A Supportive Information Assistant on Mobile Devices for Non-Technical Students Learning Programming

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Backgrounds
Backgrounds: Cartoon
"Being open to technologies of the future doesn't mean we have to accept all their uses,"

French Education Minister Jean-Michel Blanquer
At some schools, students have to hand out their mobile phones for storage before class.
Instead of ......
Why not ....

WHY NOT!!
Apps for Education: Kahoot!
Apps for Education: Zuvio
Chatbots for Higher Education
Higher Education Applications :) 

- Campus information (BEACON) 
  - Information for admission applicantion 
  - Registration/course information 
- Second language learning (Japan) 
- Learning about profiles of famous psychologists (Freudbot) 
- JAVA programming class (Research in progress)
Chatbot for Campus Info: BEACON

**BEACON: LAUNCH STATS**

- **1136 Downloads**
- **549** Android
- **587** Apple

**Top 5 Questions Answered**
- Who is my personal tutor?
- When is my next lecture?
- Where can I eat?
- Where is [location]?
- How do I connect to the Wi-Fi?

**Top 5 Questions Not Answered**
- What room is my next lecture in?
- Where is this room?
- What lectures do I have on [date]?
- Who is [Staff Member]?
- Where is [Staff Member]'s office?

**Most Used Features**
- Next Lecture: 19.0%
- Personal Tutor: 13.6%
- Societies: 7.7%
- Help: 5.7%
- Digital Services: 5.5%
- Others: 48.5%

**Number of self-service tasks completed**
- Jan 21st: 2392
- Jan 24th: 4957
- Jan 27th: 5610
- Jan 30th: 6137

**Total Number of Questions Asked**
- 1287

Digital Services at Staffordshire University, UK
Welcome to

Eliza is a mock Rogerian psychotherapist. The original program was described by Joseph Weizenbaum in 1966. This implementation by Norbert Landsteiner 2005.

ELIZA: Is something troubling you?
YOU: Men are all alike.
ELIZA: What is the connection, do you suppose?
YOU: They're always bugging us about something or other.
ELIZA: Can you think of a specific example?
YOU: Well, my boyfriend made me come here.
ELIZA: Is it important to you that your boyfriend made you come here?
YOU: He says I'm depressed much of the time.
ELIZA: I am sorry to hear that you are depressed.
YOU: It's true. I am unhappy.
ELIZA: Can you explain what made you unhappy?
YOU:


11:04

Pandorabots

How can I download you to my computer?

Sorry but I can't display websites here. You can download me for your Android phone from the Google Play Store. I will open the page so you can find out more.

Is there iOS version available?

There is.
Freudbot(2005)

You said:  
Sigmund Freud said:  
CONNECT  
Hello. My name is Sigmund Freud. What would you like to talk about?

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Goal and Gaps

- Programming capability for every student in High Education Sprout Program (HESP), MOE, Taiwan.
- Two deficiencies of non-technical students learning programming
  - All programming languages in English (use second language to learn third “language”)
  - Dividen in vocational school system causing lack of basic programming practice
Objectives
Teacher’s Concerns

- Using chatbot as a teaching aid
- Reduce the loading of large class (60 students)
- Encourage students to use mobile devices for learning
- Make students engage more in computer lab (or they will just play games after practice)
- Make them busy in class
Students’ Needs

What do you need most while learning App Inventor?

3. 你覺得在學App Inventor時最需要協助的部份是什麼？

12 則回應
Methods
Four-component instructional design (4C/ID)

- Timely support information in computer labs
- Second screen for learning task instructions
- Part of work drills, to build programming blocks, not from scratch to whole
- Instant information for debug (in English)
- Explanation of error message (in English)
Mayer’s Design Principles for Multimedia

● Personalization principle
● Siganling principle
● Multimedia principle
● Spatial proximity principle
● Coherence principle
Tools
IBM Watson Assistant Architecture

Integrations

Built-In

Custom

Users

Watson Assistant

Dialog skill

IBM Cloud Functions

Watson services

Backend systems

Tone analyzer
Speech to text
Text to speech
Tools: IBM Watson Assistant
Development Cycles
IBM Watson Assistant: Conversation Design

NODE 1
If: CONDITION
Then: RESPONSE

2
NODE 2
If: CONDITION
Then: RESPONSE

3
NODE 3
If: CONDITION
Then: RESPONSE

CHILD NODE 1
If: CONDITION
Then: RESPONSE

CHILD NODE 2
If: CONDITION
Then: RESPONSE
The Chatbot for AI2 Learning
Conclusions and Suggestions
Conclusions and Suggestions

- Course materials alongside with questions and immediate responses using two screens (computer + phone)
- Adjustment of class material according to instant responses about labs
- “First-Aid” to students with questions
- Chatbot engages students to learn
Conclusions and Suggestions

- Response to the same question without having to answer individually
- More patient than human teacher for a big class (about 60 students)
- Need to translate AI2 documentation in Chinese
- Have to redesign lab contents for better synchronization with chatbot
Since LINE is more popular among students, we will develop the assistant using LINE and Microsoft Azure services.
謝謝！
Thank You！