Constructionism 2012

Theory Practice and Impact

Conference Proceedings

August, 21-25, Athens Greece

http://constructionism2012.etl.ppp.uoa.gr/

Editors: Chronis Kynigos, James E. Clayson and Nikoleta Yiannoutsou

All papers have been reviewed by the international Review Committee

Published by: The Educational Technology Lab: http://etl.ppp.uoa.gr/
Department of Pedagogy
Faculty of Philosophy, Pedagogy, Psychology
School of Philosophy
National & Kapodistrian University of Athens

Printed by: Vivliosynergatiki S.A.
Athens 2012

ISBN 978-960-88298-4-8

Conference Chairs

- Chronis Kynigos
- James Clayson

Program Committee

- Wally Feurzeig
- Ana Isabel Sacristan
- Jose Valente
- Gary Stager
- Bruce Sherin
- Michele Wilkerson
- Karen Brennan
- Martina Kabatova
- Edit Ackermann
- Paulo Bilkstein

Local Organizing Committee

- Nikoleta Yiannoutsou
- Giorgos Psycharis
- Zacharoula Smyrnaiou
- Kostas Gavrilis
- Stefanos Keisoglou
- Maria Daskolia
- Foteini Moustaki
- Marios Xenos
- Katerina Makri
- Stamatina Anastopoulou

International Scientific Committee

- Ana Isabel Sacristán (Mexico)
- Léa Fagundes (Brazil)
- Witold Kranas (Poland)
- Loethe Herbert (Germany)
- Charles Krantz (Luxembourg)
- Luís Miguel Gomes (Portugal)
- Carlos Fino (Portugal)
- Márta Turcsányi-Szabó (Hungary)
- Chronis Kynigos (Greece)
- Matjaz Zaversnik (Slovenia)
- David Rodrigues (Portugal)
- Mike Doyle (UK)
- Darina Dicheva (Bulgaria)
- Paulo Gileno Cysneiros (Brazil)
- Jenny Sendova (Bulgaria)
- Richard Noss (UK)
- Erich Neuwirth (Austria)
- Sean Close (Ireland)
- Farkas Károly (Hungary)
- Secundino Correia (Portugal)
- Gerald Futschek (Austria)
- Sergei Soprunov (Russia)
- Gerhard Reuteler (Liechtenstein)
- Stathis Triantafillou (Greece)
- Gilberte Schuyten (Belgium)
- Ulla Wittrup (Sweden)
- Ivan Kalas (Slovakia)
- Valentina Dagiene (Lithuania)
- Jaroslav Sklenar (Malta)
- Vladimir Batagelj (Slovenia)
- João Filipe Matos (Portugal)
- Y. Shafee Give'on (Israel)
- José Armando Valente (Brasil)
- Brian Harvey (USA)
- Mitch Resnick (USA)
- Jose Valente (Brazil)
- Jim Clayson (France)

Conference Secretariat: Triaena Tours and Congress S.A., www.triaena.gr

Table of contents

Plenary Presentations

Panel Debates

Constructionism and the Curriculum

Constructionism in Teacher Education Programs

Informal Education (Collectives and Social Networking)

Best Practice Reports

Poster Presentations

Workshops

Preface

Constructionism 2012 in Athens carried on the tradition of the bi-annual meetings of the Eurologo community in Dublin (1987), Gent (1989), Parma (1991), Anavissos (1993), Birmingham (1995), Budapest (1997), Sofia (1999), Linz (2001), Porto (2003), Warsaw (2005) and Bratislava (2007) and Paris (2010). Our highly successful meeting in Paris in 2010 was characterized by the change in our title to 'Constructionism' in order to delineate our head - on addressing of and reflection on our constructionist epistemology on learning and using Logo-like digital systems.

It was also remembered for the broadening of learning domains from mathematics and programming to the arts. Permeating our discussions was the feeling that in 2012, it is time to look at and to question Constructionism in the future, to discuss the associated learning theory in a world where connections and integration is sought in a landscape of fragmented theoretical frameworks and constructs. What has constructionist learning theory to offer in our understanding of how and what we learn? It was felt that it is equally time to reconsider constructionism as a theory of pedagogical design and practice.

In a world where educational reforms and wide scale initiatives are becoming more pertinent and where curriculum materials and management systems crop up at unprecedented scale, availability and variety, how can constructionists have an impact? How can we make use of new media and how can we describe our designs and our practices to be convincing and relevant? The theme of our 2012 conference, 'Theory, Practice and Impact' was thus meant to reflect our on-going discussions and provide challenge for our meeting in Athens which we hope you all enjoyed.

CONFERENCE CHAIRS
Prof. Chronis Kynigos
Prof. James Clayson

Using the "D-stage" Kit to develop 2d Science Microworlds

Zacharoula Smyrnaiou, *zsmyrnaiou@ppp.uoa.gr*
Educational Technology Lab, School of Philosophy, Department of Pedagogy

Foteini Moustaki, *fotmous@ppp.uoa.gr*
Educational Technology Lab, School of Philosophy, Department of Pedagogy

Marios Xenos, *mariosxenos@gmail.com*
Educational Technology Lab, School of Philosophy, Department of Pedagogy

"D-stage" is designed by ETL as a "kit" for developing 2d Science Microworlds. "D-stage" is a "microworld kit" in the sense that it allows researchers, teachers and students to use it as a template and create a set of 2d Microworlds for simulating phenomena defined by Newtonian or other types of scientific Laws. Designing and constructing new microworlds using the "D-stage" kit, the students have the opportunity to explore the physics laws that underpin the phenomena they wish to simulate and create new and complicated situations to experiment with.

To develop their microworlds the students have at their disposal: a) an area where they may insert objects and observe the simulated phenomena – the "Stage", b) an area where the Properties or Behaviours of the objects appear in the form of sliders (angle, length, mass, radius, delay) – the "Attributes" area, c) an area where the GUI handlers are placed (e.g. the START button) – the "Control" area, d) an area where the values of specific Properties or Behaviours appear in a vector form, e) a Logo Editor for programming the Properties, the Behaviours and the relationships between the objects that appear on the Stage.

When opening the kit, the Stage already hosts only one object programmed to move like a projectile. Making it move in different ways is just a matter of changing the initial conditions through the sliders or changing specific parts of the LOGO Program that underpin its motion. Adding new objects at the Stage is also quite simple for the designer of microworld. The Logo code that controls the behaviour of the already existing object can be copy-pasted and linked to the new object.

In this poster, we will attempt to highlight University students' designing processes as they developed 2d half-baked Microworlds (Kynigos, 2007), using the "D-Stage" kit. We specifically focus on which functionalities of the kit they use and how they connect their design choices with pedagogical and epistemological underpinnings.

References

Kynigos, C. (2007). Half–Baked Logo microworlds as boundary objects in integrated design. *Informatics in Education , 6* (2), 335–359.