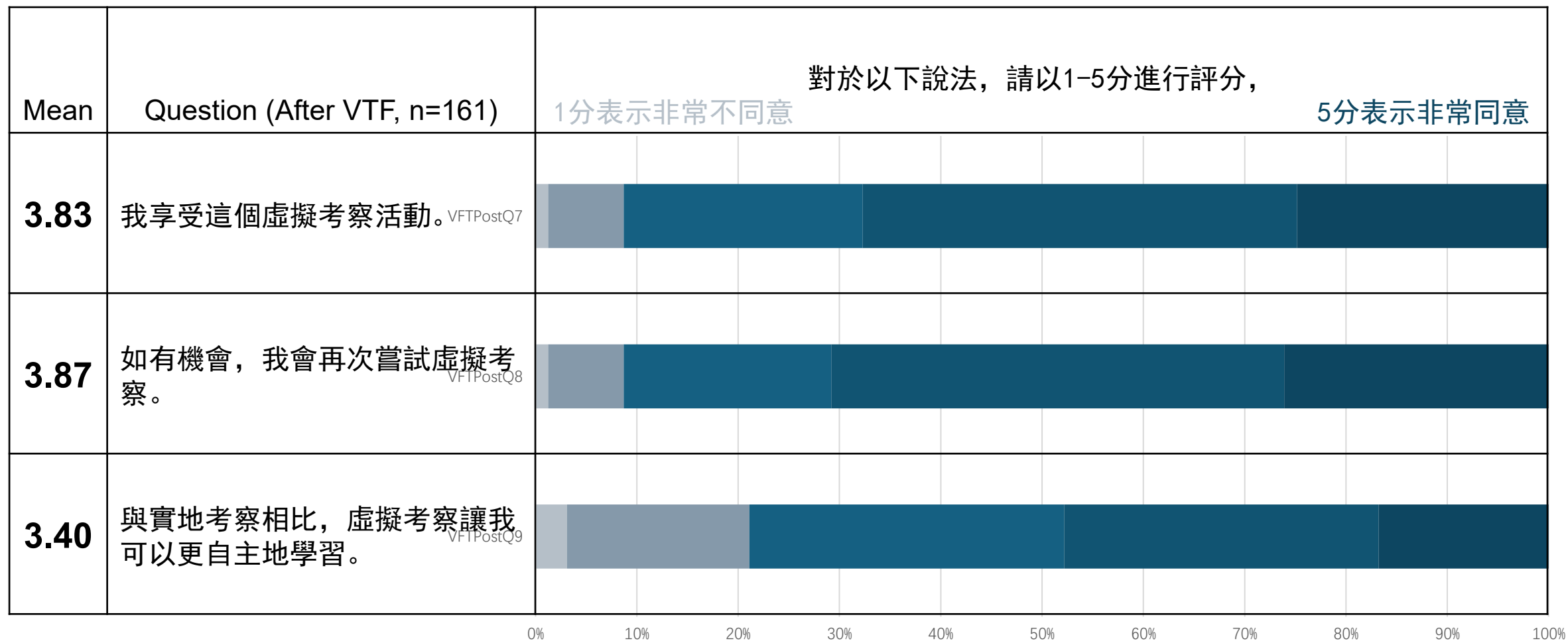
From the Perspective of University Students...



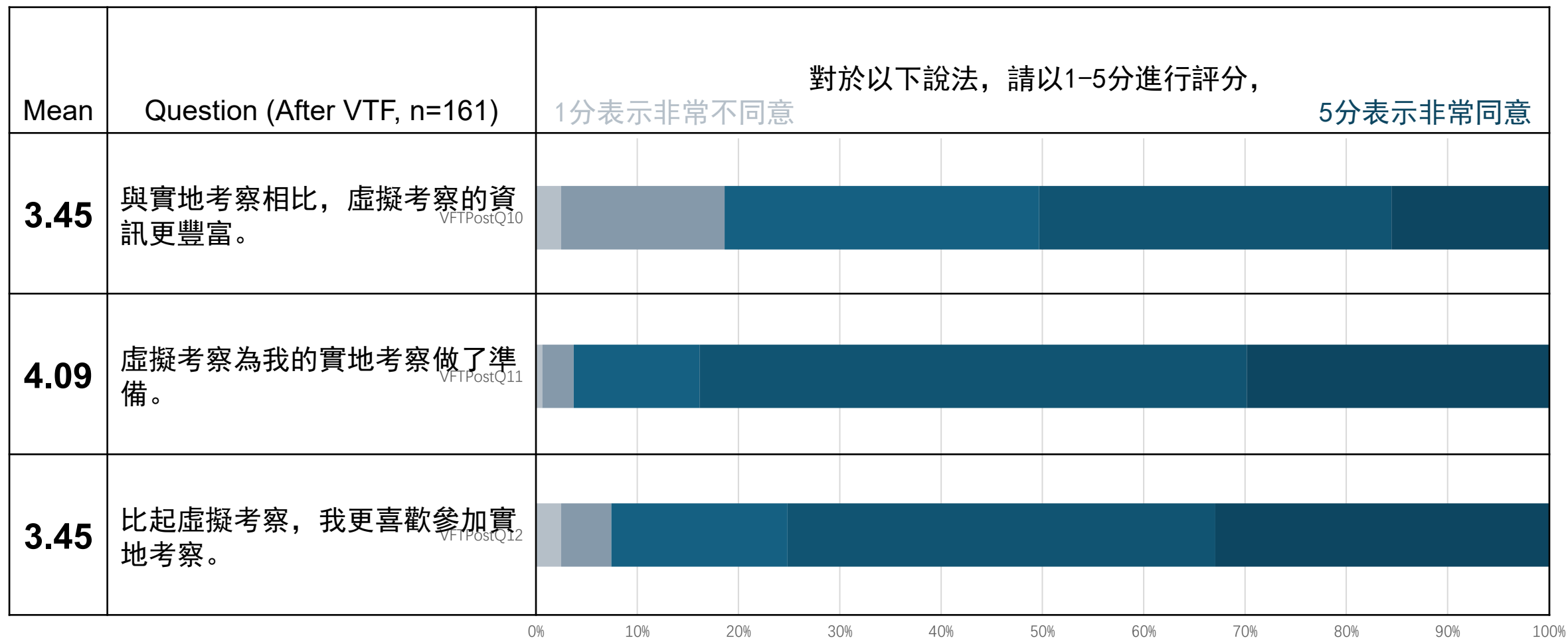
From the Perspective of University Students...



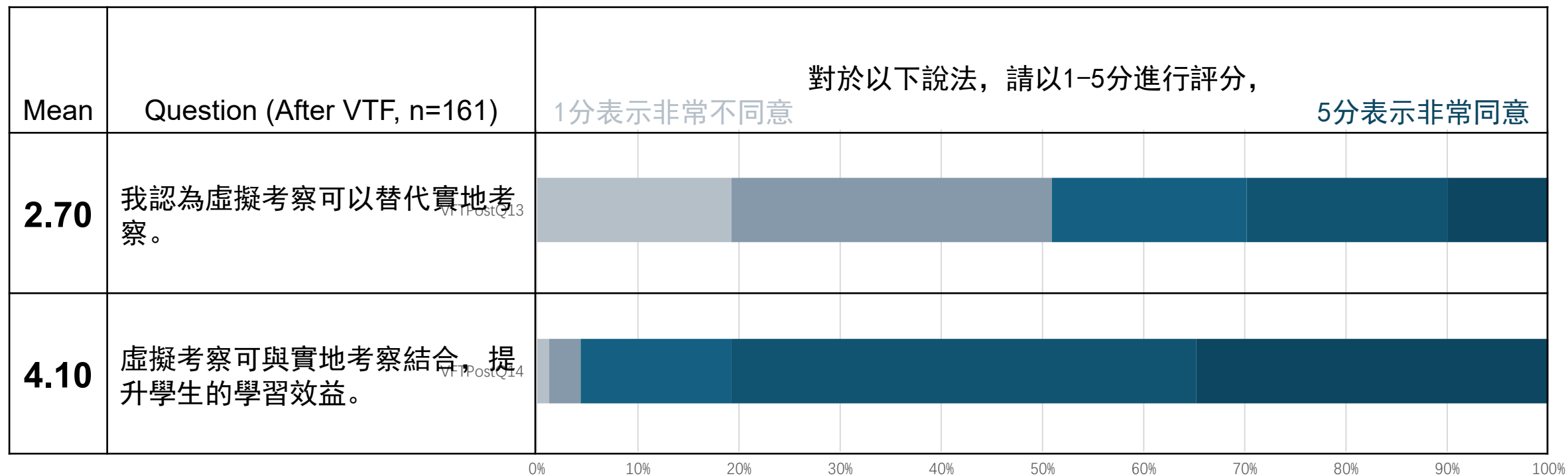
From the Perspective of University Students...



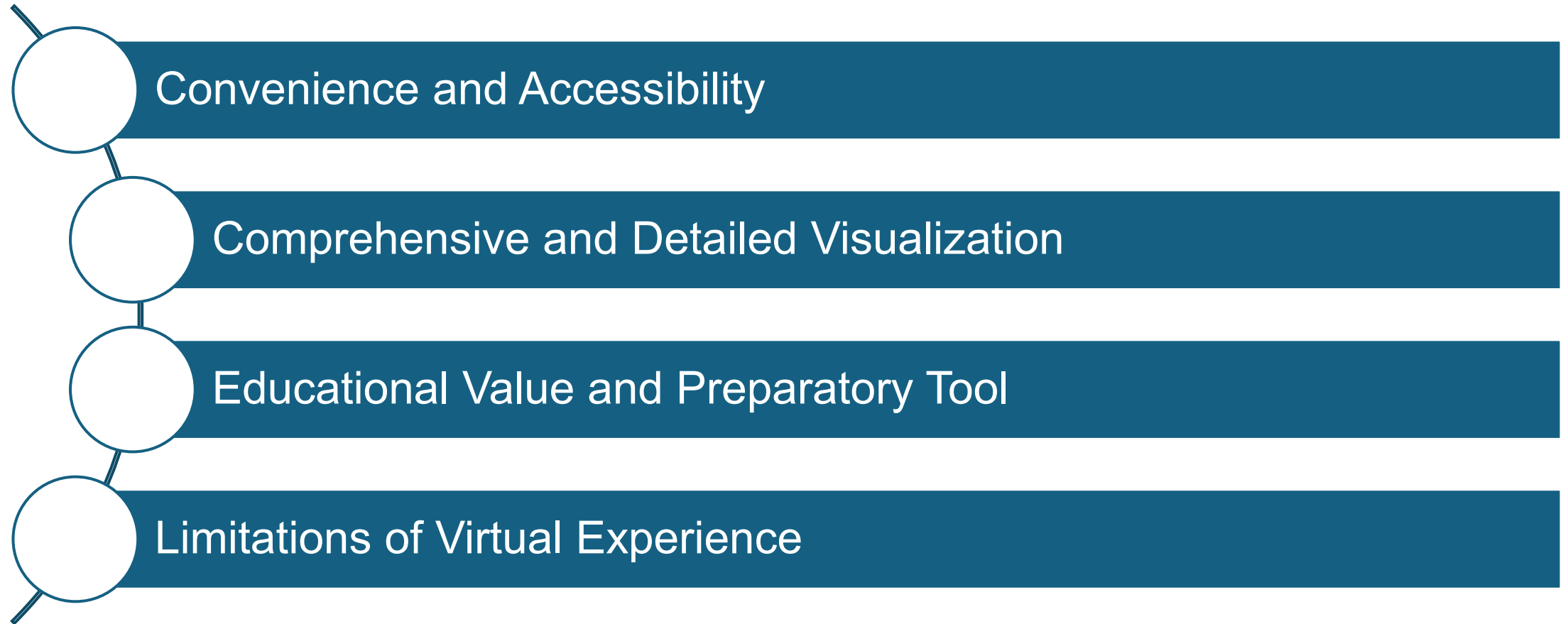
From the Perspective of University Students...



From the Perspective of University Students...



Initial feedbacks



Convenience and Accessibility

便利、可達

- Interviewees appreciated the VR tour's **convenience**, which allowed them to explore **without logistical concerns** etc. The VR format **saves time and resources**, especially for distant or challenging-to-access sites.
 - “不用走路，不限制交通，很方便” (No need to walk, no transportation limitations, very convenient).
 - “足不出戶” (No need to leave home).
 - “节省时间成本” (Saves time cost).
 - “可以多次考察，不用親自到現場” (Can visit multiple times without going on-site).
 - “不受时空限制，可以随时随地进行” (No time-space restrictions, can be done anytime, anywhere).

Comprehensive and Detailed Visualization

全面、
詳盡的可視化

- The **360° views** and **interactive features** enabled detailed observation of specific points, such as the observatory tower. Users appreciated being able to study locations thoroughly and revisit details independently.
 - “360实景” (360-degree view).
 - “全方面的景象都能被呈現” (All-around views can be presented).
 - “可以360°觀察” (Able to observe 360 degrees).
 - “每個地點的細節都能觀察到很細” (Can observe details of each location thoroughly).
 - “可以反复研究细节” (Can repeatedly study the details).

Educational Value and Preparatory Tool

教育價值、
作為準備工具

- The VR experience was seen as beneficial for understanding historical and cultural aspects, serving as an **effective pre-study tool** before physical visits.
 - “可以作为预习，为下次实地考察做准备” (Can be used for pre-study, preparing for the physical visit).
 - “每個地點的細節都能觀察到很細” (Can observe details of each location thoroughly).
 - “可以反复研究细节” (Can repeatedly study the details).
 - “Provide an alternative if a tourist attraction is closed or unavailable. 提供可替代方案”

Limitations of Virtual Experience

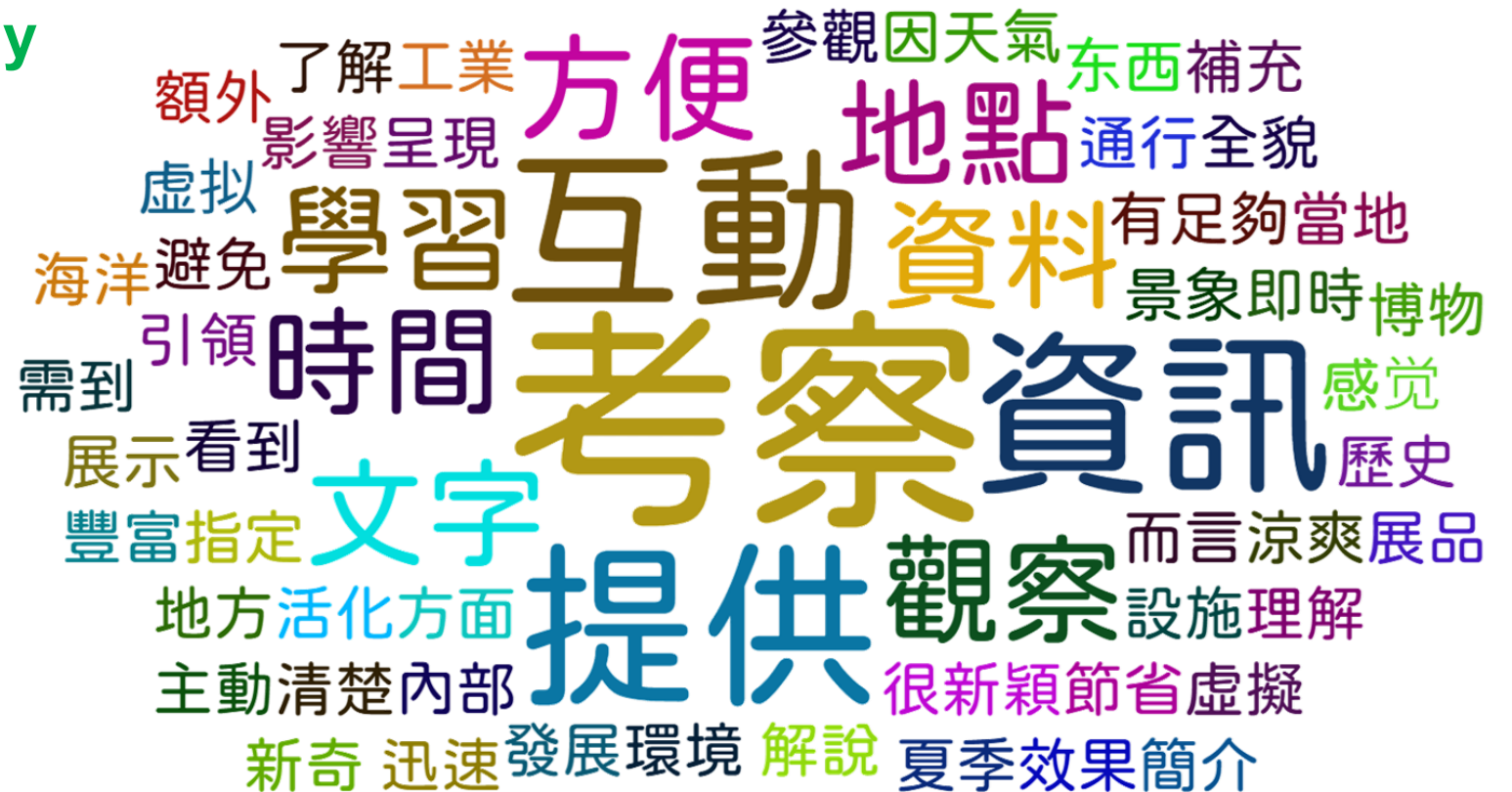
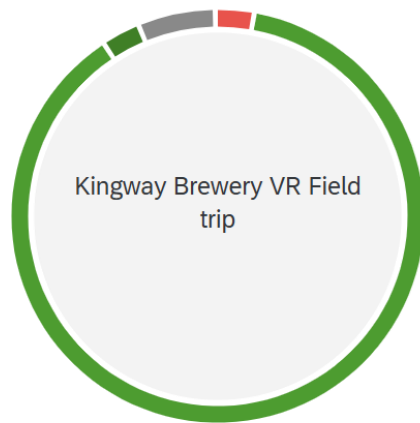
虛擬體驗的限制

- While VR provided a near-real experience, some interviewees noted that it **lacked the sensory depth** of in-person visits, which limited its ability to fully replicate a real field trip.
 - “不够沉浸和互动不足” (Not immersive and lacks interaction).
 - “考察停留在视觉层面，平面的图片无法更深入体验空间层次感” (Limited to visual; images could not deeply convey spatial layers).
 - “虚拟考察可突破时空限制，但有些感受只能通过实地体会” (Virtual tours can overcome time-space limits, but some experiences require physical presence).

My favourite thing about the virtual field trip of the Kingway Brewery in Shenzhen.....

EdUHK20241014

n=33, major in **Geography**

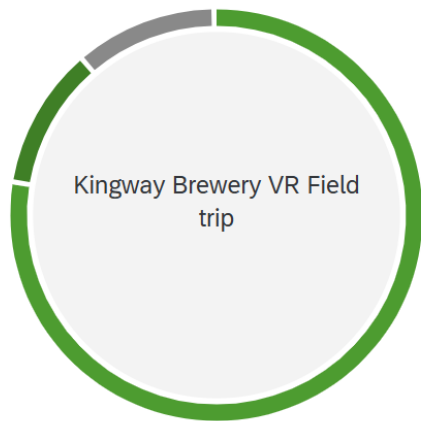


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My favourite thing about the virtual field trip of the Kingway Brewery in Shenzhen.....

HKMU20241016

n=28, major in **Heritage, Tourism**

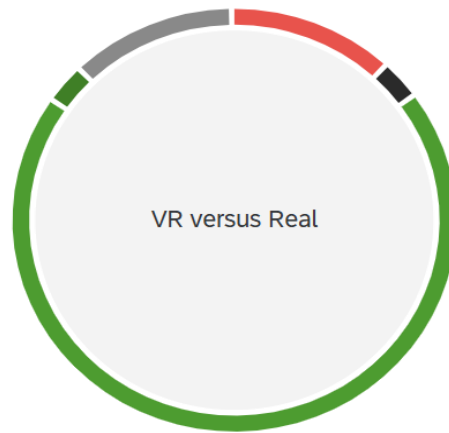


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What **benefits** do you think **virtual field trips** offer that real field trips do not?

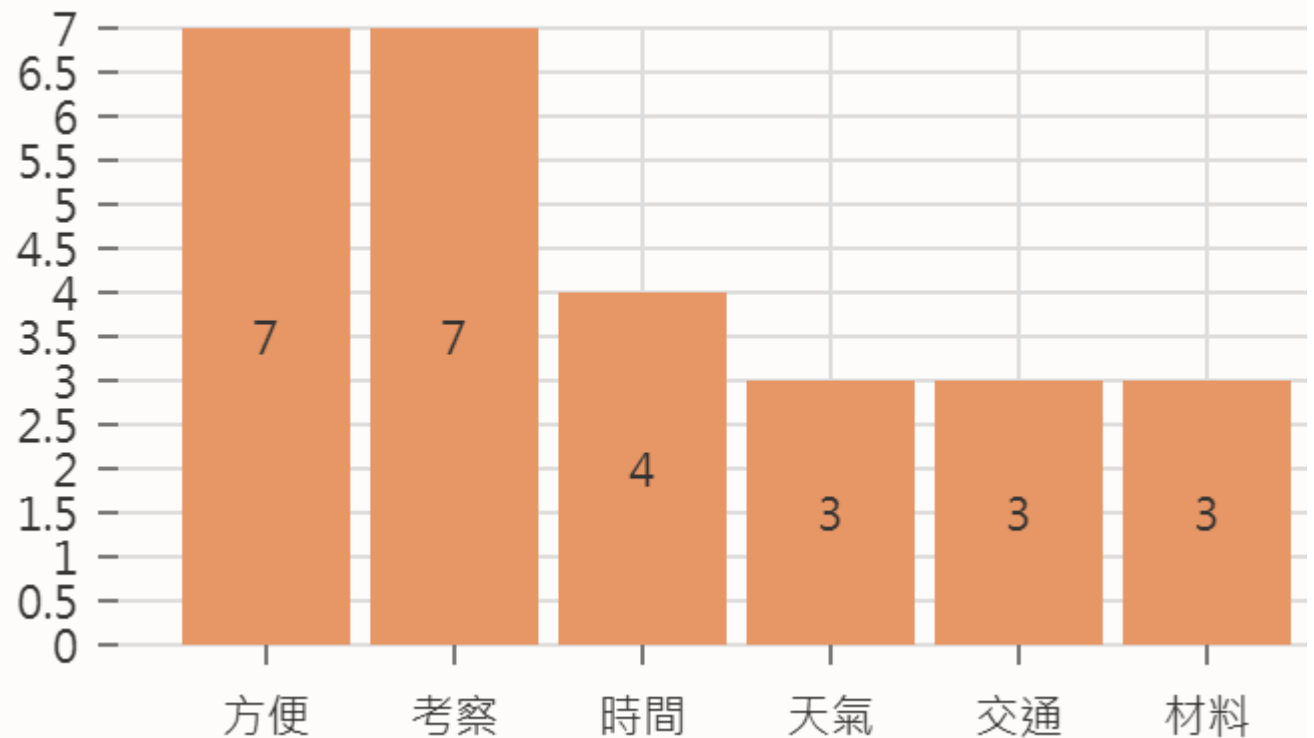
EdUHK20241014

n=33, major in **Geography**



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最常出現的字詞

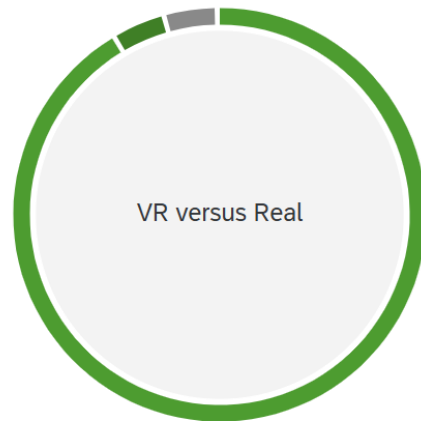


What **benefits** do you think **virtual field trips** offer that real field trips do not?

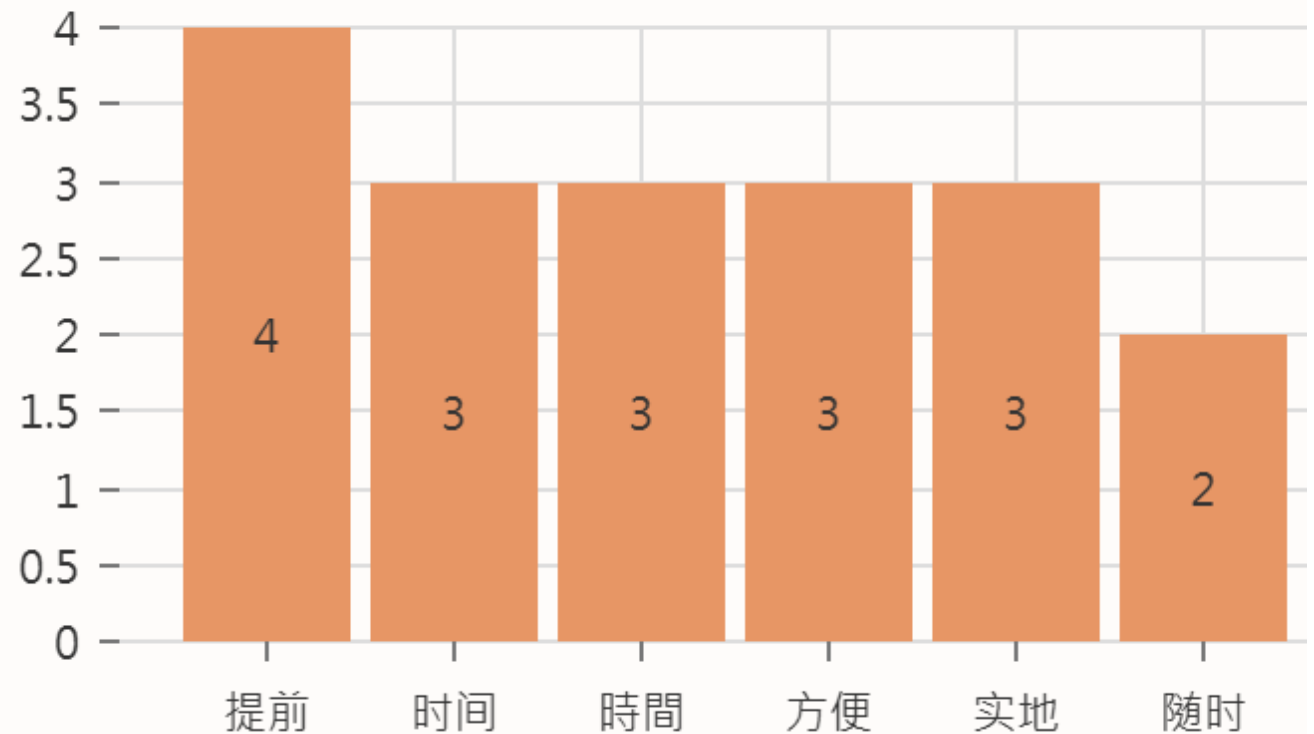
HKMU20241016

n=28,

major in **heritage & tourism**



最常出現的字詞

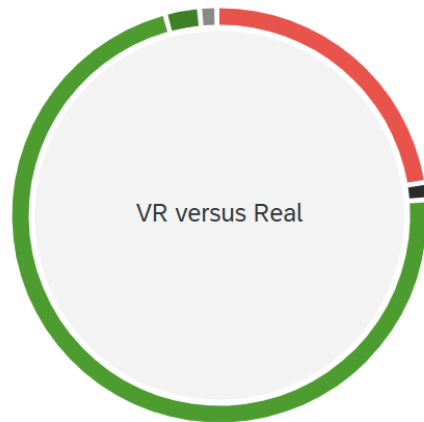


What **benefits** do you think **virtual field trips** offer that real field trips do not?

GDUT20241021-25

n=82,

major in **urban planning, landscape**



最常出現的字詞



Negative comments regarding virtual field trips

EdUHK, major in Geography

- Not immersive and interactive
- 不能用手觸摸建築
- 畫質可能因為經過上載而有所變更

GDUT, major in urban planning, landscape

- 印象感不是很強，很容易會忘記這段經歷，實地考察會發生人與人/跟景觀或建築的互動
- 交流感
- 信息量和體驗不足
- 無法真實感受空間尺度
- 無法得知實地的即時變化
- 考察停留在視覺層面，平面的圖片無法更深入體驗空間層次感，動線固定，無法自由調節
- 沒有感官體驗

What **benefits** do you think **real field trips** offer that virtual field trips do not?

SZPU(63)+GDUT(15)

n=78, major in **Smart Cities Management, Architecture**

最常出現的字詞



Concluding remarks

- Different tools and technologies used in combination to develop virtual field trips
 - VR CAVE provides an immersive experience but requires hardware and software.
 - Webobook is less demanding for facilities while offering a clear visiting route.
 - ArcGIS Story Map is informative for historic geography.
- There are teaching and learning benefits of virtual and real field trips.
- More need to be done to see how these two types of field trips can be used independently or in combination to meet different needs.

A 3D-rendered scene with a white text box and several colorful speech bubbles. The text box is white with black text and a blue underline. The speech bubbles are in shades of blue, teal, and pink, floating in a light blue and white environment. The background is a gradient of light blue and white, with a grey floor.

Comments and
suggestions are
most welcome
