Make Tech Accessible with iDesign Studio

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Joint work with:
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Mount Holyoke College
The Challenge

In a room full of 25 engineers, only 3 will be women.

Girls Who Code
http://www.girlswhocode.com
The Challenge

Women today represent 12% of all computer science graduates. In 1984, they represented 37%.

Girls Who Code
http://www.girlswhocode.com
The Challenge

In middle school, 74% of girls express interest in Science, Technology, Engineering and Math (STEM), but when choosing a college major, just 0.3% of high school girls select computer science.

Girls Who Code
http://www.girlswhocode.com
iDesign Studio

- Goals
  - Demystify technology
  - Engage in design process
  - Create interactive technology projects
iDesign Studio

- **Goals**
  - Demystify technology
  - Engage in design process
  - Create interactive technology projects

- **Logistics**
  - 14 students
  - Meet twice weekly
    - 1 hour discussion
      - Think critically about current products
    - 3 hour lab
      - Learn basics
  - Pitch and develop prototype for final project
Designing an interactive piece

hardware components + code + creativity

Shani Mensing ‘15
1st half: hands-on labs

- Lab 1: LEDs & breadboard
- Lab 2: intro to soft circuits
- Lab 3: Intro to Arduino
- Lab 4: Getting Started with SquareWear
- Lab 5: Input via Microphone
- Lab 7: other components
Code as glue

```cpp
/**
 * The code in this special method is constantly executed
 * after setup has occurred.
 **/

void loop()
{
    // check if the button has been pressed
    if (digitalRead(BUTTON_PIN) == LOW)
    {
        // if so, play the note and light LED
        tone(BUZZER_PIN, 262);
        digitalWrite(GREEN_LED, HIGH);
    }
    // otherwise, the button is not pressed
    else
    {
        // stop playing the note and turn off LED
        noTone(BUZZER_PIN);
        digitalWrite(GREEN_LED, LOW);
    }
}
```
Microcontroller enables hardware components

- Arduino platform
- SquareWear
- built-in components

Madeline Ketley ‘17
2nd half: projects

- Elevator pitch
- Pitch document
- 6 week timeline
iDesign –
first year seminar

fall ’13
partially supported by
Clare Boothe Luce Foundation
The Shy Chameleon
Meaghan Sullivan ‘17

https://www.youtube.com/watch?feature=youtu.be&v=V1uZ4nFzirc&app=desktop
Buzz Lightnight
Nikita Khan ‘17

- Spring ’14 – Pitch3 competition
  - Winner: crowd favorite
- Spring ‘15 – Draper Business Plan competition
  - semi-finalist
MusicTouch
Eva Snyder ‘17

- Spring ‘14 – MakerJam
- HackUMass ‘14 – Most Innovative
- Fall ‘14 – HackHolyoke
- Spring ‘15 – HackHolyoke
- Fall ‘15 – HackHolyoke

https://www.youtube.com/watch?feature=player_embedded&v=18Ux4XpjJJA#t=78
iDesign –
intensive 3 week course

summer ‘15
partially supported by
Massachusetts Life Sciences Center
Who?

9 students
- age ranged from 19 to 48
- included Black, Latino, Asian, and White women
- 8 community college women
- one first-generation college student

Students completed pre-survey and post-survey, exit cards
Two months later, 6 students provided answers to follow-up questions about the longer-term impact
SEOL – Simple Expressions Of Love
Kelli Kydd ‘18

- taking CS 101
- planning a CS major
A glimpse into the design and development process

(switch presentations)
Themes

Preliminary research
Becky Wai-Ling Packard
Sarah Byrne
Themes

- Confidence is developed through tangible outcomes and exploration

“Everyone seemed to be "getting it" except me...also, everyone was young. [After two weeks] I started "getting it" and it with tangible results. There's something about creating with technology that is very empowering."
Themes

- Course-level support system helps to buffer frustration

Had a few hiccups with the button but after having help, I completely understand how the bread board works. (along with everything else that we used)

“I learned] don’t let your frustration get to you. If you need help make sure to ask. Don’t be afraid to ask because your peers are there to help.”
Themes

- Design involves creativity; problem-solving is exciting

“I love challenging myself; I get very excited about finding solutions and coding is all about that. It’s learning another language, and using that language to make change happen whether it’s playing a game with others, making a doll light up, or expanding your mind through collaborating with others. There are endless possibilities with coding.”
This positive experience opened up the field and the possibility of going further.

“I was intimidated...because of this course, [now I chose to take] CS 101 and consider declaring a major in computer science!”
Themes

- Public speaking is a separate, important dimension of learning

“I hate to stand up and talk in public. However, since I survived, I think that was a good first step for me to be more comfortable.”
Thank you!

0 Questions?

0 iDesign web site
https://sites.google.com/a/mtholyoke.edu/idesign-workshop-2015/

0 photos, more photos