

Advances in Game-Based Learning

Series Editors

Dirk Ifenthaler

Scott Joseph Warren

More information about this series at <http://www.springer.com/series/13094>

Fengfeng Ke • Valerie Shute
Kathleen M. Clark • Gordon Erlebacher

Interdisciplinary Design of Game-based Learning Platforms

A Phenomenological Examination
of the Integrative Design of Game,
Learning, and Assessment

 Springer

Fengfeng Ke
Department of Educational Psychology
and Learning Systems
Florida State University
Tallahassee, FL, USA

Valerie Shute
Department of Educational Psychology
and Learning Systems
Florida State University
Tallahassee, FL, USA

Kathleen M. Clark
School of Teacher Education
Florida State University
Tallahassee, FL, USA

Gordon Erlebacher
Department of Scientific Computing
Florida State University
Tallahassee, FL, USA

ISSN 2567-8086 ISSN 2567-8485 (electronic)
Advances in Game-Based Learning
ISBN 978-3-030-04338-4 ISBN 978-3-030-04339-1 (eBook)
<https://doi.org/10.1007/978-3-030-04339-1>

Library of Congress Control Number: 2018962489

© Springer Nature Switzerland AG 2019

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, express 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

Acknowledgment

The E-Rebuild project is funded by the National Science Foundation, grants 1318784 and 1720533. Any opinions, findings, and conclusions or recommendations expressed in this book are those of the authors and do not necessarily reflect the views of the National Science Foundation.

This work would not have been possible without the participation and support of our E-Rebuild design and research team members. We are especially indebted to Danial A. Smith, an E-Rebuild lead programmer; Dr. Peyman Fazian, an E-Rebuild level and assessment programmer; Dr. Anne Taylor, an architecture consultant; Sungwoong Lee, an E-Rebuild learning support designer; and Biswas Parajuli, an E-Rebuild assessment programmer. We are also grateful to all teachers and students who have participated in the design-based research of E-Rebuild.

Contents

1	Introduction and Prior Research Review	1
2	Chronicle of Designing a Game-Based Learning Platform	15
3	Interdisciplinary Design Activities and Patterns	51
4	Design of Gameplay for Learning	75
5	Interweaving Task Design and In-Game Measurement	99
6	Designing Dynamic Support for Game-Based Learning	119
7	An Evolving Design Framework for Game-Based Learning Platforms	141
	Index	153