

Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering

328

Editorial Board Members

Ozgur Akan

Middle East Technical University, Ankara, Turkey

Paolo Bellavista

University of Bologna, Bologna, Italy

Jiannong Cao

Hong Kong Polytechnic University, Hong Kong, China

Geoffrey Coulson

Lancaster University, Lancaster, UK

Falko Dressler

University of Erlangen, Erlangen, Germany

Domenico Ferrari

Università Cattolica Piacenza, Piacenza, Italy

Mario Gerla

UCLA, Los Angeles, USA

Hisashi Kobayashi

Princeton University, Princeton, USA

Sergio Palazzo

University of Catania, Catania, Italy

Sartaj Sahni

University of Florida, Gainesville, USA

Xuemin (Sherman) Shen

University of Waterloo, Waterloo, Canada

Mircea Stan

University of Virginia, Charlottesville, USA

Xiaohua Jia

City University of Hong Kong, Kowloon, Hong Kong

Albert Y. Zomaya

University of Sydney, Sydney, Australia

More information about this series at <http://www.springer.com/series/8197>

Anthony Brooks · Eva Irene Brooks (Eds.)

Interactivity, Game Creation, Design, Learning, and Innovation

8th EAI International Conference, ArtsIT 2019
and 4th EAI International Conference, DLI 2019
Aalborg, Denmark, November 6–8, 2019
Proceedings

Editors

Anthony Brooks 
Department of Architecture, Design
and Media Technology
Aalborg University
Aalborg, Denmark

Eva Irene Brooks 
Department of Culture and Learning
Aalborg University
Aalborg, Denmark

ISSN 1867-8211 ISSN 1867-822X (electronic)
Lecture Notes of the Institute for Computer Sciences, Social Informatics
and Telecommunications Engineering
ISBN 978-3-030-53293-2 ISBN 978-3-030-53294-9 (eBook)
<https://doi.org/10.1007/978-3-030-53294-9>

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2020
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

We are delighted to introduce the proceedings of the 8th European Alliance for Innovation (EAI) International Conference on Arts and Technology, Interactivity, and Game Creation (ArtsIT 2019) and the 4th International Conference on Design, Learning and Innovation (DLI 2019), held in Aalborg, Denmark, November 6–8, 2019.

ArtsIT 2019 was meant to be a place where people in the arts, with a keen interest in modern IT technologies, meet with people in IT, having strong ties to the arts in their works. Since 2009, the event has become a leading scientific forum for dissemination of cutting-edge research results in the area of arts, design, and technology. The event also reflects the advances seen in the open related topics of interactivity (interaction design, virtual reality, augmented reality, robotics, etc.) and game creation (serious games, gamification, leisure gaming, gameplay, etc.).

ArtsIT has been successfully co-located with the international conference DLI since 2016.

Design, learning, and innovation frame the world of IT, opening doors into an increasingly playful world. The DLI 2019 conference was driven by the belief that tools, technologies, and environments, as well as content and approaches, can spark and nurture a passion for learning, transforming domains such as education, rehabilitation/therapy, work places, and cultural institutions. Design, learning, and innovation are a powerful catalyst in empowering individuals to participate, communicate, and create, whereby they can exceed their own limits in a playful way. Making this spirit explicit and visible is crucial for identifying how specific tools, technologies, methodologies, and solutions shape opportunities for learning and engaging with the demands of today's world. More than ever, challenges in the fields of design, learning, and innovation are often approached by transdisciplinary teams and solutions that mobilize tools, technologies, methods, and theories from different fields to unlock new frameworks, opening up to partnerships that can enrich learning in formal and informal learning practices. DLI 2019 intended to foster such dynamics.

The venue for the ArtsIT and DLI events was the city campus of Aalborg University (AAU) in Aalborg, in the region North Jutland of mainland Denmark. AAU is a Danish public university that was founded in 1974 that currently has campuses in the cities of Aalborg, Esbjerg, and Copenhagen. The Aalborg campus has distributed faculty buildings throughout the city as well as around the peripheral of the city boundaries. Aalborg is Denmark's fourth largest city by population size. The university awards bachelor degrees, master degrees, and PhD degrees in a wide variety of subjects within humanities, social sciences, information technology, design, engineering, exact sciences, and medicine. Aalborg University differentiates itself from the older and more traditional Danish universities with its focus on interdisciplinary, interfaculty studies; an experimental curriculum based on an interdisciplinary, basic courses with subsequent specialisation; and a pedagogical structure based on problem-centered, real-life projects of educational and research relevance – which internationally has become

known and recognised as The Aalborg Model. With the problem-based, project-organised model, semesters at AAU are centred around complex real-life problems which students attempt to find answers to in a scientific manner while working together in groups. In February 2007, the foundation of the UICEE Centre for Problem-Based Learning (UCPBL) paid recognition to Aalborg University, which subsequently led to the appointment of AAU as UNESCO Chair in problem-based learning. Aalborg University is a member of the European Consortium of Innovative Universities (ECIU), which was founded in 1997 by 10 European universities. The other 9 European universities are: Dublin City University, Ireland; Linköping University, Sweden; Aveiro University, Portugal; Autonomous University of Barcelona, Spain; Hamburg University of Technology, Germany; University of Stavanger, Norway; Kaunas University of Technology, Lithuania; Tampere University of Technology, Finland; and University of Twente, The Netherlands. The aim of the ECIU is to create a European network where participating universities can exchange experiences and practices in projects in education, research, and regional development. In 2010, the ECIU consisted of 11 members and 3 foreign affiliates.

Personnel behind bringing ArtsIT and DLI to AAU are employed under Aalborg University's Department of Architecture, Design and Media Technology and the Department of Culture and Learning. Further national and international research collaborations by these personnel is within Xlab, a research complex investigating learning, creativity, play, and digital technologies, under the Department of Culture and Learning at AAU's main campus in Aalborg. Xlab hosts workshops with regional pre-schools, schools, and institutes that are led by the in-lab team. Xlab is also active in many international research consortia projects.

This is stated at the closure of this text as notably, at both ArtsIT and DLI 2019 events, many meetings were hosted discussing with attending delegates on potential research project collaborations with Xlab. Contact with Xlab to discuss potential projects is through Professor Eva Brooks, Director, Xlab: Design, Learning, Innovation, Department of Culture and Learning, Aalborg University, Denmark.

We take this opportunity to thank all involved in realising the two events and likewise to congratulate best paper winners from both ArtsIT (Thomas Westin, Henrik Engström, and Jenny Brusk for their paper titled "Towards sustainable inclusive game design processes") and DLI (Emil Rosenlund Høeg, Christian Francis Reeves Scully, Jon Ram Bruun-Pedersen, and Stefania Serafin for their paper titled "The Reality of Implementing Virtual Reality: A case study on the challenges of integrating VR-based rehabilitation"). We are especially grateful to our four eminent luminary keynote speakers, namely Ernest Edmonds and Linda Candy for the ArtsIT event, and Willian Gaver and Thomas Hillman for the DLI event.

Acknowledgements are due to Aalborg University management who hosted the joint conference at the city campus and to the opening speakers who welcomed delegates to Aalborg and the university, namely Claus Brøndgaard Madsen who kindly welcomed on behalf of the Department of Architecture, Design and Media Technology, and Anja Overgaard Thomassen who kindly welcomed on behalf of the Department of Culture and Learning.

Alongside management acknowledgements, special thanks are due to all volunteers and locally employed personnel who kept things on track, ensured all was set up for

welcoming the delegates, and others who were intermediators between services and delivery to delegates e.g. in-venue caterers for breaks and lunches, AAU IT service personnel, and host venue service staff (to name just a few). We also herein acknowledge all committee members and reviewers, without whom academic scientific conferences cannot take place. Similarly, we are thankful to the sponsors of the event, especially the Danish Music Union who supported the gala dinner musicians, namely the Olav Gudnason duo. Thanks also to the staff and leadership of Mortens Kro restaurant where the most fantastic conference dinner was enjoyed by all. Final thanks goes to all who exhibited at the events, including Noldus, ATV, and INGA (International Green Agents), as well as Springer and O'Reilly publications who both sponsored the best paper prizes.

Finally, from our roles as chairs and steering leaders of the two events over the years, we posit that once again it was a pleasure to welcome delegates from around the world to ArtsIT and DLI. Special edition ArtsIT and DLI international journals are



currently being formulated where 2019 delegates and others are invited to submit extended papers.

Thanks to all – and we hope to see you in 2020!

June 2020

Anthony Brooks
Eva Brooks

Organization

Steering Committee (*ArtsIT ** DLI)

Imrich Chlamtac (President)	European Alliance for Innovation
*Anthony Brooks	Aalborg University, Denmark
**Eva Brooks	Aalborg University, Denmark

Organizing Committee

General Chairs

*Anthony Brooks	Aalborg University, Denmark
**Eva Brooks	Aalborg University, Denmark

General Co-chairs

*Anthony Brooks	Aalborg University, Denmark
**Eva Brooks	Aalborg University, Denmark

TPC Chairs and Co-chair

*Ido Iurgel	Rhine-Waal University of Applied Sciences, Germany
*Fotis Liarokapis	Masaryk University, Czech Republic
**Cristina Sylla	University of Minho, Portugal
**Anders Kalsgaard Møller	Aalborg University, Denmark

Technical Programme Committee Members

*Brendan Allison	University of California, San Diego, USA
*Zainab AlMeraj	Kuwait University, Kuwait
** Lucia Amante	Open University, Portugal
*Atakan Akçali	Rhine-Waal University of Applied Sciences, Germany
*Anastasia Analyti	Foundation for Research and Technology - Hellas (FORTH), Greece
*António Araújo	Aberta University, Portugal
*Heitor Avelos	Universidade do Porto, Portugal
*Marcos Azevedo	Wildlife Studios, Brazil
*René Bakker	HAN University of Applied Sciences, The Netherlands
*Brian Bemman	Aalborg University, Denmark
** Marie Bengtsson	Harplinge and Steninge Schools and Preschools, Halmstad Municipality, Sweden
*José Bidarra	Aberta University, Portugal
*Christos Bouras	Computer Technology Institute, Greece
*Alma Boyes	University Brighton, UK
** Lykke Bertel Brogaard	Aalborg University, Denmark

Anthony Brooks	Aalborg University, Denmark
Eva Irene Brooks	Aalborg University, Denmark
*Paul Brown	University of Sussex, UK
*Jon Ram Bruun-Pedersen	Aalborg University Copenhagen, Denmark
*Duncan Bullen	Brighton University, UK
*David Calås	Linnaeus University, Sweden
*Ana Cano	Universidad Complutense Madrid (UCM), Spain
*Isabel Carvalho	CIAC, Aberta University, Portugal
** Alejandro Catala	University of Santiago de Compostela, Spain
** Eva Cerezo	University of Zaragoza, Spain
*Karen Cham	Brighton University, UK
*Niels Christian	Aalborg University, Denmark
*Graça Corrêa	CFCUL, University of Lisbon, Portugal
** Nuno Correia	Universidade Nova de Lisboa, Portugal
** Clara Coutinho	University of Minho, Portugal
*Stuart Cunningham	Manchester Metropolitan University, UK
*Bruno da Silva	Universidade do Algarve, Portugal
** Susanne Dau	University College North (UCN), Denmark
*Pedro Alves da Veiga	Universidade Aberta and Universidade do Algarve, Portugal
*Amalia de Götzen	Aalborg University Copenhagen, Denmark
*Jean Detheux	Independent, Canada
*Brian Duffy	Wrexham Glyndwr University, UK
*Chamari Edirisinghe	Imagineering Institute, Malaysia
*Andreas Eklund	Linnaeus University, Sweden
*Cumhur Erkut	Aalborg University Copenhagen, Denmark
*Kai Essig	Rhine-Waal University of Applied Sciences, Germany
*Alun Evans	Universitat Ramon Llull, Spain
** Taciana Pontual Falcao	Universidade Federal Rural de Pernambuco, Brazil
*Panagiotis Fotaris	University of Brighton, UK
*Mauro Figueiredo	Universidade do Algarve, Portugal
*Franco Garcia	Universidade Federal de São Carlos (UFSCar), Brazil
*Sue Gollifer	Brighton University, UK
** Luís Gonzaga	University of Minho, Portugal
*Lindsay Grace	American University, USA
*Dimitris Grammenos	Foundation for Research and Technology - Hellas (FORTH), Greece
**Susanne Haake	Pädagogische Hochschule Weingarten, Germany
** Thanasis Hadzilacos	Open University, Cyprus
*Luciana Haill	Greenwich University London, UK
*Karen Heald	Wrexham Glyndwr University, UK
*Miralem Helmefalk	Linnaeus University, Sweden
*Bruno Herbelin	Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
*Anca-Simona Horvath	Aalborg University, Denmark
*Alina Huldgtren	Rhine-Waal University of Applied Sciences, Germany

*Emil Rosenlund Høeg	Aalborg University Copenhagen, Denmark
*Tobias Isenberg	Université Paris-Sud, France
*Ido Iurgel	Rhine-Waal University of Applied Sciences, Germany
*Antoni Jaume-i-Capó	Universitat de les Illes Balears, Spain
** Marco Javier	University of Zaragoza, Spain
*Walther Jensen	Aalborg University, Denmark
*Michail Kalogiannakis	University of Crete, Greece
*Juliet King	George Washington University, USA
** Susanne Kjällander	Stockholm University, Sweden
*Silvia Kober	University of Graz, Austria
*Lise Busk Kofoed	Aalborg University Copenhagen, Denmark
*Martin Kraus	Aalborg University, Denmark
*Andre Frank Krause	Rhine-Waal University of Applied Sciences, Germany
*Mel Krokos	University of Portsmouth, UK
*Ben Kybartas	Delft University of Technology, The Netherlands
*Hartmut Könitz	HKU University of the Arts Utrecht, The Netherlands
*Thomas Laubach	Rhine-Waal University of Applied Sciences, Germany
*Melanie Lenz	V&A Museum, UK
*Fotis Liarokapis	Masaryk University, Czech Republic
** Jesper Lund	Halmstad University, Sweden
*Markus Löchtefeld	Aalborg University, Denmark
*Penousal Machado	University of Coimbra, Portugal
*Kristina Madsen	Aalborg University, Denmark
*Leif Marcussen	Linneaus University, Sweden
*Gabriel Mendes	Universidade Federal de São Carlos (UFSCar), Brazil
*Max Mignotte	Montreal University, Canada
*Roderick Mills	Brighton University, UK
*Leonel Morgado	Universidade Aberta, Portugal
*Natalie Mrachacz-Kersting	Aalborg University, Denmark
** Anders Kalsgaard Møller	Aalborg University, Denmark
** Chrystalla Neophytou	Open University, Cyprus
*Vania Neris	Universidade Federal de São Carlos (UFSCar), Brazil
*Grant Norte	The University of Toledo, USA
*Dan Overholt	Aalborg University Copenhagen, Denmark
*Melike Ozmen	İstanbul Bilgi Üniversitesi, Turkey
*Mark Palmer	University of the West of England (UWE), UK
*Courtne Paschall	University of Washington Seattle, USA
*Rich Picking	Wrexham Glyndwr University, UK
*Mannes Poel	University of Twente, The Netherlands
** Cristina Ponte	Universidade Nova Lisboa, Portugal
*Sofia Ponte	Universidade do Porto, Portugal
*Mirjana Prpa	Simon Fraser University, Canada
*Chris Raftery	Colorado State University, USA
*Shivakeshavan Ratnadurai-Giridharan	Cornell University, USA
*Kamila Rios	Universidade Federal de São Carlos (UFSCar), Brazil

Special Tracks/Workshops Chairs

*Miralem Helmefalk	Linnaeus University, Sweden
*Anton Nijholt	University Twente, The Netherlands
*Thomas Westin	Stockholm University, Sweden

Publicity and Social Media Chairs

Joao Martinho Moura	Polytechnic Institute of Cávado e Ave, UCP, Portugal
Eva Brooks	Aalborg University, Denmark

Publications Chairs

*Anthony Brooks	Aalborg University, Denmark
**Eva Brooks	Aalborg University, Denmark

Web Chair

Joao Martinho Moura	Polytechnic Institute of Cávado e Ave, UCP, Portugal
---------------------	--

Posters Chairs

*Anthony Brooks	Aalborg University, Denmark
**Alejandro Catala	Universidade de Santiago de Comostela, CiTIUS, Spain

Panels Chairs

*Anthony Brooks	Aalborg University, Denmark
**Eva Brooks	Aalborg University, Denmark

Demos Chairs

*Anthony Brooks	Aalborg University, Denmark
**Jeanette Sjöberg	Halmstad University, Sweden

EAI Events Management

Kristina Lappyova	European Alliance for Innovation
Katarina Srnanova	European Alliance for Innovation

Contents

Keynote Chapters

Art and Code: Programming as a Medium	3
<i>Ernest Edmonds</i>	

Creating with the Digital: Tool, Medium, Mediator, Partner	13
<i>Linda Candy</i>	

Targeting Experiences

Targeting Experiences	31
<i>Anthony L. Brooks and Eva Brooks</i>	

Real-Time Measurement and Analysis of Audience Response	38
<i>Philip Wigham and Ben Challis</i>	

Out of the Box, into the Cubes: Envisioning User Experiences Through a Tool for Gamification, Toyification and Playification	49
<i>Pirita Ihämäki and Katriina Heljakka</i>	

Balancing Enlightenment and Experience in Interactive Exhibition Design . . .	69
<i>Peter Vistisen, Vashanth Selvadurai, and Jens F. Jensen</i>	

Audience Perception of Exaggerated Motions on Realistic Animated Animal Characters	88
<i>Mackenzie Hammer and Nicoletta Adamo</i>	

Towards a Conceptual Design Framework for Emotional Communication Systems for Long-Distance Relationships	103
<i>Hong Li, Jonna Häkkinen, and Kaisa Väänänen</i>	

Developing a User-Centred Communication Pad for Cognitive and Physical Impaired People	124
<i>Chaudhary Muhammad Aqdas Ilyas, Kasper Rodil, and Matthias Rehm</i>	

Evaluating Interactions with a Cognitively Biased Robot in a Creative Collaborative Task	138
<i>Jonathan Jung Johansen, Lasse Goul Jensen, and Brian Bemman</i>	

A Positional Infrared Tracking System Using Non-individualised HRTFs to Simulate a Loudspeaker Setup and Its Influence on Externalisation of Music	158
<i>Rasmus Eklund and Cumhuri Erkut</i>	

Finding, Feeling and Sharing the Value of a Landscape	178
<i>Rui Jesus, Catarina Conceição, and Gonçalo Lopes</i>	
Extended Realities, Artificial Intelligence and Interfaces	
Extended Realities, Artificial Intelligence and Interfaces	195
<i>Anthony L. Brooks and Eva Brooks</i>	
Hosting Social Touch in Public Space of Merging Realities	202
<i>Karen Lancel, Hermen Maat, and Frances Brazier</i>	
Renoir in VR: Comparing the Relaxation from Artworks Inside and Outside of Virtual Reality	217
<i>Johan Winther Kristensen, Lasse Lodberg Aafeldt, Peter Kejser Jensen, Rebecca Pipaluk Vinther, and Hendrik Knoche</i>	
Procedurally Generated Self Overlapping Mazes in Virtual Reality	229
<i>Balázs Gyula Koltai, Jakob Elkjær Husted, Ronny Vangsted, Thomas Noes Mikkelsen, and Martin Kraus</i>	
Navigating Procedurally Generated Overt Self-overlapping Environments in VR	244
<i>Jannik A. I. H. Neerdal, Thomas B. Hansen, Nicolai B. Hansen, Kresta Louise F. Bonita, and Martin Kraus</i>	
Staging Virtual Reality Exhibits for Bystander Involvement in Semi-public Spaces	261
<i>Daniel Hepperle, Andreas Siess, and Matthias Wölfel</i>	
Playful and Humorous Interactions in Urban Environments Made Possible with Augmented Reality Technology	273
<i>Anton Nijholt</i>	
“But Wait, There’s More!” a Deeper Look into Temporally Placing Touch Gesture Signifiers	290
<i>Liv Arleth, Emilie Lind Damkjær, and Hendrik Knoche</i>	
Co-designing Object Shapes with Artificial Intelligence	309
<i>Kevin German, Marco Limm, Matthias Wölfel, and Silke Helmerdig</i>	
Authentication of Art: Assessing the Performance of a Machine Learning Based Authentication Method	328
<i>Ailin Chen, Rui Jesus, and Márcia Vilarigues</i>	
“What I See Is What You Get” Explorations of Live Artwork Generation, Artificial Intelligence, and Human Interaction in a Pedagogical Environment . . .	343
<i>Ana Herruzo and Nikita Pashenkov</i>	

Games, Gamification and Accessible Games

Games, Gamification and Accessible Games.	363
<i>Anthony L. Brooks and Eva Brooks</i>	
Challenges for Designing Adaptive Gamification in Telerehabilitation Systems for Heart Failure Patients' Self-management.	370
<i>Bianca Clavio Christensen, Hendrik Knoche, and Birthe Dinesen</i>	
Co-creating Virtual Reality Applications for Motor Rehabilitation with Physiotherapists.	379
<i>Emil Rosenlund Høeg, Begüm Becermen, Jon Ram Bruun-Pedersen, and Stefania Serafin</i>	
Towards Sustainable Inclusive Game Design Processes	390
<i>Thomas Westin, Henrik Engström, and Jenny Brusk</i>	
Co-designing a Head-Mounted Display Based Virtual Reality Game to Teach Street-Crossing Skills to Children Diagnosed with Autism Spectrum Disorder	397
<i>Ali Adjorlu and Stefania Serafin</i>	
Stars, Crests and Medals: Visual Badge Design Framework to Gamify and Certify Online Learning	406
<i>Bastian Ilsø Hougaard and Hendrik Knoche</i>	
Make Waste Fun Again! A Gamification Approach to Recycling	415
<i>Miralem Helmeffalk and Joacim Rosenlund</i>	
Our Museum Game.	427
<i>Kristina Maria Madsen and Rameshnath Krishnasamy</i>	
Adoption of Requirements Engineering Methods in Game Development: A Literature and Postmortem Analysis.	436
<i>Miikka Lehtonen, Chien Lu, Timo Nummenmaa, and Jaakko Peltonen</i>	
Designing a Serious Game to Raise Awareness of Intimate Partner Violence Among Adolescents in the UK: The Use of 'Good Games' Principles for Effective Behavioural Change	458
<i>John Pearson, Song Wu, Hayley Royston, Helen Smailes, Natasha Robinson, Adam Cowell, and Adele Jones</i>	
Personalization of Educational Video Games in APOGEE	477
<i>Valentina Terzieva, Elena Paunova-Hubenova, and Boyan Bontchev</i>	

Arts and Artist

Arts and Artist 491
Anthony L. Brooks and Eva Brooks

An Analysis of How Interactive Technology Supports the Appreciation
of Traditional Chinese Puppetry: A Review of Case Studies 496
Shichao Zhao

SimonXXL - Investigating Spontaneous Group Formation Around Public
Installations 506
*Bo Jacobsen, Michael Utne Kærholm Svendsen, Adam Kjær Søgaard,
Rune Lundegaard Uggerhøj, and Markus Löchtefeld*

Interactive Arts and Disability: A Conceptual Model Toward
Understanding Participation 524
*Jonathan Duckworth, James Hullick, Shigenori Mochizuki, Sarah Pink,
Christine Imms, and Peter H. Wilson*

Nature and Nurture Across the Ages: Modest Means
for Modern Times 539
Henry J. Moller, Lee Saynor, Mark Chignell, and John Waterworth

Huge Balls: A Ludo-Narrative Exploration of Game Art 559
Guofan Xiong, Daniel Plata, and Chu-Yin Chen

Playing with the Artist 566
*Maria Vayanou, Olga Sidiropoulou, George Loumos, Antonis Kargas,
and Yannis Ioannidis*

Design as a Knowledge Constructing Activity

Design as a Knowledge Constructing Activity 583
Eva Brooks and Anthony L. Brooks

Touch to Read: Investigating the Readers' Interaction Experience
in Mediated Reading to Design Story Apps 588
Douglas Menegazzi and Cristina Sylla

Designing a Smart Toy Interactive Setting for Creating Stories 601
Silke ter Stal, Alejandro Catala, Mariët Theune, and Dennis Reidsma

Our Little Secret: Design and User Study on an Electrochromic Ambient
Display for Supporting Long-Distance Relationships 611
Hong Li, Heiko Müller, and Jonna Häkkinä

Keeping Digital Libraries Alive: Designing an Interactive Scientific Publication to Drive Demands of Scholars Based on Participatory Design . . .	623
<i>Camila Wohlmuth and Nuno Correia</i>	
Enabling Rural Women in India to Speculate Futures Through Games and Theatre: A Participatory Approach	633
<i>Arjun Harish Rao, Mahima Chandak, and Shreya Mukta Gupta</i>	
Learning Designs and Participation Through Digital Technologies	
Learning Designs and Participation Through Digital Technologies.	645
<i>Eva Brooks and Anthony L. Brooks</i>	
Teachers' Preferable Attributes of E-Learning Resources	650
<i>Valentina Terzieva, Elena Paunova-Hubenova, Katia Todorova, and Petia Kademova-Katzarova</i>	
Innovative Inclusive Educational Technology in Language Classrooms and Learner Perspectives: A Study of Nine Learner Narratives	660
<i>Henrik Kasch</i>	
GLOBE - Digital Literacy and Organizational Learning by Scenario-Driven Exercises	671
<i>Markus Bresinsky and Sophia Willner</i>	
Problem Solving and Collaboration When School Children Develop Game Designs	683
<i>Jeanette Sjöberg and Eva Brooks</i>	
To Become Digitally Competent: A Study of Educators' Participation in Professional Learning.	699
<i>Eva Brooks, Marie Bengtsson, Malin Jartzell Gustafsson, Tony Roth, and Lena Tonnby</i>	
Do People with Diabetes Follow the Recommendations? A Study of Motivational and Compliance Factors of People with Type 1 Diabetes.	714
<i>Marie Charlotte Lyngbye and Anders Kalsgaard Møller</i>	
Innovation, Inclusion and Emerging Technologies	
Innovation, Inclusion and Emerging Technologies	725
<i>Eva Brooks and Anthony L. Brooks</i>	
VR Situated Simulations	730
<i>Thore Soneson, Michael Johansson, Barbro Bruce, Kerstin Ahlqvist, and Camilla Siotis Ekberg</i>	

Head-Mounted Display-Based Virtual Reality as a Tool to Reduce Disruptive Behavior in a Student Diagnosed with Autism Spectrum Disorder 739
Ali Adjorlu and Stefania Serafin

The Reality of Implementing Virtual Reality: A Case Study on the Challenges of Integrating VR-Based Rehabilitation 749
Emil R. Høeg, Christian F. R. Scully, Jon R. Bruun-Pedersen, and Stefania Serafin

Designing and Learning with IoT in a Passion-Based Constructionist Context 760
Janette Hughes, Jennifer Anne Robb, and Margaret Lam

Entrepreneurial Cultural Affinity Spaces (ECAS): Design of Inclusive Local Learning Ecosystems for Social Change, Innovation and Entrepreneurship 772
Stefania Savva, Nicos Souleles, and Ana Margarida Ferreira

Short Paper

The Deadly Gamification Challenge of #BlueWhale 785
Selcen Ozturkcan

Author Index 789