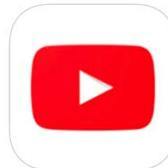


# Introducing Virtual Reality (VR) Techniques into the Learning and Teaching of Physical Geography in Hong Kong Secondary Schools

## SECTION 1

- 步驟一：將你手機連接 WIFI NETWORK

- 步驟二：下載 YOUTUBE APP



- 步驟三：下載 QR CODE READER APP

QR Code Reader from **Kaywa**



## 步驟四：下載以下 VR APPs

**Google Streetview**



**Discovery VR**



**Within - VR (Virtual Reality)**



**Google Cardboard**



**Google Expeditions**



Centre for Learning Science and Technologies (CLST)  
The Chinese University of Hong Kong



# Introducing Virtual Reality (VR) Techniques into the Learning and Teaching of Physical Geography in Hong Kong Secondary Schools



Centre for Learning Sciences and Technologies  
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教育遊戲 Game-based Learning

網誌教學 Blog-based Learning

移動學習 Mobile Learning

翻轉教學 Flipped Learning

自主學習 Self-directed Learning

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# Objectives

This course aims to introduce to teachers basic techniques of developing **virtual fieldwork** resources via the use of **virtual reality** (VR) in the learning and teaching of **physical geography** at both junior and senior secondary levels.

After finishing the course, participants should be able to:

- a) master the basic skills in **capturing** the field environment on **360 degree video** using appropriate tools (including 360 degree camera);

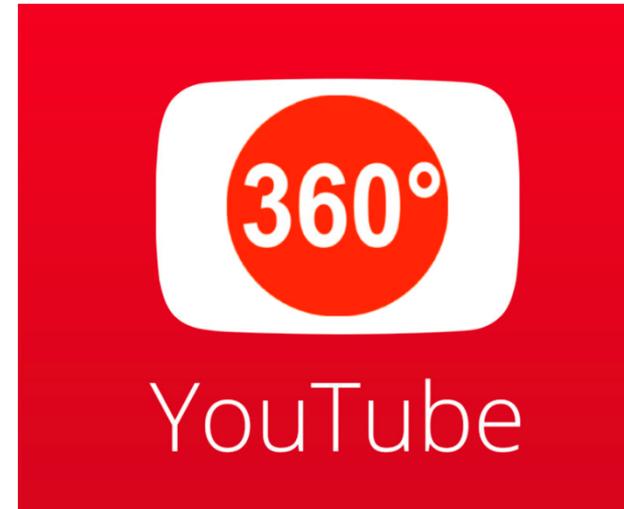
# Objectives

- b) upload the 360 degree video onto the school's server / website / learning management system ready for downloading to students' VR viewing devices
- c) plan and design Geography lessons for implementing virtual fieldwork in classroom environment (including the use of appropriate e-tools and apps).

Capture 拍攝

Cloud 儲存

View 觀看



# Session 1

- Brief introduction to the **theories** and **a field trip** that focuses on capturing 360 videos of actual environment.
- Both **technical** and **pedagogical** skills will be addressed.
- Participants are expected to master the basic skills in **capturing** the field environment on 360 degree video using appropriate tools (including 360 degree camera);

# Session 1

1. The **Role and Importance** of Field Trip in the Geography Curriculum
2. The **Field Trip** (in CUHK)
3. Discussion of **Assignment**

# Session 2

- This session focuses on the **post-processing** of 360 videos and how to **design meaningful VR learning experience for geography lessons**
- Several pioneering Apps and platforms will also be discussed intensively.
- For example, the **EduVenture-VR Project**, based on the EduVenture platform which widely adopted in K-12 of HK, that enables participants to access the resource bank hosted by CUHK.
- Participants thus have the chance of learning and trying out the latest VR technologies.

# Session 2

1. Discussion and feedback on assignment
2. Introduction to the essential concepts of the VR technologies
3. Introduction to post-production software
4. Discussion on the techniques of delivering the 360 videos onto an online platform (e.g. YouTube)
5. Introduction to apps and software for implementing virtual fieldwork in classroom environment
6. Discussion on turning VR materials into Geography learning and teaching activities
7. Introduction to alternatives of VR resources
8. Conclusion, discussion, and Q&A

# Session 1

1. The **Role and Importance** of Field Trip in the Geography Curriculum
2. The Field Trip (in CUHK)
3. Discussion of Assignment

## 討論

1. 平均一個學年會進行多少次戶外考察？
2. 進行戶外考察地點多位於城市/ 郊區？當中考慮的原因
3. 有否使用 fieldwork center 的服務？當中考慮的原因
4. 你認為你戶外考察是否具備效能？
5. 進行戶外考察最大的困難是？
6. 有否借助科技去加強考察效能的經驗？具體操作如何？

## Session 1:

# 1. The Role and Importance of Field Trip in the Geography Curriculum

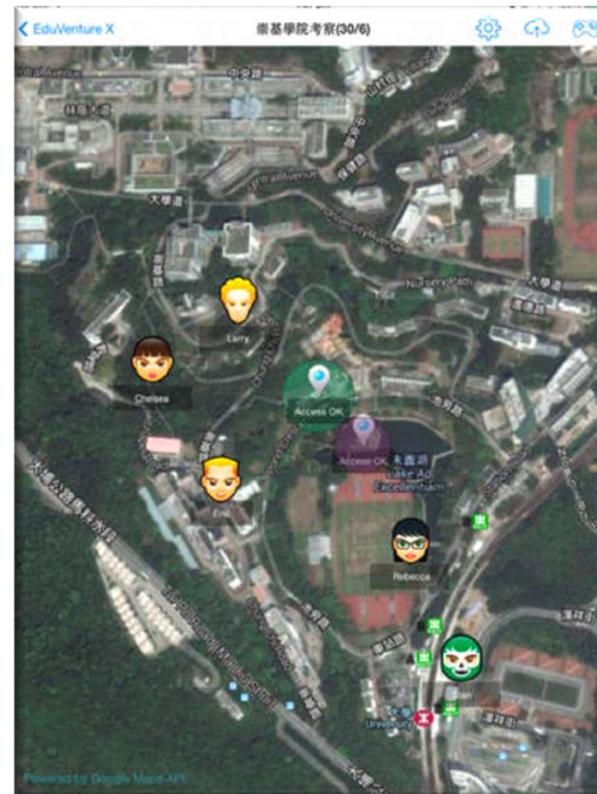
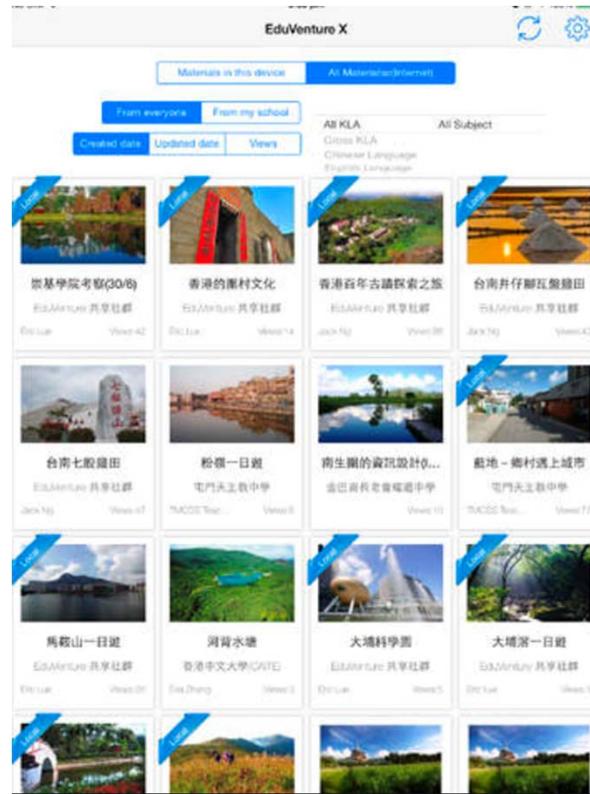
1. 背景資料 : EduVenture®
2. 背景資料 : EduVenture® VR
3. 甚麼是虛擬實境 (VR) ?
4. 為何使用EduVenture® VR教學 ?
5. 戶外學習在地理課程中的角色與重要性
6. 資訊科技教育策略
7. 戶外考察的主要類別
8. 地理科實施戶外**考察困難**
9. 實施野外教學常遇的問題
10. 虛擬 vs 真實野外考察
11. 虛擬考察的優點

## 1.1 EduVenture

Two years ago, the Centre for Learning Sciences and Technologies (CLST), The Chinese University of Hong Kong (CUHK) launched the **EduVenture®** learning system, which has been well received by students and teachers. CLST has recently developed **EduVenture® VR (Virtual Reality)**, a sub-system of EduVenture®.



# 1.1 EduVenture



## 1.2 EduVenture VR

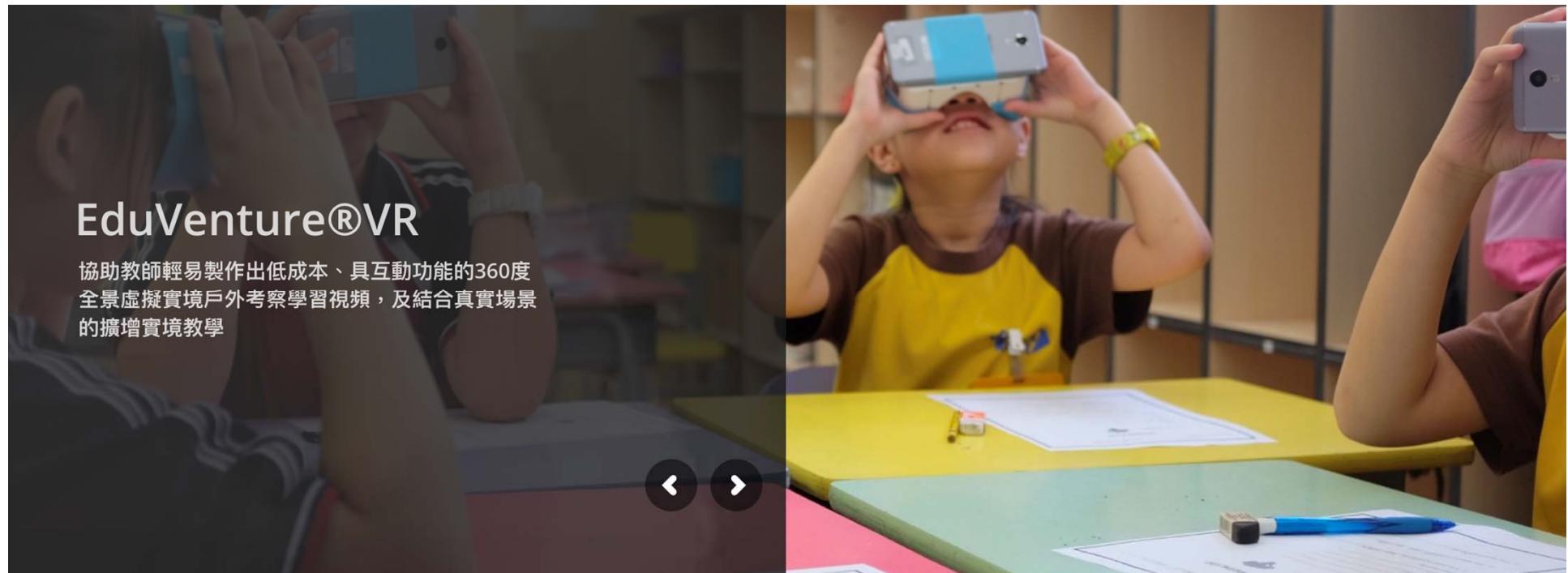
This is a user-friendly web-based composer for teachers to produce **VR and AR (Augmented Reality)**-based immersive fieldtrips.

Through this system, students of limited means or with special needs can also experience real-life fieldtrips which would otherwise be costly, difficult or impractical.

The image shows a composite view. On the left, a screenshot of the EduVenture®VR website homepage is displayed. It features the CLSB logo, the EduVenture®VR logo, and a banner with the text "EduVenture®VR" and "協助教師輕易製作出低成本、具互動功能的360度全景虛擬實境戶外考察學習視頻，及結合真實場景的擴增實境教學". On the right, a close-up photograph shows a young child wearing a white and blue VR headset, looking through it with hands holding the sides.

## 1.2 EduVenture VR

EduVenture® VR adopts affordable interactive 360° spherical VR and AR technologies for teachers to produce VR-based immersive fieldtrip learning videos that capture real-world environments layered with AR-based pedagogic scaffolds.



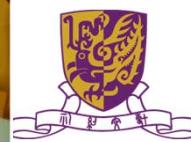
## 1.2 EduVenture VR



## 1.3 What is Virtual Reality?(VR) ?

Virtual reality is the term used to describe a **three-dimensional**, computer generated environment which can be **explored** and **interacted** with by a person.

That person becomes part of this virtual world or is **immersed** within this environment and whilst there, is able to manipulate objects or perform a series of actions.



## 1.4 Advantages in using EduVenture® VR

1. There are various **advantages** in using EduVenture® VR to produce a virtual fieldtrip. For example, some real-life fieldtrips are **costly, difficult or impractical**, like overseas fieldtrips or a polar expedition. In the virtual world, they become feasible.
  
2. EduVenture® VR brings significant meaning to the target learners **with disabilities or special needs** because a virtual field trip provides more opportunities to understand the world through rather **realistic experiences** which are better than the 2D book or TV.

## 1.4 Advantages in using EduVenture® VR

3. It allows teachers to integrate learning and teaching content into the VR world, making classroom activities a lot more **enjoyable** and more **flexible** and this can effectively strengthen students' **learning motivation**.
  
4. A community and blog has been built for EduVenture®, where teachers can share all resources and tips in a resource bank for the community. EduVenture® VR also has its own **resourceful community** for the same purpose

## 1.4 Advantages in using EduVenture® VR

5. In addition, adopting this system is **economically** viable. Students can experience the virtual fieldtrip simply by using a **low-cost Google Cardboard**.



## 1.5 戶外學習在地理課程中的角色與重要性

對於學習而言，只有在真正的走出教室，利用戶外的實地考察活動才能提供學生認識周遭環境的機會，讓學生在戶外**親身體驗**，進行**親自動手做**和**探究式的學習**，才能落實現實世界中學習的統特質，也才能真正達成**統整概念**的建立 (Landis 1996)

只有在戶外環境下，透過觀察的技巧，學生能夠看見、聽見、感覺，以一種**有意義**和活生生的經驗來學習，很自然的將學習和科目間統整在一起，可以增加學生對整個概念的了解，進一步**將學科知識在現實生活中相互印證**

## 1.5 戶外學習在地理課程中的角色與重要性

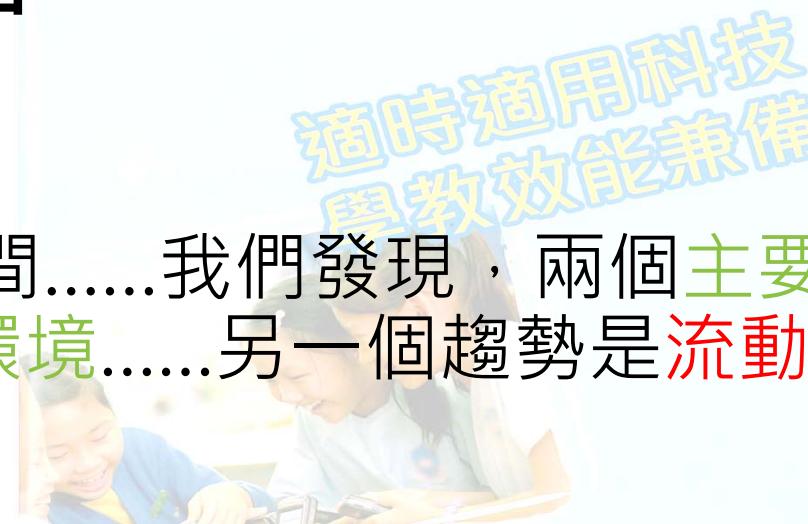
戶外教學所提供的學習經驗，不會讓學生被限制在某一個學科課題的學習上，反而可以在完整的脈絡中全面看到一個**完整的學科**，結果會使學科變得更有意義、更有趣，而這正是透過「野外考察」的方式學習時才能達成的統整學習。

「戶外教學」不止對地理及生物等地球科學重要，對不同學習領域都息息相關，所以「戶外教學」應該要落實到「**每所學校**」的「**每個班級**」的「**每個同學**」。

# 1.6 資訊科技教育策略

## 第三個資訊科技教育策略

「資訊科技有無限發展空間.....我們發現，兩個主要發展趨勢正在影響着學習環境.....另一個趨勢是流動學習。」



這種學習模式一般泛指在教學上應用流動科技，以便「隨時隨地學習」.....包括課室回應系統、配備標準軟件的手提電腦及平板電腦、便攜式電子白板、發送至手提電話的文字訊息提示、利用無線裝置進行小組學習、多媒體博物館導賞，以及透過手提電話隨時隨地進行學習.....強調.....多元化的學習模式。」(教育局，2007)

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# 1.6 資訊科技教育策略

## 第四個資訊科技教育策略

- 流動電腦裝置的普及引領我們進入後電腦時代。流動科技不單能讓學生隨時隨地從互聯網上得到各種學習資源，也能促進師生間的溝通及互動。
- 學生能便捷地與同儕及老師分享知識及交流意見，而教師亦可扮演顧問的角色，與學生建立學習夥伴的關係。當資訊科技衍生的學習機會增加，學生會逐漸培養對個人學習負責的態度及習慣，進而成為自主學習者。

# 1.6 資訊科技教育策略

## 第四個資訊科技教育策略

- 後個人電腦時代是一種市場趨勢，大部份用家最後會選用流動裝置如智能電話及平板電腦等
- 取代個人電腦成為首要的電腦裝置。這些裝置著重**便攜和連接性**，包括**雲端服務**的使用、更專門的**應用程式**以執行任務，以及在多種裝置之間同步而無縫地處理資訊。(Isaacson, 2011)

# 1.6 資訊科技教育策略

## 第四個資訊科技教育策略

### 自主學習及共通能力

- 廣義而言，自主學習涵蓋一系列學習過程和學習活動，學生可**自發設計及負責自己的學習經歷**，也能透過不同渠道，隨時隨地選擇、管理及評估屬於自己的學習。
- 自主學習有助**加強學生的學習動機**，培養他們對自學的正面態度，並能提升學生的自尊、批判思考能力、解難能力和 other 高階思考能力。

# 1.6 資訊科技教育策略

## 第四個資訊科技教育策略

在應用資訊科技的情況下，自主學習大致有四種特徵

- 學習者的控制；
- 學習者的自我管理；
- 個人自主；及
- 真正學習自主 (Tendency of self-learning)：  
在正規學習環境以外，對學習的追求。

## 1.7 戶外考察的主要類別

戶外考察主要有哪幾類？

- 實地導賞 (Field Excursion)
- 驗證假設的實地研究 (Hypothesis Testing)
- 探究式實地考察 (Enquiry Fieldwork)
- 發現式實地考察 (Discovery Fieldwork)
- 感官實地考察 (Sensory Fieldwork)

上述的策略或取向並不是互相排斥的。所以教師在設計實地考察時，應該先考慮課程的要求及學生的需要、興趣和能力，才決定以上述任何**一種或混合多種**取向來設計和組織地理實地考察。

# 戶外考察



# 戶外考察



# 戶外考察



# 戶外考察



## 1.8 地理科實施戶外考察的困難

- (1) 時間安排不易
- (2) 安全顧慮
- (3) 學校行政無法密切配合
- (4) 教師專業能力欠缺
- (5) 經費不足；
- (6) 缺乏可參考的路線規劃資料

楊萬全(1987):國中地理面面觀，地理教育，13:17-20

## 1.8 Reasons teachers give for not taking field trips

- ① Teaching schedule which is already too full
- ② too many pupils in class
- ③ lack of time for planning
- ④ problems with liability
- ⑤ lack of transportation
- ⑥ lack of funding
- ⑦ lack of resource people for assistance
- ⑧ failure of school to assume trip risks
- ⑨ too much red tape
- ⑩ the inability of some tour guides to teach and engage youngsters

Tuthill, G., and Klemm, E. B., (2002). Virtual field trips: alternatives to actual field trips, International Journal of Instructional Media, 29(4): 453-468.

## 1.8 地理科實施戶外考察的困難

- (1) 課程進度已太滿
- (2) 學生人數過多
- (3) 缺乏規劃準備時間
- (4) 教師需擔負責任的問題
- (5) 缺乏交通工具
- (6) 缺乏經費
- (7) 缺乏協助的人手
- (8) 缺乏學校出面擔負意外責任
- (9) 太多複雜的行政程序
- (10) 若干嚮導不懂如何教導學童或和學童打成一片

Tuthill, G., and Klemm, E. B., (2002). Virtual field trips: alternatives to actual field trips, International Journal of Instructional Media, 29(4): 453-468.

## 1.9 實施野外教學常遇的問題

1. 由於對實察**地區陌生感**，使得大量的野外資訊讓學生應接不暇，難以在短時間內吸收(Falk et. al., 1978)
2. **班級人數眾多**，導致上下車和集合時間拖長，減低學生注意力，缺乏效率(Kent et. al., 1997)
3. 通常教師帶領學生走到一個實察定點才集合講述，遲到的學生往往沒聽到開頭的重點
4. 學生難以同時進行觀察、聽解說和記錄筆記

## 1.9 實施野外教學常遇的問題

5. 在野外的天氣變化無法控制
6. 單獨一次的考察難以看出環境變遷 (Tuthill 和 Klemm, 2002)
7. 學習似乎伴隨著實察活動結束後即停止，對野外收集的資料少有後續的應用 (Bellan 和 Scheurman, 1998)

## 1.10 虛擬野外考察 vs 真實野外考察

- 若要用電腦中虛擬的野外實察來「完全取代」實地的地理實察，恐怕大部分的地理學者無法同意
- 高度複雜的真實世界隱含著大量的地理資訊，現今的資訊技術僅能透過**簡化**的方式來**模擬**，已喪失許多資訊的**真實性**、**完整性**或**即時性**；
- 需要在野外利用實地操作的**儀器**(如 GPS)，也較難在室內訓練使用;更遑論**親身體驗**工廠違法排放污水的惡臭、壯闊地景所帶來心靈的震撼、或是微微海風吹拂時感受的身心舒暢。

## 1.10 虛擬野外考察 vs 真實野外考察

- 虛擬考察最大的價值應不在於「取代」傳統的地理 實察教學，而是在於運用 IT 「加強」傳統地理 實察教學的成效
- Bellan 和 Scheurman(1998)即建議單獨實施傳統 的野外 實察或虛擬考察 都可能會浪費大量時間，  
兩者互相搭配則是一種強而有力的教學方法。

## 1.11 虛擬考察

- Woerner (1999)：虛擬考察定義為「不必實際旅行到該定點的考察」
- Wood 等人(1997) 將虛擬野外課程 (virtual field course, VFC) 定義為「一種以電腦為基礎的資源，可達成若干實際野外課程的教學目標」
- Ritter(1998)認為虛擬考察是一種「線上活動」，學生在線上使用 觀察和分析技巧，得到類似於實際野外實察的學習經驗

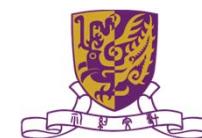
## 1.11 虛擬考察

- Stainfield et. al., (2000)：「目前的虛擬考察不是要製作一個真正的虛擬實境，那種讓使用者能完全沈浸在電腦所製作的互動式虛擬環境中，使用像資料手套和感應套裝等輸入設備，以及頭盔式顯示器和環場音效系統等輸出設備；
- 反之，虛擬考察只是企圖讓使用者的手有更進一步的自主權，能不必身歷其境就能進行觀察，或是順手就有講解者，最好能透過參與、探索、分析和技能的學習與測驗，與虛擬的環境產生交互作用」

## 1.11 虛擬考察的優點

- 天氣因素不再是障礙，並且可以無數次地反覆實察，學生可以用實地考察所不可能採取的各種角度來觀察地形
- 用各種不同方式來展示地形，包括從地面拍攝的照片、衛星影像、線畫圖、航空照片或電子地圖等；利用數值高程模型(digital elevation model, DEM)所製作的模擬飛行動畫則能讓學生進入無法到達的地區
- 對於無法進行實察的肢體殘障學生而言，這是一個絕佳的替代品
- 虛擬考察可以相互連結，讓學生進行不同地點的比較

Nanny, 1990



## 1.11 虛擬考察的優點

- 瀏覽不同地點的虛擬考察有助於強化同一個觀點
- 進行實地考察前使用虛擬考察作為預覽或準備工具的好處，虛擬考察可以在每個景點的背後加入許多故事，於是在實地野外實察時就不必一一講述
- 在任務報告和成果討論階段部分採用虛擬考察可回顧和強化野外的學習 (Tuthill 和 Klemm, 2002)

## 1.11 虛擬考察的缺點

- 過度強調虛擬考察的優點或採用虛擬考察來完全取代傳統地理野外實察，則可能導致學習成效不彰
- 學生擁有較多的學習主動權，而教師相對缺乏對學生學習歷程有所控制時，學生可能傾向於將虛擬考察當作「線上遊戲」，只想追求聲光刺激
- 教師也可能貪圖網路上現成虛擬考察的便利，因而疏於準備教材，只是藉由拼湊網路上的虛擬考察來減輕備課負擔(Bellan 和 Scheurman, 1998);

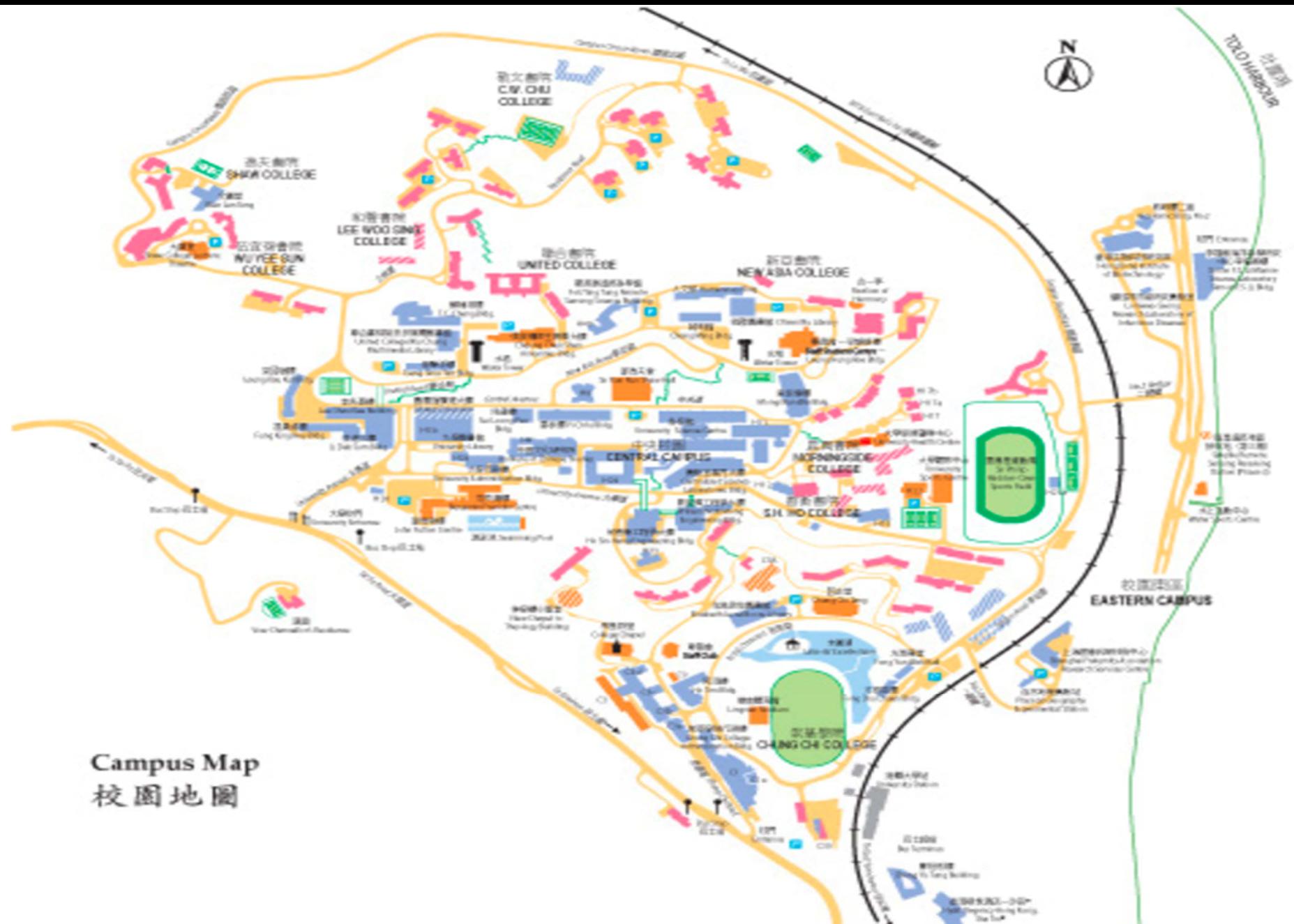
## 1.11 虛擬考察的缺點

- 不是每個學生家庭都擁有電腦和上網設備，各家庭的網路頻寬也有所差異，因此教師在設計家庭作業或線上教材時必須考慮**數位落差(digital divide)**的問題
- 教師要自行製作**虛擬考察**，需具備基本網頁編輯和**多媒體製作的能力**，許多教師仍需要這方面的**教育訓練(Tuthill 和 Klemm, 2002 )**。

# Session 1

1. The Role and Importance of Field Trip in the Geography Curriculum
2. The Field Trip (in CUHK)
3. Discussion of Assignment

# The Chinese University of Hong Kong (CUHK)



# Chung Chi College



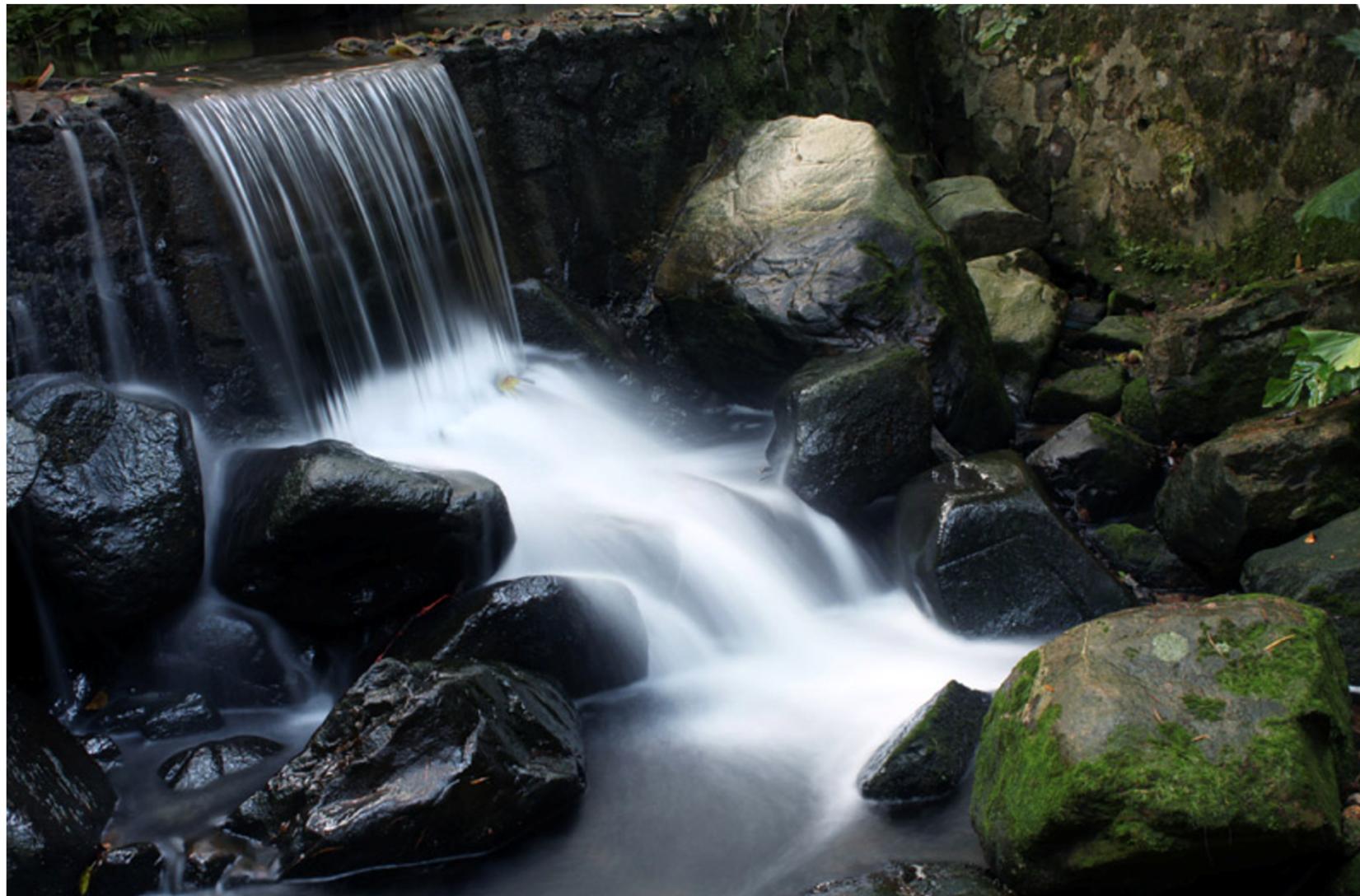
# HotSpot 1: HoTim Building



## HotSpot 2: 小橋流水 A Small Arch Bridge



## HotSpot 2: 小橋流水 A Small Arch Bridge



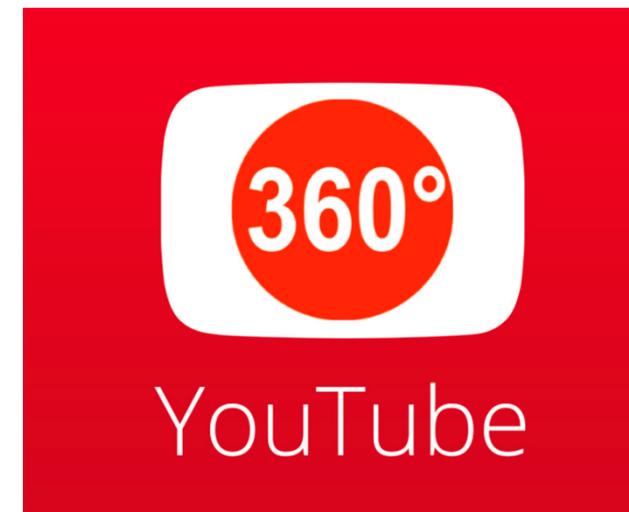
## HotSpot 3 CUHK CC College Lake Ad Excellentiam Lion Pavilion 香港中文大學崇基學院未圓湖獅子亭



Capture 拍攝

Cloud 儲存

View 觀看



# Filming Plan and Preparation

- Route planning and how to optimize the route
- Time management
- Film duration management

品牌	LG	Ricoh	Ricoh	Samsung 58
機型	360 CAM	Theta S	Theta M15	Gear 360
照片				
建議售價	台幣\$8990	台幣\$13900	台幣\$11900	399.99 美元
鏡頭	雙廣角魚眼鏡頭(206°)	雙魚眼鏡頭	雙魚眼鏡頭(180°)	雙魚眼鏡頭(195°)
動態畫素	1300萬	1200萬	640萬	1500萬
影片規格	2560*1440(2K)	1920 x1080(FHD)	1080p	3840 x 1920(4K)
靜態畫素	1600萬	1400萬	1200萬	3000萬
視訊格式	MP4 / H.264	MP4 / H.264	MOV	MP4 / H.265
光圈	f1.8	f2.0	?	f2.0
電池	1200mAh	?(不可換)	?(不可換)	1350mAh
防水	N/A	N/A	N/A	IP53
內建記憶體	4GB	8GB	4GB	N/A
記憶卡	可擴充(最高2TB)	無	無	可擴充(最高128GB)
無線	藍牙/WiFi	WiFi	WiFi	藍牙/WiFi/NFC
USB	USB Type C	USB 2.0	USB 2.0	USB 2.0
尺寸	97 x 40 x 25 mm	130x44x22.8 mm	129x42x22.8mm	66.7x56.2x60 mm
重量	76.7克	125克	95克	153克
麥克風	3	2	2	2

# RICOH Theta S



Live Streaming



# RICOH Theta S



Mass Storage



# RICOH Theta S



**Self-Timer**





# 360-DEGREE Photo Capturing Skills

- Composition of picture
- Device levelling
- Lighting techniques (sunlight, weak light, halogen light, etc.)
- The Dynamic Range Theory and its application

# 360-DEGREE Video Capturing Skills

How to choose the **right filming spot** by considering:

- Accessibility and Safety
- Illumination
- Points of interest

Voice Recording Techniques:

- Camera **Internal** Microphone Recording (Pros and Cons)
- **External** Microphone Recording (Pros and Cons)

# Instructional Design and Implementation of 360-DEGREE Videos

- Camera-speaking techniques
- How to motivate students
- How to design interactive activities
- Strategic pauses
- How to make good use of the environment to achieve learning goals
- Promoting students' collaboration and interaction
- The Inquiry-based Learning Approaches
- How a long video should be divided to fit students' expectation
- How to cater students' individual learning differences.



THETA

## RICOH THETA S - 使用說明書

### 功能表清單

- ▶ 準備
- ▶ 拍攝靜態圖像
- ▶ 拍攝視訊
- ▶ 即時串流
- ▶ 使用智慧型手機觀看和分享
- ▶ 使用電腦觀看和分享
- ▶ 變更設定
- ▶ 故障檢修
- ▶ 其他資訊

本使用說明書詳細說明如何使用 RICOH THETA S。

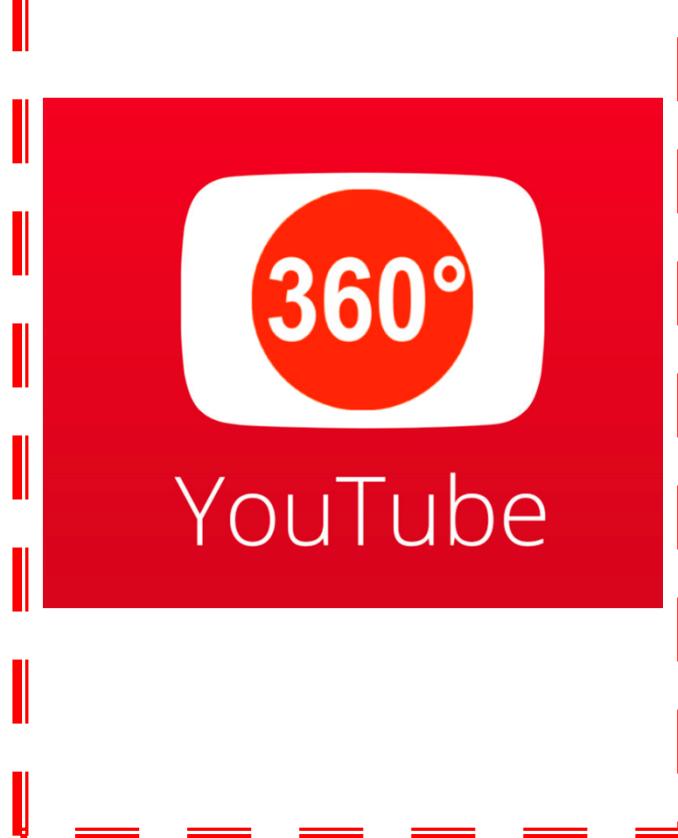
- 本說明書的內容及圖像可能與實際設備的內容和圖像有所不同，具體取決於應用程式或韌體版本。
- 在使用前請將相機裝置韌體更新至最新版本。欲了解如何將相機裝置更新至最新版本，請參閱下方資訊。  
[https://theta360.com/ct/support/manual/s/content/pc/pc\\_09.html](https://theta360.com/ct/support/manual/s/content/pc/pc_09.html)  
可至下方連結查看先前的韌體版本。  
<https://theta360.com/ct/support/download/firmware/s/>
- 本文件中智慧型手機應用程式的螢幕擷取畫面來自 RICOH THETA S for iPhone。可能與 RICOH THETA S for Android 有所不同。  
\*iOS 應用程式與 Android 應用程式提供的功能存在差異。

<https://theta360.com/ct/support/manual/s/index.html>

Capture 拍攝



Cloud 儲存



View 觀看



# STEP 1 : Create a Google account

## Create your Google Account

One account is all you need  
A single username and password gets you into everything Google.



Take it all with you  
Switch between devices, and pick up wherever you left off.



**Name**  
 First  Last

**Choose your username**  
 @gmail.com  
[I prefer to use my current email address](#)

**Create a password**

**Confirm your password**

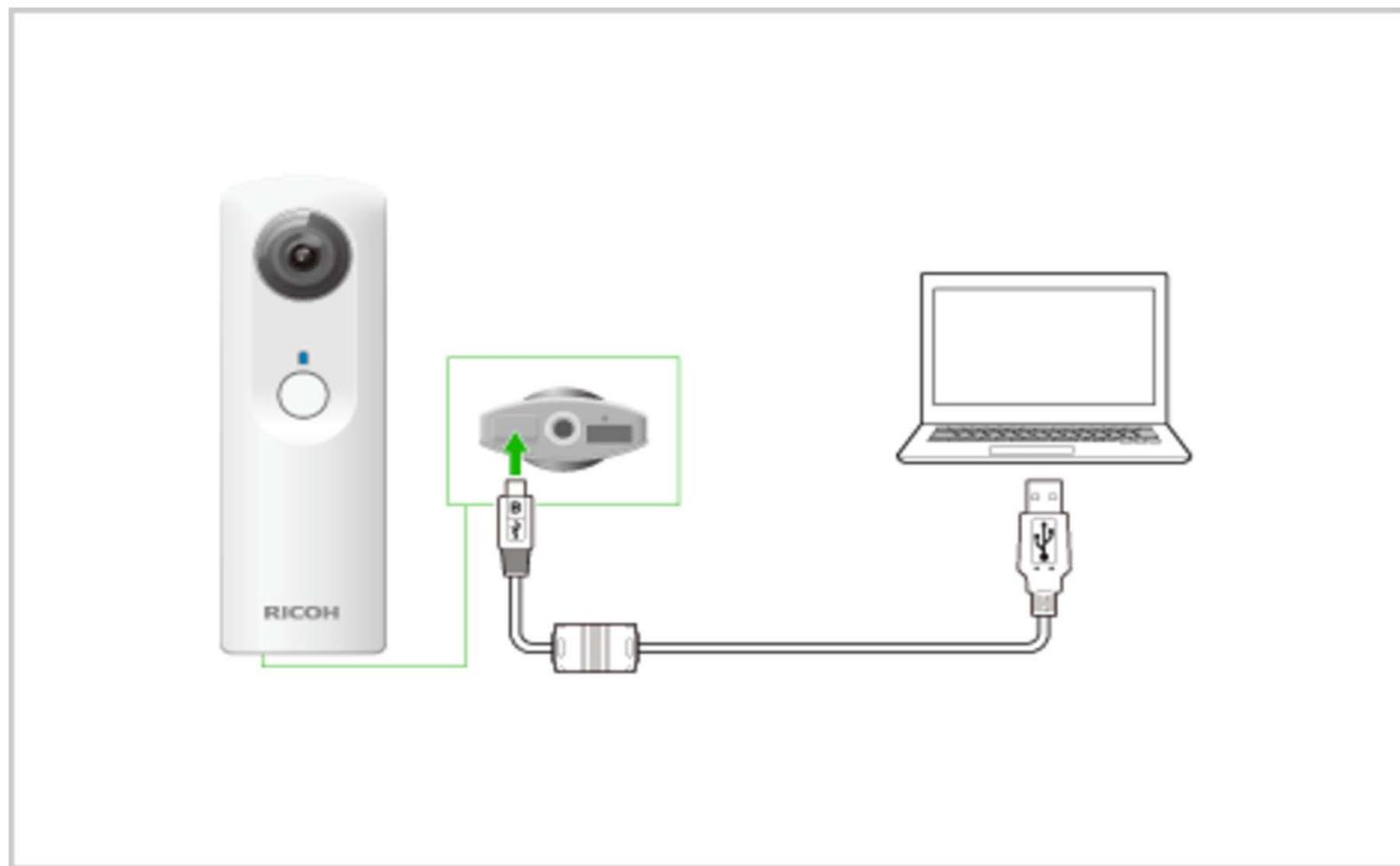
**Birthday**  
Month  Day  Year

**Gender**  
 I am...

**Mobile phone**  
 

**Your current email address**

## STEP2: Capture a video using RICOH THETA and import it to the computer



## STEP3

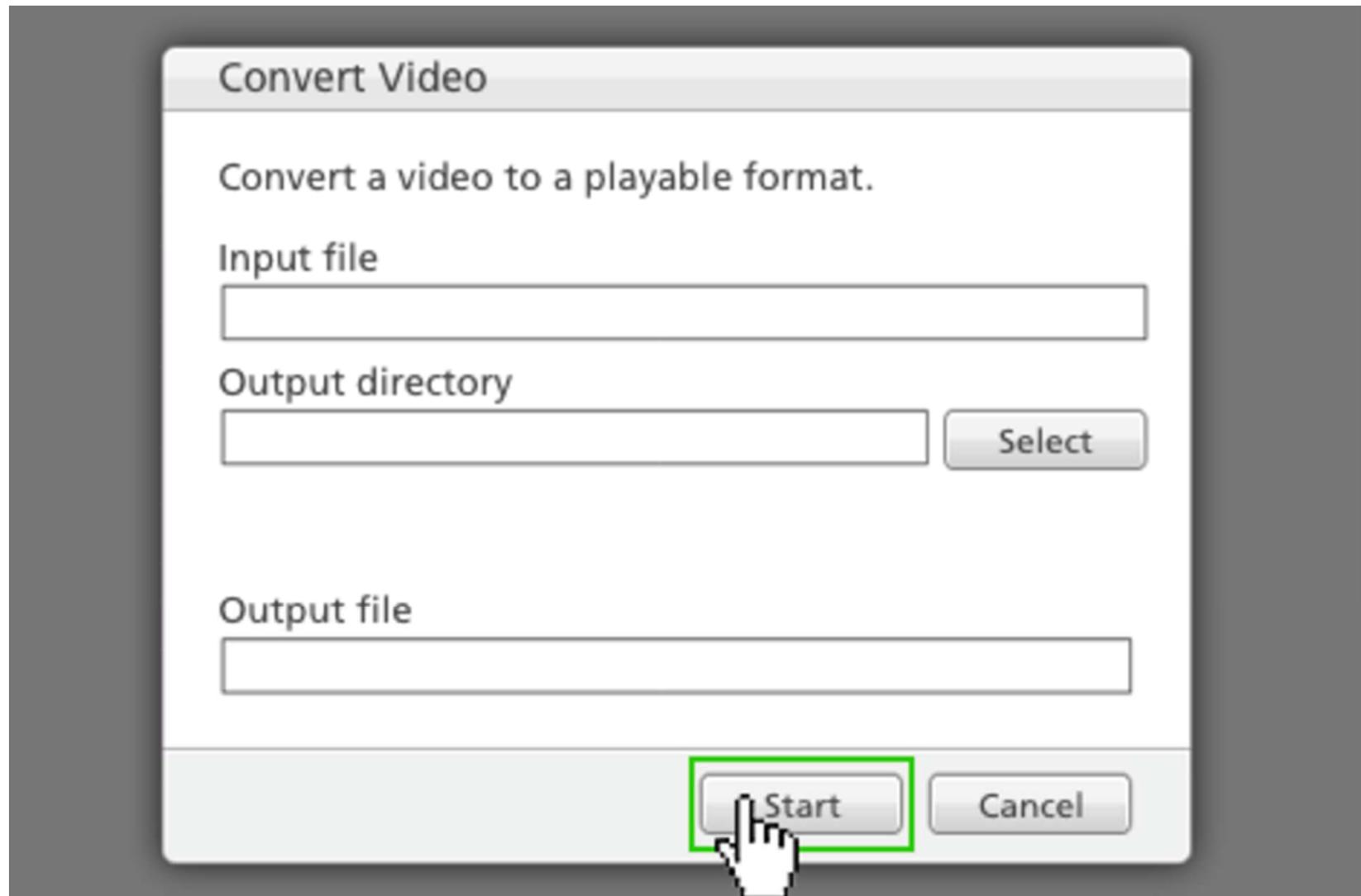
Launch RICOH THETA for PC (a computer application),  
and drag and drop the imported video (MOV file)



Drag & drop the spherical image

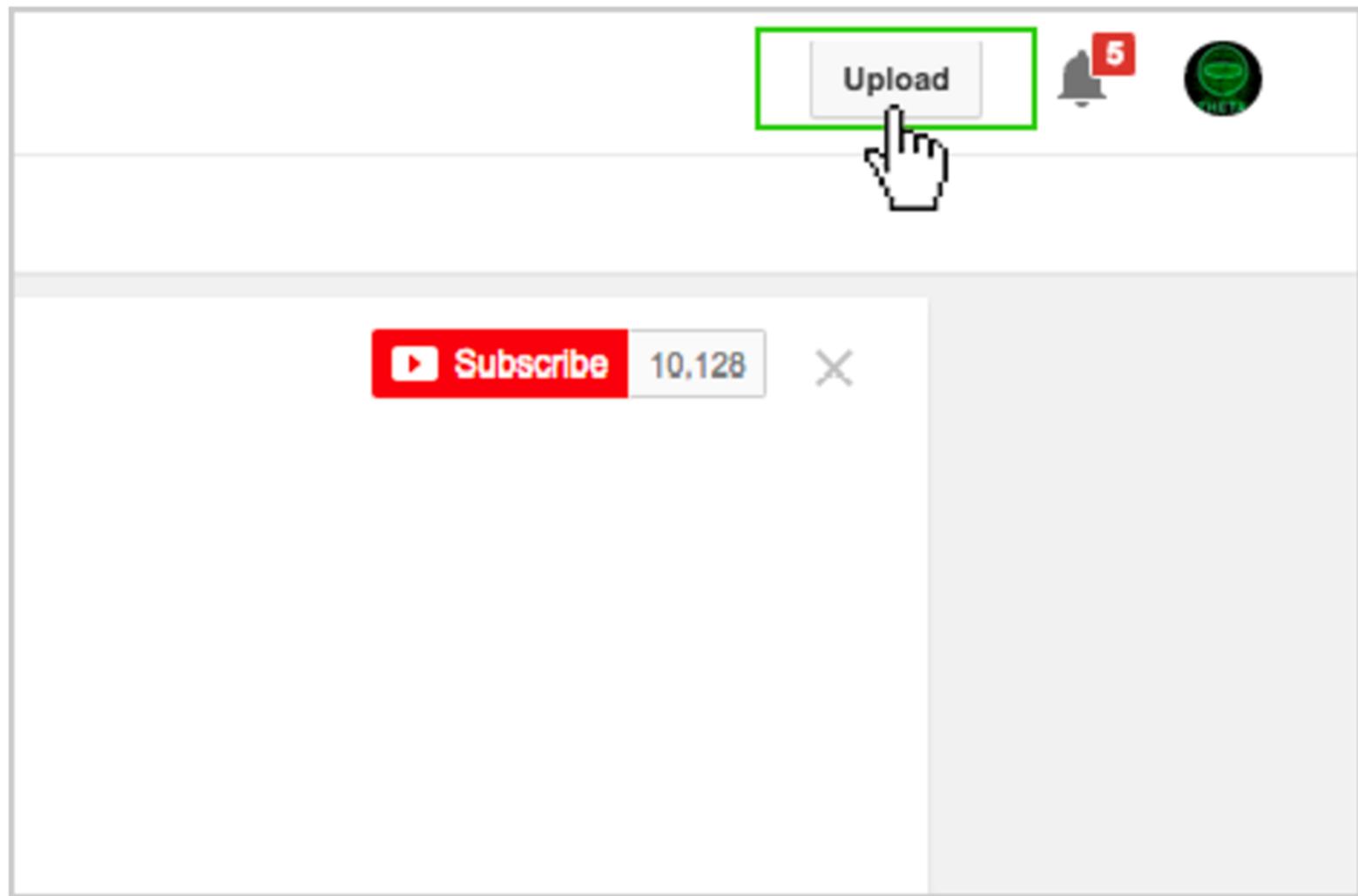
## STEP4

Click the "Start button" to convert to an mp4 file



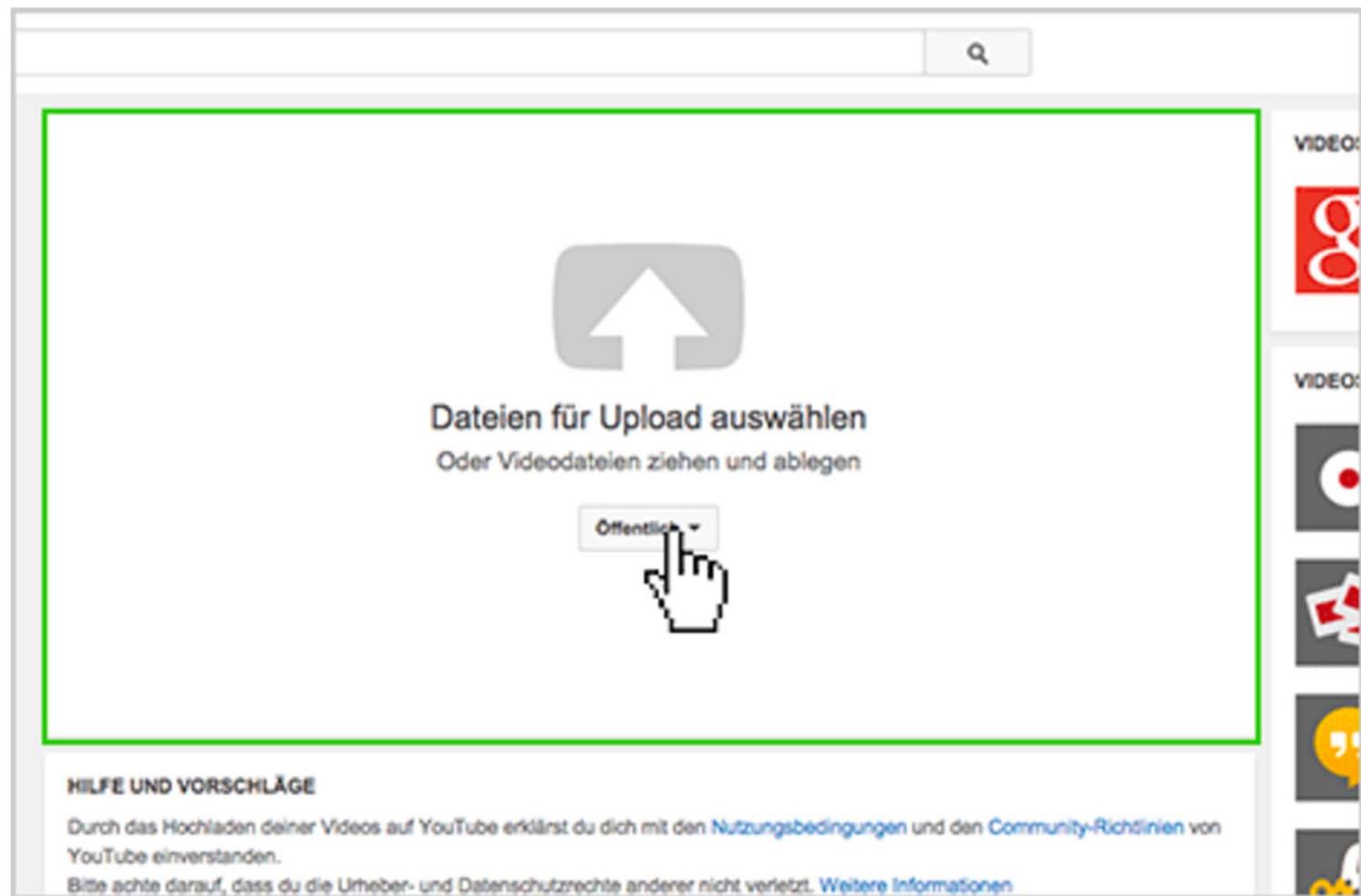
## STEP5

Login to YouTube, and click the "Upload button" at the top right



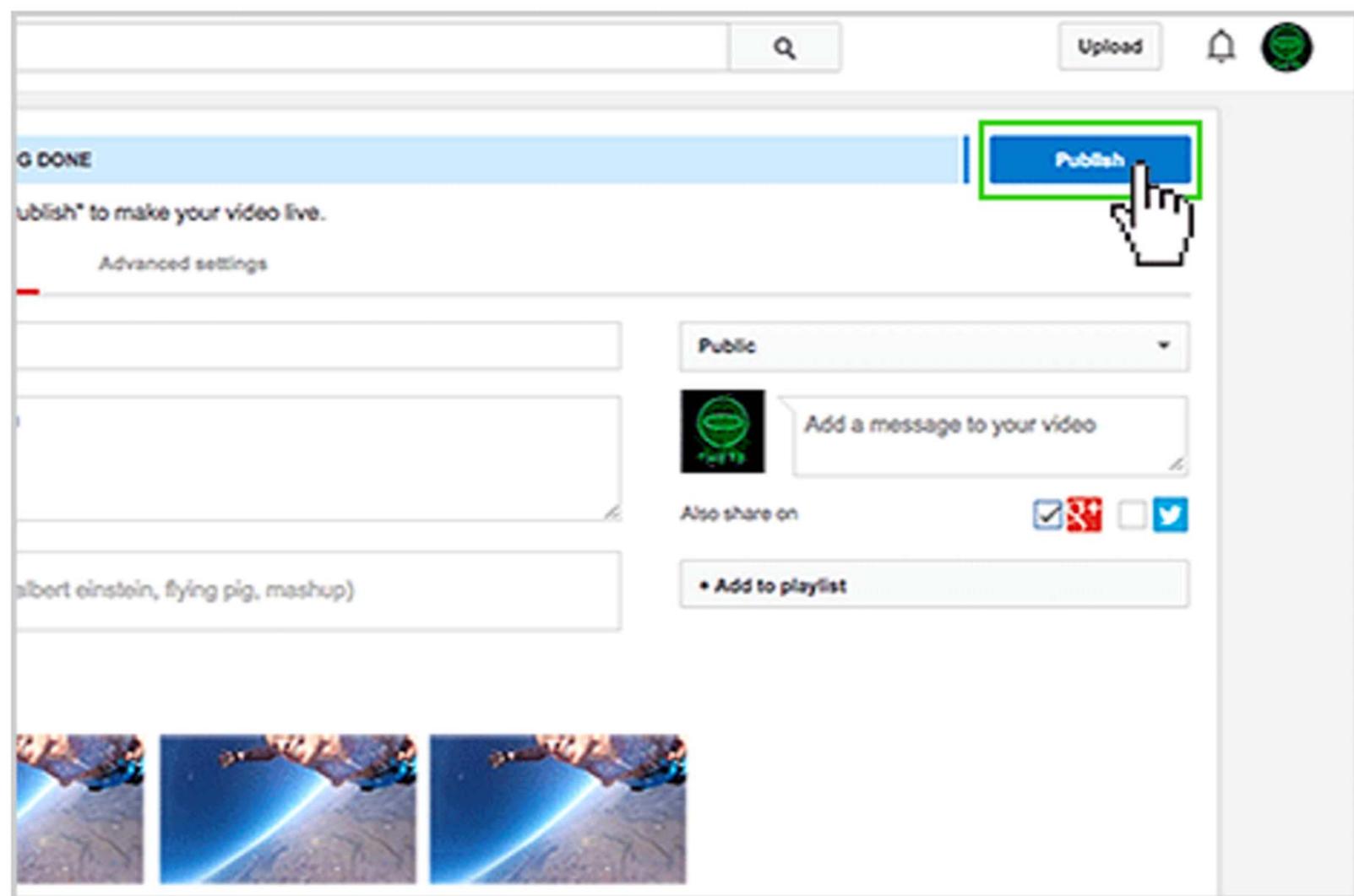
## STEP6

Select the privacy setting, and drag and drop the converted mp4 file to upload it

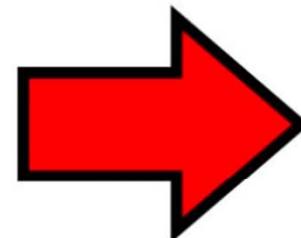


## STEP7

Click the "Publish button", and you're done!



# Upload 360-degree video/ photo



YouTube  
VR 360 Video

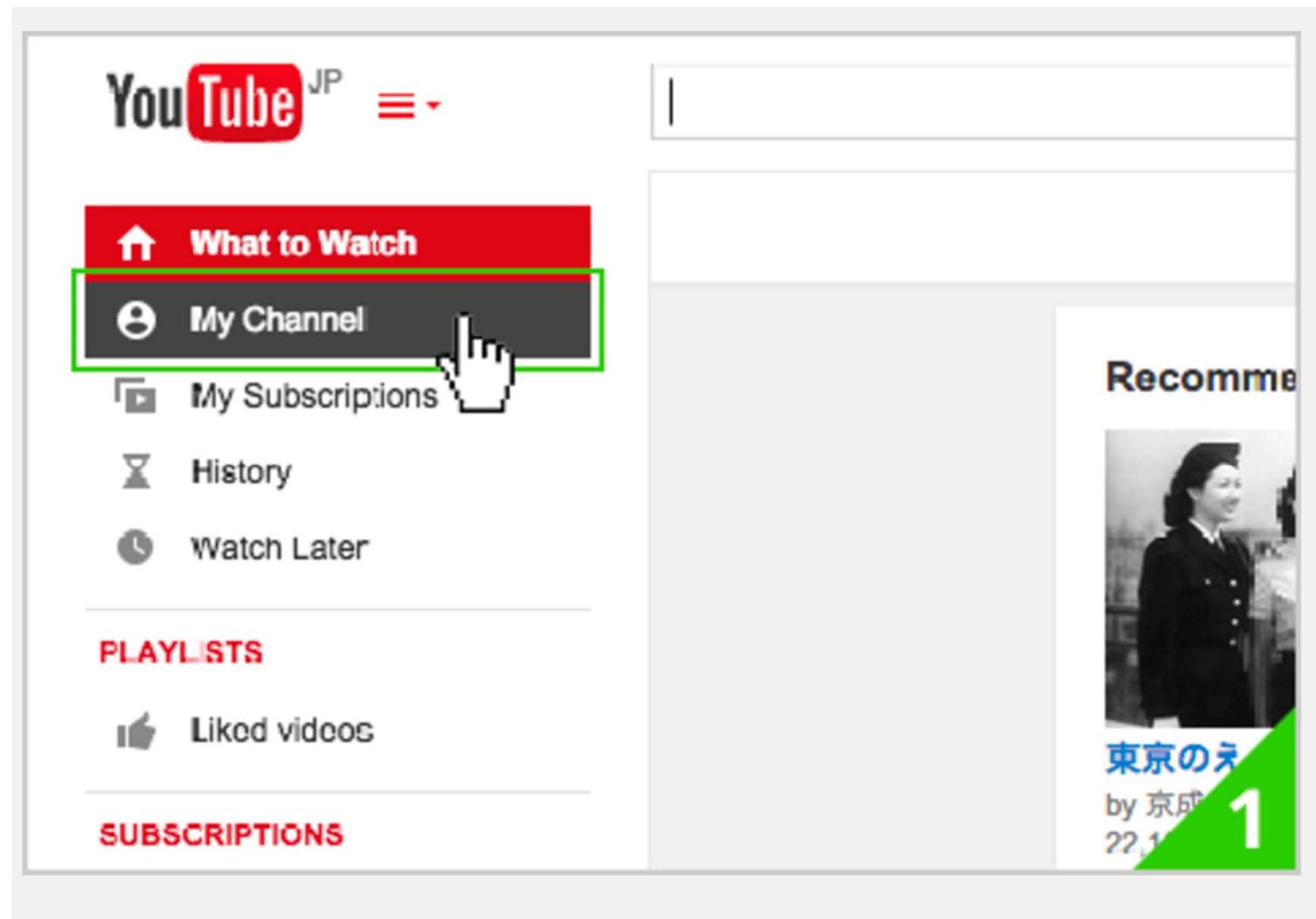


Ricoh Theta

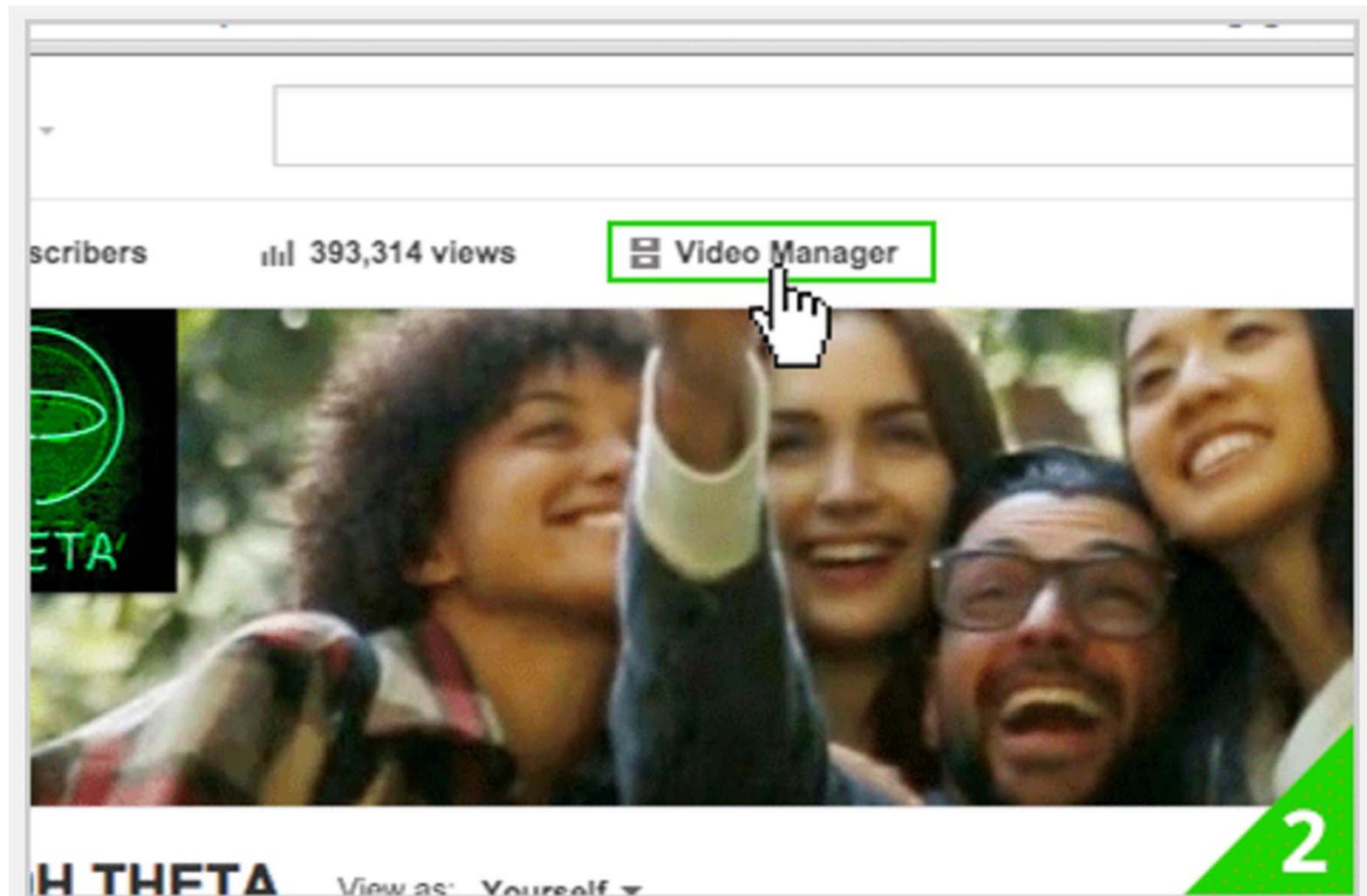
Centre for Learning Science and Technologies (CLST)  
The Chinese University of Hong Kong



# How do I check the videos I have posted?



# How do I check the videos I have posted?



# How do I check the videos I have posted?

The screenshot shows the YouTube Creator Studio interface. On the left, there's a sidebar with options: Dashboard (selected), Video Manager, Videos (highlighted with a red bar), Live Events, Playlists, Copyright Notices, Community, and Channel. The main area is titled "Videos 18". It lists three video thumbnails:

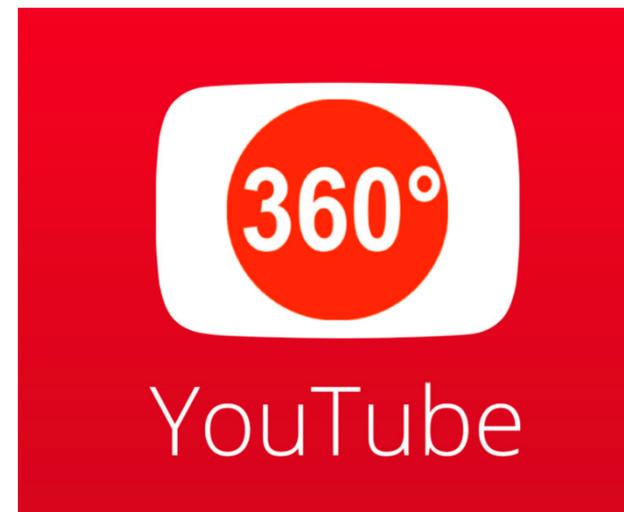
- skydive HD**  
March 18, 2015 10:20 AM  
Edit ⋮ Improve this video
- Party HD**  
March 11, 2015 2:52 PM  
Edit ⋮
- Sample spherical video - Bike riding**  
March 11, 2015 11:38 AM  
Edit ⋮ Add quick

A large green number "3" is overlaid in the bottom right corner.

Capture 拍攝



Cloud 儲存



View 觀看



# VR Viewing



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The Chinese University of Hong Kong



# Watch 360 degree videos in Cardboard

Google Cardboard lets you experience virtual reality in a simple and fun way. With Cardboard and the YouTube mobile app, you can even watch [360 degree videos](#) for an immersive experience.

1. [Get Google Cardboard](#) and assemble it
2. Open the YouTube app
3. Go to the [360Video house channel](#) by searching for "#360Video" and visiting the channel. You'll know it's the right one if it has this avatar:  

4. Pick a video on the channel, and start playback
5. Tap the cardboard icon . You'll notice that the screen splits into two smaller screens  

6. Insert your phone into Cardboard
7. Look around to view the video in 360 degrees

# Watch 360 degree videos in Cardboard

**Google Streetview**



**Discovery VR**



**Within - VR (Virtual Reality)**



**Google Cardboard**





# Watch 360 degree videos in Cardboard

## Google Expeditions

Google Expeditions enable teachers to bring students on virtual trips to places like museums, underwater, and outer space.

Expeditions are collections of linked virtual reality (VR) content and supporting materials that can be used alongside existing curriculum.

These trips are collections of virtual reality panoramas — 360° panoramas and 3D images — annotated with details, points of interest, and questions that make them easy to integrate into curriculum already used in schools.

# Watch 360 degree videos in Cardboard

Google Expeditions



Google Expeditions enable teachers to bring students on virtual trips to places like museums, underwater, and outer space. Expeditions are collections of linked virtual reality (VR) content and supporting materials that can be used alongside existing curriculum.

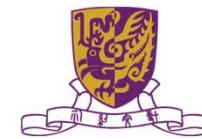
These trips are collections of virtual reality panoramas — 360° panoramas and 3D images — annotated with details, points of interest, and questions that make them easy to integrate into curriculum already used in schools.

# Watch 360 degree videos in Cardboard

Google Expeditions



Google is working with a number of partners, including: WNET, PBS, Houghton Mifflin Harcourt, the American Museum of Natural History, the Planetary Society, David Attenborough with production company Alchemy VR and many of the [Google Cultural Institute](#) museum partners to create custom educational content that spans the universe.



# Session 1

1. The Role and Importance of Field Trip in the Geography Curriculum
2. The Field Trip (in CUHK)
3. Discussion of Assignment

# Discussion of Assignment

- Participants are required to suggest and design a 360 video on a geographical spot in Hong Kong, learning outcomes should also be suggested;
- The homework can be based on some sample projects discussed in the class by making modifications;
- Other advanced design and implementation regarding the mobile devices are also encouraged.

# Discussion of Assignment

Centre for Learning Sciences and Technologies ↵

The Chinese University of Hong Kong ↵

Course: Introducing Virtual Reality (VR) Techniques into the Learning ↵  
and Teaching of Physical Geography in Hong Kong ↵  
Secondary Schools ↵

CLASS: \_\_\_\_\_ NAME: \_\_\_\_\_ ↵

考察地點 : \_\_\_\_\_ ↵

教學年級 : \_\_\_\_\_ ↵

相關課題 : \_\_\_\_\_ ↵

進行實地考察可能出現的問題 : ↵

1 . \_\_\_\_\_ ↵



# Discussion of Assignment

- 完成附件教學設計
- 以電郵附件方法呈交
- wallaceman2011@gmail.com
- 檔案名稱 : CUHK\_VREV\_AC2\_XXX
- EMAIL 標題 : CUHK\_VREV\_AC2\_XXX
- 呈交限期 : 15/06/2017