Workshop on Computational Thinking in Education

Follow-up report
KinderGarten and Beyond Lifelong Learning research group

1 THE WORKSHOP

The Workshop on Computational Thinking in Education, which was held June 23 2016 at RCC Harvard, paid a tribute to the visionaries who 50 years ago started to transform the way computer science is used in education. Top educators and researchers from three different continents shared what they are doing now, 50 years later. Attendants were invited to share their views on the use of computer science and computational thinking in education in the future. A tasting of Spanish wines and food was served at the end of the event.

1.1 ORGANIZERS

The workshop was organized by scholars from the Universidad Rey Juan Carlos and the Universidad Complutense de Madrid:

- URJC

  - Gregorio Robles

  - Agustín Santos

  - Jesús Moreno

- UCM

  - Borja Manero

1.2 SPONSORS

The workshop was sponsored by following organizations and research projects:

- Real Colegio Complutense at Harvard

- Universidad Rey Juan Carlos

- eMadrid network of excellence

- NOTRE, network for social computing research

- Cloud4BigData

1.3 SPEAKERS

The panel of speakers was formed by researchers from different backgrounds and perspectives. This selection of academics aimed to provide a global vision on the use of computational thinking in education in the past, in the present and also in the near future.

- **Cynthia Solomon** is one of those pioneers who we wanted to pay a tribute to with this workshop. She was part of the team that developed Logo, the first programming language designed specifically for children. Cynthia was a founder of Logo Computer Systems and directed the development of Apple Logo, the first commercial version of Logo. In addition, her seminal book `Computer Environments for Children` was the first comprehensive reflection on computers in education, and her paper with Seymour Papert `Twenty Things to do with a Computer` is a classic in the field. All these achievements recently made her be awarded with the National Centre for Women and Information Technology Pioneer Award.

- **Richard Millwood** is one of the key figures in Europe when it comes to computer science in education. He started as a teacher in London in the 70s, and he led software development in the 'Computers in the Curriculum Project' at Kings College London in the 80s. For almost two decades, he developed Ultralab, one of the most successful innovation centres in learning and technology throughout the world. He was actually the director of Ultralab from 2004 to 2006. Richard is currently Assistant Professor at Trinity College Dublin, combining this position with research, consultancy and development contracts with organizations as Apple or UNESCO.

- **Gregorio Robles** is Associate Professor at the Universidad Rey Juan Carlos, Madrid. He earned his PhD in 2006 with a thesis on empirical software engineering research on free, libre, open source software. In addition to this line of research, he is active in the field of technology enhanced learning, in particular, in the study and evaluation of computational thinking. The `Dr. Scratch` project that his group develops received the Google RISE Award 2015.

- **Gilly Puttick** is currently a co-leader of the Life Sciences Initiative at TERC, a research-based organization dedicated to improving mathematics and science education. Her group seeks to understand the nature of students' encounters with living systems through laboratory experiences. The goal is to develop an integrated K-13 progression in life sciences curriculum and associated teacher professional development. Gilly is the Principal Investigator of 'Building Systems from Scratch', the NSF funded project that was be presented in the workshop. **Jackie Barnes**, who also works in the project, is a Postdoctoral Researcher at Northeastern University. She has previously worked in the department of Teaching and Learning at Vanderbilt University investigating consequential feedback in educational videogames, as well as acting as project manager and research analyst.

- **Yetunde Folajimi** is Postdoctoral Research Fellow at Northeastern University and a tenured Faculty at University of Ibadan Nigeria, where she leads the Intelligent Systems Group. Yetunde's research is predominantly directed at Serious Games and E-Learning and their

applications for adult and Child Education, youth empowerment and women empowerment. Driven by a special passion to impact on the new generation of girls and women in Nigeria and to increase their interests and participation in Computer Science, she founded the Nigeria Geek Girls Club and organizes regular summer camps and hackathons.

2 IMPACT

2.1 ATTENDANTS

26 people attended the workshop on-site. In order to manage the registration process we set up an Eventbrite page. Figure 1 shows the progression of registered people during the days prior to the event.

Figure 1: REGISTRATION ANALYTICS.

2.2 STREAMING AND RECORDING

The workshop was broadcast live using Google Hangouts Onair technology. Figure 3 presents the number of viewers by time, with a total of 55 people connecting in some moment of the workshop. Table 1 shows the number of viewers by country, being US, Spain and Cyprus the countries with a bigger number of viewers.

In addition, as the recording has been embedded in the website, when writing this report (3 days after the workshop was held) 121 new visualizations have been accounted. Nonetheless, the recording will be edited in following days to have a final version that includes the RCC logo and more usable videos.
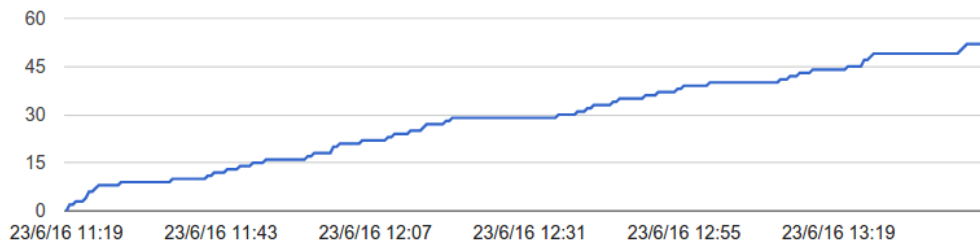
Figure 2: STREAMING ANALYTICS.

Table 1: STREAMING VIEWERS BY COUNTRY

Country	Viewers
Argentina	1
Brazil	1
Chile	1
Cyprus	13
Spain	17
Greek	1
Ireland	2
India	1
Poland	2
United Kingdom	2
Turkey	1
United States	10

2.3   TWITTER

The workshop was promoted in Twitter using the hashtag `50yearsOfLogo`. Figure 3 presents the analytics of the hashtag. As can be seen, 63 tweets from 29 different contributors along 3 days used the hashtag, reaching more than 24,000 accounts and being printed over 76,000 times.

2.4   FLICKR

The pictures taken during the workshop have been uploaded to a Flickr album. In this moment the album has been visualized 25 times.

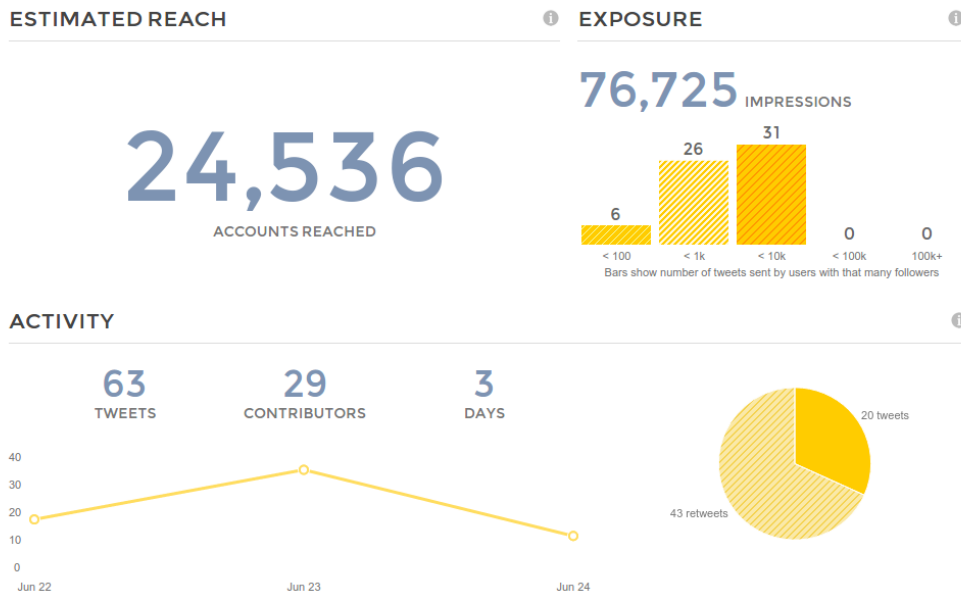**Figure 3:** HASHTAG ANALYTICS: 50YEARSOFLOGO.

Figure 4: FLICKR ALBUM.

3 CONCLUSIONS

The figures that summarize the impact of the workshop as well as the feedback provided by attendees allow us to state that the event was a reasonable success. In consequence, the organizers would welcome the idea of organizing a second edition of the workshop in the next academic course.

This workshop would not have been possible without the support and collaboration of RCC Harvard.