Software Engineering Java K12 Outreach Course

with Alice and Cloud Computing
Software Engineering Course

- Hands-on 20 hour course
- Targets K-12 students, grades 6-12
- Introduces students to Java with Alice
- Teaches basic cloud computing concepts
We call it Project Expression

- It focuses on creating a digital film with Alice
- The film expresses an idea, opinion, or belief, relative to society.
Robocamp

- Robocamp is a very successful Auburn University K-12 outreach that happens 3 times each year.
- Project Expression is a division of Robocamp.
- It takes place in Auburn University labs four weeks in a row usually on Saturdays.
- Has been implemented into local elementary schools.
Survey of Campers (56)

- 56 Students were surveyed with general RoboCamp questions.
- The questions were on a 5 point scale and the following results indicate an “agree” or a “strongly agree”
Survey of Campers (56)

- 96% enjoyed the camp,
- 89% thought the content was interesting,
- 92% believed instructors to be knowledgeable,
- 79% said they learned a lot about using computers
- 66% said the material would be useful to future career
- 83% said they would recommend Robocamp to others.
Let’s talk about Project Expression

- Is designed to be attractive to students
- Students create 3D movies with Alice
- Use green screens, record custom audio, play and create music, learn video editing
- The course is a landscape for learning cloud-computer-programming.
Cloud Computing defined?

- What is cloud computing?
- “Everyone seems to have a different definition” – Infoworld
- Some argue, anything you consume outside the firewall is in the cloud.
Cloud Computing

- Online Guitar Store
- Flash Promotion
- Facebook
- SQL Database
- Google Shopping Cart
Learning cloud computing with Project Expression

- Project Expression gives students access to cloud elements right from the beginning.
- Students put their focus on individual cloud elements.
- Realization of connection points between elements gives birth to a practical conception of cloud-computing.
Multimedia Cloud Group

- Google Documents
- You-Tube
- Google Mail
- Google Chat
- Google Calendar
- Google Earth
- Bulents Screen Capture
- Video Editing Software
- Alice 2.2
- Audio Workshop
- Green Screen Footage
Communication Cloud Group

Google Sites
- Google Documents
- Google Chat
- Google Mail
- Google Calendar

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Alice Rocks!

- When it comes to introducing students to Java programming, Alice rocks!
- Students can learn object oriented programming
- Loops, conditions, variables, user interaction, and much more…
What is a loop?

“it repeats”, “a circle”, “to make it do it over and over again”, “a loop is when you set an object to do a certain thing over and over”, “How many times it does an action”, “an action that repeats”, “makes a method or program keep going continuously”
What is an object?

In computing: “an object can be defined as a discrete item that provides a description of virtually anything known to a computer...”
What is an object?

- “an object is a thing, car, chair, table, disk, something”
- “piece of material that is inanimate”
- “a person place or thing you can use”
- “everything is an object”
- “thing that is in a 3d like the world”
“the ultimate risk of heavy technology use is that it diminishes empathy by limiting how much people engage with one another, even in the same room” - Stanford professor Clifford Nass

- Project Expression activities focus on improving human empathy
- Chair Object activity
- CSUnplugged.org
Students' Enjoyment Level using Alice

<table>
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<th>Enjoyment Level (5 being most enjoyment)</th>
<th># of students</th>
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<tr>
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<tr>
<td>5</td>
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49 Students total
Alice Survey of Campers (35)

- 97% said they gained valuable knowledge
- 83% became confident programming in Alice
- 83% said they will continue using Alice at home
- 80% thought their ability to program in Alice had improved
- 86% believed the knowledge they learned would apply to life outside camp
YouTube Tutorials

- Mastering alice film techniques part 1 and part 2
- Film-making tutorials include world navigation, dummy objects, panning the camera, animating with poses, vehicles, and more
- 2,500 downloads, good feedback
Future work

- Fall 2013 implementation into a local high school. 1 hour class, 5 days a week, for 3 weeks
- More Robocamps coming up
References


References


References

http://www.youtube.com/watch?v=jdVbx7LLXAs&feature=share&list=UUc58PkMeocU_wiyhV2FsJRg

http://www.youtube.com/watch?v=Odk6xQ0ExYE&feature=share&list=UUc58PkMeocU_wiyhV2FsJRg

http://www.alice.org