

The ATDI Story: Community Service Learning with Application of Professional Skills and Knowledge



Presenter:

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Also with special contribution from:

Student Affairs Office (**SAO**)

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Our University

- ❑ The Hong Kong Polytechnic University
- ❑ One of the 9 universities in Hong Kong





Our University (cont'd)

The Hong Kong Polytechnic University



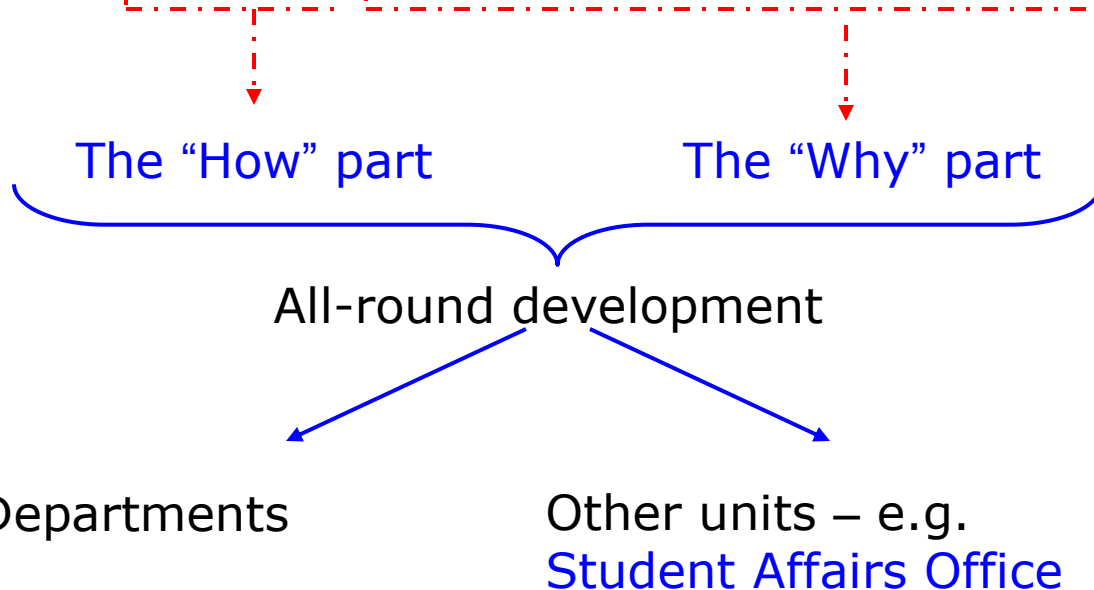


Our University (cont'd)

▣ Our Motto:

開物成務 勵學利民

To learn and to apply, for the benefit of mankind.





Our Role

- Our President:
- “... While pursuing academic excellence, we will continue to design and deliver application-oriented education and training programmes...”

**PolyU's 70th Anniversary
Innovation & Technology
Showcase 2007-05-29**





My Department



❑ The Department of Electronic and Information Engineering

❑ Technology-oriented curriculum

❑ Heavy workload

❑ Demanding and difficult tasks

A common perception held by our students!

Programme Contents (課程內容)

- ❑ 基礎電學及電子學
- ❑ 資訊科技、工程科學、數學邏輯設計、線性系統、計算機程式設計
- ❑ 電子回路、通訊基礎、計算機系統基礎、面向對象的設計與編程
- ❑ 集成電路技術與進程、數據與計算機通訊
- ❑ 接口與嵌入式系統數字信號處理、應用電磁學
- ❑ 綜合項目、三年級畢業項目
- ❑ 工程師的經濟科、工程管理、工程師與社會
- ❑ 工程英文、通識科...等等

Programme Contents (課程內容)

- ❑ 集成類比及數字電路、超大規模集成電路與電腦輔助設計
- ❑ 電力電子、高頻線路設計
- ❑ 電腦體系結構與系統、多媒體技術
- ❑ 分布式系統與網絡編程
- ❑ 視頻、圖像與音頻處理
- ❑ 通訊網絡、移動通訊等
- ❑ 生物工程訊號與系統
- ❑ 光纖網路

What is ATDI

Assistive Technology Development Initiative





The Start of ATDI

- ❑ Encouraged by the Head of Department, a community service learning group was formed in 2004/05
- ❑ Started with 4 students

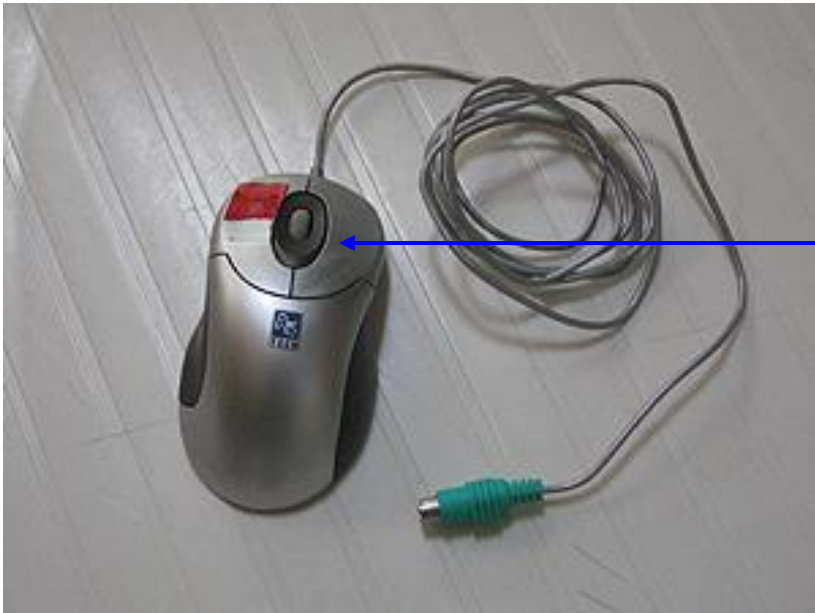


The Tasks

- The group of 4 students were given the **simple** task:
 - To design/improve input devices for a special school so that their students can interact with the computer
- Our belief:
 - **Simple (and small)** tasks done by EIE students can carry **great value** to the special school students



The Tasks (cont'd)



Simple and small tasks for EIE students

- **Take the mouse apart**
- **Cut a trace on the PCB to disable the button**
- **Re-assemble it**

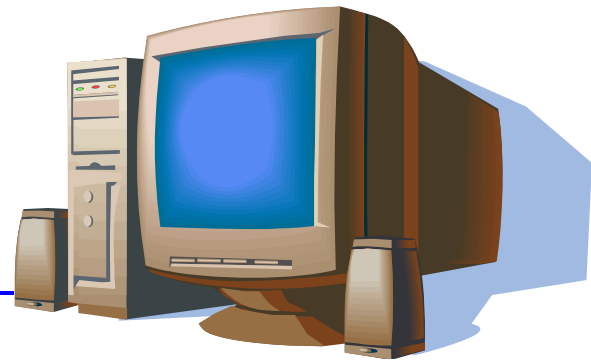
A Single-button mouse
(?why?)



The Tasks (cont'd)



USB connection



Pressing this big-button key =



Pressing this tiny Enter key



The Tasks (cont'd)



Adapted keyboard, to accept other input devices

Large-button key

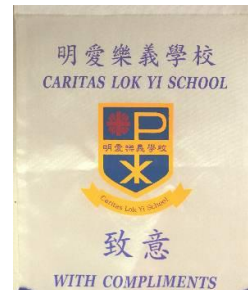
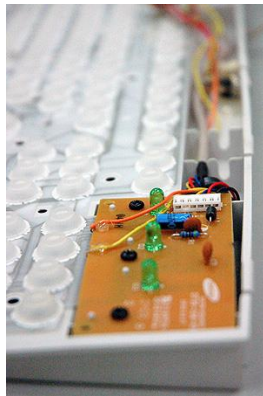
Hand-grip key

Hand-grip key

Remote key



The Tasks (cont'd)





The Growth of ATDI...

- ❑ In the following year (2005/06)
- ❑ The ATDI group was expanded to 12 students
- ❑ All joined the group voluntarily

Name	Roles & Responsibilities
Ho Tsz Chun	President
Leung Chi Yung	Vice President
Leung Lai Yee	Financial Secretary
Lam Yin Kwan	Hon. Secretary
Pun Yau Fung	R&D Manager
Tse Kin Chung	Technical Development
Cheung Yat Pang	Hardware Specialist
Wong Yuk Man	Hardware Specialist
Choy Shu Sang	Software Specialist
Fung Tin Ching	Software Specialist
Fung Yuk Ting	Membership
Wong Fung Ling	Membership



The Growth of ATDI... (cont'd)

- ❑ ATDI group members organized themselves
- ❑ With duties and responsibilities assigned
- ❑ With more functions (visits, meetings), more products

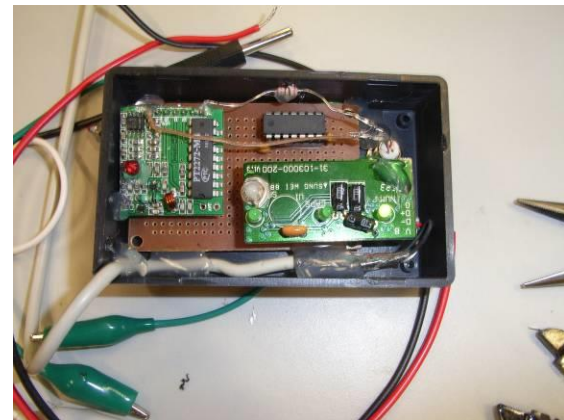
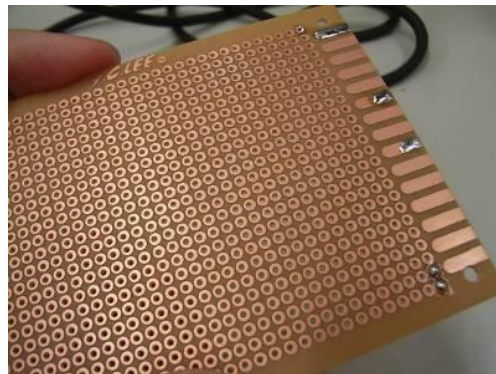
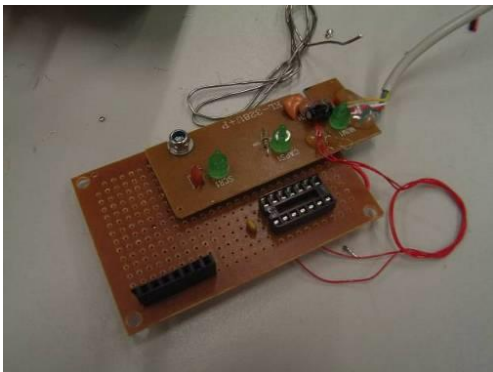
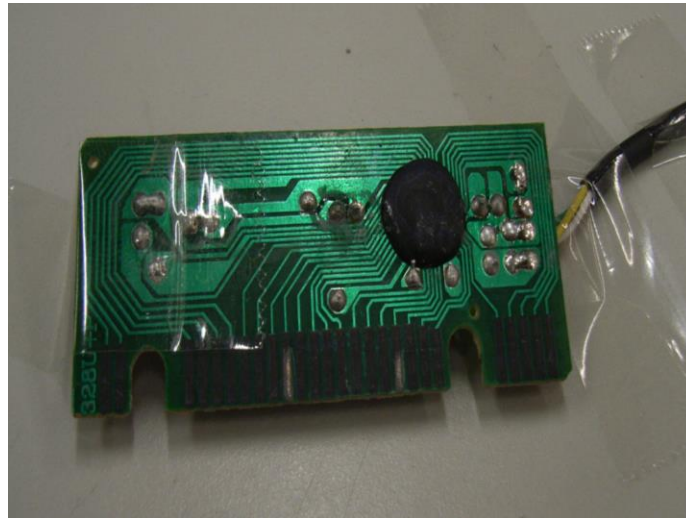
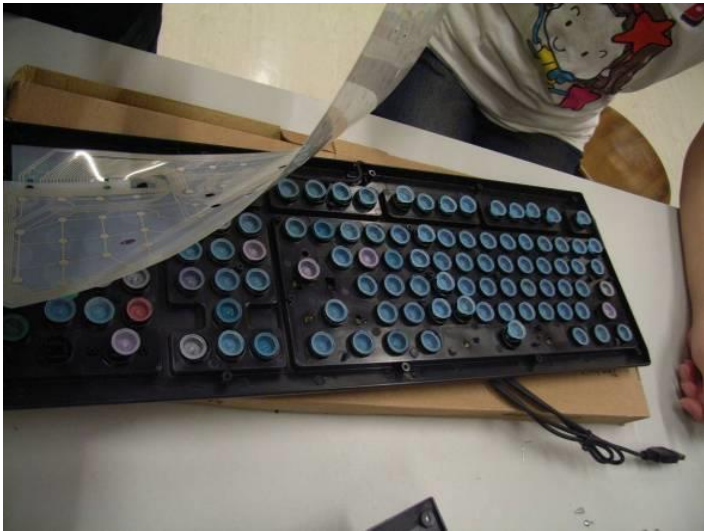


Activities – Design and Production





Activities – Design and Production





Activities – Visits and Discussion





A Turning Point

- ❑ In 2005, there was the Community Service Learning Program (CSLP) organized by Students Affairs Office (SAO)
- ❑ The ATDI group entered the program and got an award
- ❑ And entered the programme again in 2006



Activities – CSLP Award



EXEMPLARY COMMUNITY SERVICE LEARNING PROJECTS 2005 / 06 AND COMMENDATIONS FROM COLLABORATING AGENCIES

傑出社區服務實踐計劃 2005 / 06 及合作機構的回應

Department of Electronic and Information Engineering 電子及資訊工程學系

ASSISTIVE TECHNOLOGY DEVELOPMENT INITIATIVE (ATDI) 輔助科技研發製作小組



Period 日期	Sep 2005 - Aug 2006 2005年9月 — 2006年8月
Service User 服務使用者	Students with mental / physical disabilities 特殊學校學童
Collaborating Agency 合作機構	Caritas Lok Yi School / Hong Chi Association - Fanling Integrative Rehabilitation Complex 明愛樂義學校/匡智會粉嶺綜合復康中心
Student Coordinator 學生代表	CHOY Shu Sang 蔡樹生

To facilitate IT learning and improve the daily living of special school students, a group of students from the Department of Electronic and Information Engineering designed and developed different assistive devices.

電子及資訊工程學系「輔助科技研發製作小組」的同學，運用其本科知識，研究及開發各種輔助器材，幫助特殊學校學童使用電腦，改善他們日常生活。



The Expansion (2006/07)

- ❑ The ATDI group took a further expansion in 2006/07 academic year
- ❑ There are 40 students:
 - From different academic programmes (in EIE Department)
 - In different years of study
 - Graduates
 - Two secondary school students
 - All came voluntarily



Activities

- ❑ Regular **meetings** for the design /development/production of assistive devices
- ❑ **Presentation**, experimentation, ...
- ❑ **Team-building** and socializing activities (outings, cycling, BBQ, night-snacks, ...)
- ❑ **Visits** to NGOs to understand their need and to learn the related theory in special education (e.g. *Conductive Education*)
- ❑ **Voluntary services** (outing functions with special school students, game booth ...)
- ❑ **Charity** (donation, walk for million ...)



Theory of Conductive Education





Team-building Activities





Voluntary Services



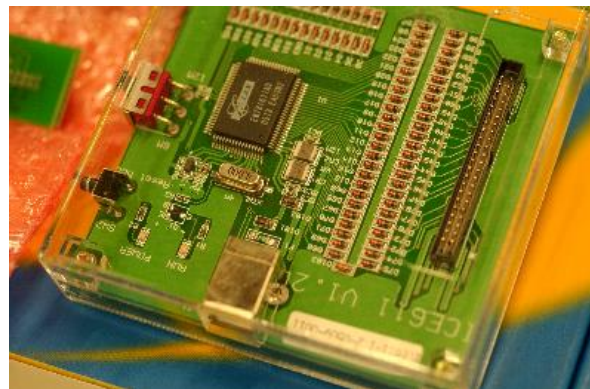
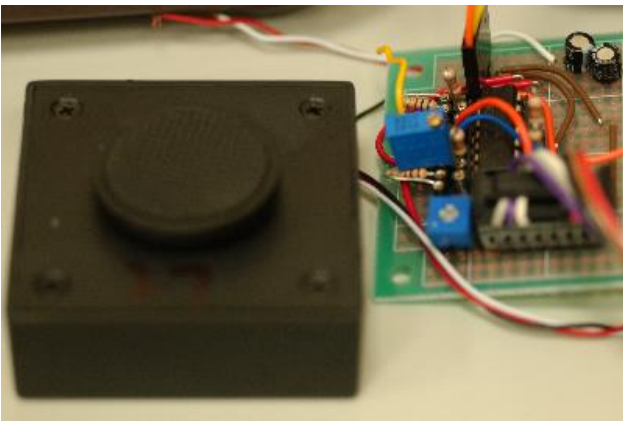


Helpers in Classes





Product Development





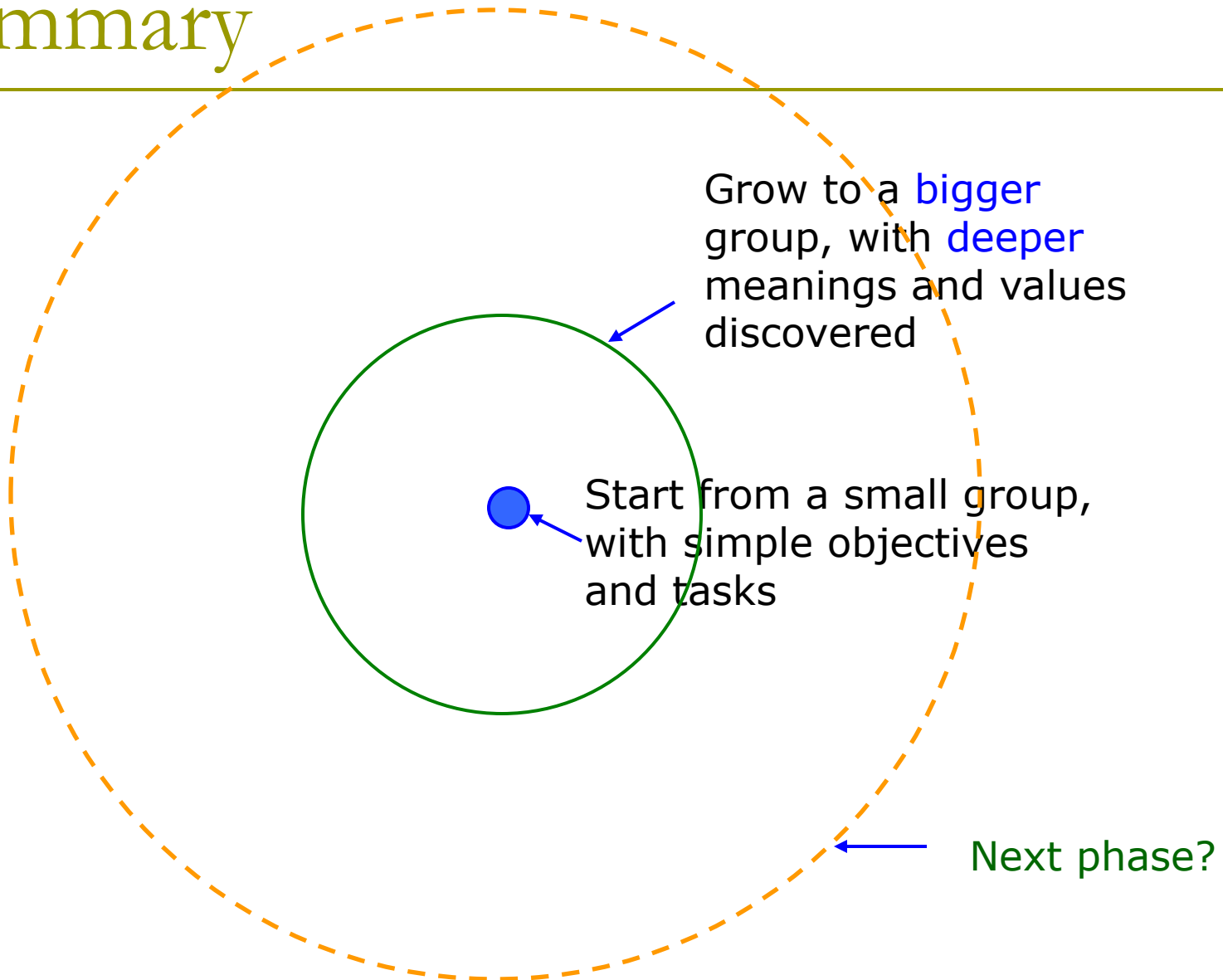
The Discovery Processes

- Through participation in ATDI, and CSLP, the students have discovered:
- The **values** of their profession (EIE)
- The **relevance** of their study to life
- The **meanings** of their existence
- All these made their learning meaningful and relevant, made them more confident and mature

The programme leader discovered this ←



Summary





Why Community Service Learning?

- ❑ Make the learning more meaningful, and relevant
- ❑ Provide more opportunities for application
- ❑ Cultivate/develop students' caring, understanding, and embracing attitudes; empathy for others
- ❑ Develop students' professional *skills* (the “how” part) and *heart* (the “why” part)



The Road Ahead

- ❑ Students' Learning:
 - Preparation
 - Motivation
 - evaluation
- ❑ Multi-discipline: include students/staff from other:
 - Disciplines, departments, schools
- ❑ Professional product qualities
 - safety, robustness, user-friendliness, cost-effectiveness



Challenges and Consideration

- ❑ Workload
 - For students
 - For staff
- ❑ Mindsets
 - Perception
 - Expectation
 - Philosophy
 - Psychology
- ❑ The model
 - Non/Credit-bearing?
 - Voluntary/compulsory?
 - Support
 - NGOs' expectation
 - Service/Learning/Charity?



Acknowledgement

- Some materials for products have been developed with a donation made by Woofoo Foundation Limited, for which the ATDI group is grateful

Thank You



Discussion and Sharing