Constructing Meanings by Designing Worlds

Digital Games as Participatory Platforms for Interest-Driven Learning and Creativity

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville
Università degli Studi di Padova, Italy

Vittorio Marone
August 2013

Copyright © 2013 by Vittorio Marone
All rights reserved.

Dedication

Mojej drogiej Mamie,
Która zawsze we mnie wierzyła,
I dzięki której zawsze wierzę.

"Ucz się ucz, bo nauka to potęgi klucz!"

Alla mia cara Mamma,
Che ha sempre creduto in me,
E che mi ha fatto sempre credere.

"Studia, studia, che lo studio è la chiave del potere!"

To my dear Mum,
Who has always believed in me,
And always made me believe.

"Learn and keep learning, because knowledge is the key to power!"

Acknowledgements

This work would have not been possible without the support and guidance of many special people. First of all, I want to acknowledge the faculty at the University of Padua, and in particular professors Bianca Maria Varisco, Marina Santi, Raffaella Semeraro, Laura Messina, Donatella Lombello, Mino Conte, Luciano Galliani, and Graziano Cecchinato. I also want to thank the staff at the University of Padua, and in particular Roberta Cosimo, Maria Grazia Dainese, Laura Fiore, Donatella Martella, Katia Milan, and Giuseppe Sassano.

I want to warmly acknowledge my doctoral committee members and mentors, Dr. Kathy Greenberg, Dr. Cary Staples, and Dr. Joel Diambra. Your unceasing support and care made a world of difference in my life. I will never forget it.

I want to express my sincere gratitude to the faculty of The University of Tennessee, and in particular to professors Ralph Brockett, Lisa Fall, Neil Greenberg, Tricia McClam, Trena Paulus, Susan Riechert, Christopher Skinner, Barbara Thayer-Bacon, Michael Waugh, and Lisa Yamagata-Lynch.

I also want to thank the Dean of the College of Education, Health, and Human Sciences, Dr. Bob Rider, the Head of the Department of Educational Psychology and Counseling, Dr. Steve McCallum, Dr. Joy DeSensi, Dr. Thomas George, Dr. Christina Goode, Dr. Carolyn Hodges, Dr. Kay Reed, Dr. Pia Wood and all the

people at The University of Tennessee for their support throughout my Ph.D. and the dual-degree process.

I must acknowledge the great staff in the College of Education, Health, and Human Sciences at The University of Tennessee, and in particular Diane Booker, Bonnie Bull, Beverly Cate, Millie Cheatham, Joy DuVoisin, Marie Fox, April Phillips, and Christine Tidwell. Your help and smile brightened my days. You are truly special.

I also want to thank and acknowledge some great researchers, professors, and friends who helped me and encouraged me in a thousand ways: at Ca' Foscari University (Venice) Dorota Pawlak, Aleksander Naumow, Emilia Magnanini, and Francesco Leoncini; and at other universities across the world: Dr. Allison Anders (University of South Carolina), Dr. Mike Carbonaro (University of Alberta), Dr. Antoinette Errante (Ohio State University), Dr. Vera John-Steiner (University of New Mexico), Dr. Diane Ketelhut (University of Maryland), Dr. Jessica Lester (Washington State University), Dr. Jan Plass (New York University), Dr. Paolo Sorzio (University of Trieste), Dr. Jonathan Taylor (Troy University), and Dr. Mary Alice Varga (University of West Georgia).

I salute and thank my "Ph.D. fellas" at UNIPD (with a big "ciao" to Elena Grassi and Monica Campion), my friends at UTK Bennett Adkinson, Emory Barnett (and everyone who helped me with the documentary), Ann Bennett, Renee Bumgarner, Kamella Carmino (and her husband Amigo Garraway), Janelle Coleman, Danielle Davis, Mark Gates, Carolyn Grimes, Taotao Long, Jennifer Lubke, Brenda

Murphy, LaNita Norman, Sultana Shabazz, Brian Sohn, Thelma Vandergriff and all the students in the EDPY-504 class and in the LEEDS program. A big “thank you” goes to my friends in the Discourse Analysis Research Team (DART) Ginny Britt, Doug Canfield, Joshua Johnston, and Elizabeth Price.

I want to sincerely thank my friends and their families in Knoxville, TN, who have welcomed me and supported me throughout my stay in Tennessee, making it a wonderful human experience: Josh Flory, Tim Jones, Lee Leadbetter, Jonathan Mintz, David Stults, Melanie, Julian, and the Reese family.

A very special “thank you” goes to my dear friends Smitta Dibapile (Tsala!) and Stephen Puplampu (Maaan!). Your smile and generosity make the world a better place.

I want to extend my thanks to my outstanding friends and supporters Francesca, Mahavir, Sofia and Giovanni, Anna and Tatiana Moroz, Manuela Picariello, Daniele Rossetti, Oleg Rumyantsev, and Marta Vanin. You showed me the true colors of friendship.

I also want to acknowledge Sam (of *Sam’s Party Store*) for his friendship (and for providing the tea that kept me running!); *Fast Lane Daily* and *Top Gear* for keeping me on track; and *Deadmau5*, *Knife Party*, and *Savant* for keeping me awake, focused, and inspired.

I want to wholeheartedly thank Don Alfonso, Graziano, and the Madonna della Navicella Church in Sottomarina, Italy, for taking care of someone I dearly love, and Pastor Ryan Wyatt and Fuse Church in Knoxville, TN, for their prayers and inspiration.

To my family, Krysia, Tonino, Giuseppe, Brunello, Sari, Viola Elettra, Laura, Cristiana, Eugenio, Elisa, Pietro, Marcello, my aunts, uncles, and cousins: thank you so much for your continuing support and encouragement! Wherever I may roam, you have always been and will always be my safe home.

My most bestial thanks go to Bella (my special canine assistant), La Piccola and La Grande, Zorro, and Iuno. Micetta, Raal, and Scott, you will always be in my life and forever in my heart.

Last, but definitely not least, I want to thank my wonderful wife Claudia who supports me and loves me in ways beyond my imagination. Ti amo.

Abstract (in English)

This study emerges from the observation of an increasing divide between generations: a lack of a shared ground that carries profound social, cultural, and educational implications. In particular, the broadening differences between academic and "grassroots" approaches to learning and creativity are transforming formal and informal enterprises into seemingly incommunicable realms. This clash between different (and distant) practices, inside and outside of school, is inhibiting the construction of a common language between teachers and students, and, more broadly, between generations, thus hindering the development of *any* educational discourse.

In this study I inquired into an online participatory space in order to advance our understanding on how its participants, driven by their interest in gaming and game design, discursively constructed learning and creativity. In particular, I looked into a community dedicated to designing, sharing, and critiquing digital game levels (i.e., "mini-games") created with *LittleBigPlanet* (a digital game and creative tool for the PlayStation 3 game console) and discussed in the "Forum" section of the *LittleBigPlanet Central* website (www.lbpcentral.com).

In this qualitative study I applied a *hybrid intertextual methodology* based on discourse analysis, studio critique, and design process analysis to analyze discursive texts (threads/posts in the discussion forum), interactive artifacts (user-generated game levels),

and constructive practices (deigning, sharing, and critiquing game levels).

The findings suggest that participants socially construct and negotiate learning and creativity by enacting specific discursive functions that entail the use of humor, specialist language, and the negotiation of effort and self-appreciation. By engaging in multimodal and intertextual practices in an attentive and competent community, users create a safe social space that fosters reciprocal trust, togetherness, participation, planning, and reflectivity.

By furthering our understanding of a situated interest world, this research advances our knowledge on informal participatory spaces in which learning and creativity emerge as intertwined phenomena that develop through social-constructive endeavors spurred by people's interests and passions.

Abstract (in Italiano)

Questa ricerca nasce dalla constatazione di un crescente divario tra generazioni: una mancanza di terreno comune che comporta profonde implicazioni sociali, culturali ed educative. In particolare, le differenze tra approcci formali e informali all'apprendimento e alla creatività sembrano inibire la costruzione di un linguaggio condiviso tra docenti e studenti, e, più in generale, tra generazioni, ostacolando così lo sviluppo di *qualsiasi* discorso educativo.

In questa ricerca qualitativa ho analizzato le interazioni in uno spazio on-line informale i cui partecipanti, guidati dal loro interesse per i videogiochi e il game design, progettano, condividono, e commentano livelli di gioco digitali (cioè "mini-giochi") creati con *LittleBigPlanet* (un videogioco e uno strumento creativo per la PlayStation 3) e discussi nella sezione "Forum" del sito *LittleBigPlanet Central* (www.lbpcentral.com).

In questo studio ho utilizzato una *metodologia intertestuale ibrida* basata sull'analisi del discorso, sulla "studio critique", e sull'analisi di processo nel campo del design, per analizzare i *testi discorsivi* (i thread/post nel forum), gli *artefatti interattivi* (i livelli di gioco creati dagli utenti) e le *pratiche costruttive* (progettare, condividere e commentare i livelli di gioco).

I risultati di questa ricerca dimostrano che i partecipanti del forum costruiscono socialmente l'apprendimento e la creatività attraverso specifiche funzioni discorsive che comportano l'impiego di

humor e linguaggio specialistico e la negoziazione sociale di impegno e auto-apprezzamento. Gli utenti del forum, immersi in una comunità attenta e competente, cimentandosi in pratiche multimodali e intertestuali, creano uno spazio sociale che favorisce lo sviluppo di fiducia reciproca, unità, partecipazione, pianificazione, e riflettività.

Questa ricerca amplia la nostra comprensione degli spazi partecipativi informali in cui l'apprendimento e la creatività emergono come fenomeni interconnessi che si sviluppano attraverso pratiche socio-costruttive che scaturiscono dagli interessi e dalle passioni delle persone.

Table of Contents

Chapter 1 Introduction to the Study 1
Situating the Study 2
The research context 2
A new approach to interests 3
New literacies, Discourses, and interest worlds 4
The rise of participatory cultures 5
The evolution of contemporary digital games 7
Research Problems 9
The "missing link" between generations 10
The distance between formal and informal learning environments 11
The overlooking of interests and interest worlds 12
Purpose of the Study 19
Guiding Research Questions 20
Positionality Statement 20
Theoretical and Conceptual Framework 22
Previous Research 25
Methodology and Methods 27
Significance of the Study 28
Critical merit 28
Theoretical merit 28
Methodological merit 29
Practical merit 29
Heuristic merit 30
Limitations 31
Delimitations 32
Organization of the Study 33
Definition of Relevant Terms and Concepts 34
Affordance 35
Emoticon 35
Game level 35
LittleBigPlanet 36
LittleBigPlanet Central 36
Participatory platform 37
Participatory space 37
Chapter 2 Review of the Literature 38
The Need for an Interdisciplinary Approach 38
Search Criteria 41

Constructivism and Situated Cognition 44
Social Constructivism 48
Informal Learning Environments 50
Individual cognition vs. shared cognition 51
Pure mentation vs. tool manipulation 52
Symbol manipulation vs. contextualized reasoning 52
Generalized learning vs. situation-specific competencies 53
Communities of Practice 54
Virtual Communities 57
Affinity Spaces 59
Defining affinity spaces 59
Previous research on affinity spaces 61
Critical synthesis of the research 64
Methodological issues and perspectives 66
Participatory Spaces 68
Social Creativity in the Digital Age 70
Digital Games as Participatory Platforms 76
Digital Games as *Play* 77
Digital Games as *Design* 91
Digital Games as *Participation* 97
Conclusions 108
Chapter 3 Methodology and Methods 111
A Qualitative Approach to Educational Research 111
The Researcher as the Instrument of Inquiry 112
Research Methodology 113
Discourse 113
Multimodality and intertextuality 115
A hybrid intertextual methodology 117
Research Methods 118
Discourse analysis 118
Studio critique 123
Design process analysis 124
Sources of Data 126
LittleBigPlanet 126
The *PlayStation Network* 131
LittleBigPlanet Central 131
Research Design and Procedures 133
Data selection, collection, and analysis 133
Copyright issues 135
Ethical and privacy issues 135

Warranting....136
Addressing "quality" in qualitative research....137
Reliability and validity....143
Trustworthiness and soundness....144
Chapter 4 Findings....146
Methodological Considerations on Findings....147
The Use of Language....149
Discursive Texts....151
"Yelling at the editor": humor and its functions....151
"A big experiment in timed magnetic switches": naturally occurring specialist talk....159
"Keep in mind that I will be improving": the discursive functions of the opening posts....161
Interactive Artifacts....184
Content....184
Form....188
Function (project goals)....189
Structure (hierarchy, order)....192
Usefulness (audience pragmatics)....193
Aesthetics (form enhancement)....194
Distinction (uniqueness)....195
Constructive Practices....198
Acceptance....198
Analysis....200
Definition....203
Ideation....208
Idea selection....210
Implementation....212
Evaluation....213
Conclusions....218
Chapter 5 Discussion, Conclusions, Implications, and Recommendations 220
Discussion and Conclusions....222
Humor and its functions....223
Specialist language....225
The discursive functions of the opening posts....228
A social-iterative approach to learning and creativity....228
The discursive construction of effort....231
Fostering assertiveness through self-appreciation....232
Listener's competence and learning....234
Togetherness and reciprocal trust....235

Shared references and intertextuality 236
Planning and reflectivity 237
Multimodality 238
Social implementation 239
Final Thoughts 240
Implications and Recommendations 243
Implications and recommendations for researchers 243
Implications and recommendations for practitioners 249
Interest-Driven Learning and Creativity: A Visual Model 256
List of References 266
Vita 307

List of Tables

Table 1. The opening post: dimensions, themes, and examples. 163
Table 2. The opening post as a request for absolution. 183

List of Figures

Figure 1. The evolution of contemporary digital games. 9
Figure 2. The dimensions of interests. 13
Figure 3. The dimensions of interests (expanded). 15
Figure 4. An interdisciplinary approach to the study. 39
Figure 5. Situating digital games: the traditional perspective. 78
Figure 6. Chronotopes and game design in participatory spaces. 109
Figure 7. A hybrid intertextual methodology. 119
Figure 8. LittleBigPlanet 2 (box artwork). 127
Figure 9. A cooperative section for two players ("x2") in LittleBigPlanet 2. 129
Figure 10. LittleBigPlanet Central ("Level Showcase" subcategory). 132
Figure 11. Popular characters (upper row) and their Sack-personifications in LittleBigPlanet (lower row). 173
Figure 12. Interest-driven learning and creativity. The core and its four dimensions: personal, social, conceptual, and concrete (build 1 of 7). 258
Figure 13. Interest-driven learning and creativity. The four principal components: individual, group, artifact, and environment (build 2 of 7). 259
Figure 14. Interest-driven learning and creativity. Experience, discourse, self-development, and self-expression (build 3 of 7). 260
Figure 15. Interest-driven learning and creativity. Becoming, belonging, constructing, and sharing (build 4 of 7). 261
Figure 16. Interest-driven learning and creativity. Reflexivity, reciprocality, competence, and influence (build 5 of 7). 263
Figure 17. Interest-driven learning and creativity. Awareness, responsibility, initiative, and involvement (build 6 of 7) 264
Figure 18. Interest-driven learning and creativity. Identity, relationship, ownership, and participation (build 7 of 7). 265

“A creative act is an instance of learning.”
(Guilford, 1950)

Chapter 1

Introduction to the Study

This study emerges from the observation of an increasing divide between generations: a lack of a shared ground that carries profound social, cultural, and educational implications. In particular, the broadening differences between academic and "grassroots" approaches to learning and creativity are transforming formal and informal enterprises into seemingly incommunicable realms. This clash between different (and distant) practices, inside and outside of school, is inhibiting the construction of a common language between teachers and students, and, more broadly, between generations, thus hindering the development of *any* educational discourse.

I argue that we need to get closer to students' interests and interest worlds that involve complex social endeavors facilitated and empowered by *new technologies* and *new practices with technologies* that require the development of *new literacies*. From this perspective, in this study I look at the "interest world" of gaming and game design, and, more specifically, at how user-generated digital games are designed, shared, and critiqued in a social space. In fact, this study aims at advancing our understanding of learning and creativity in informal social environments inspired and propelled by the interests of their passionate participants.

In this chapter I present the study through an overview of its main components. I start by situating the study ("The research context," "A new approach to interests," "New literacies, Discourses,

and interest worlds," "The rise of participatory cultures," and "The evolution of contemporary digital games"). I then introduce the research problems ("The "missing link" between generations," "The distance between formal and informal learning environments," and "The overlooking of interests and interest worlds"). Successively, I articulate the purpose of the study and present the guiding research questions, the positionality statement, the theoretical and conceptual framework, and previous research related to the study. The methodology and methods, significance, limitations, delimitations, and organization of the study are outlined in subsequent sections. I conclude the chapter by defining relevant terms and concepts ("affordance," "emoticon," "game level," "*LittleBigPlanet*," "*LittleBigPlanet Central*," "participatory platform," and "participatory space").

Situating the Study

The research context. People's interests form an intricate web of interest worlds populated by millions of enthusiasts. In this study I immerse myself in one of these worlds with a stance of sincere interest, curiosity, and care, in order to further our understanding on the social construction of learning and creativity in an informal online space. In particular, I inquire into a community dedicated to designing, sharing, and critiquing digital game levels (i.e., "mini-games") created with *LittleBigPlanet* (a digital game and creative tool

for the PlayStation 3 game console) and discussed in the "Forum" section of the *LittleBigPlanet Central* website (www.lbpcentral.com).

I approach this study from a multimodal and intertextual perspective (Kress, 2011; Kress, Jewitt, Ogborn, & Tsatsarelis, 2001) considering not only the *discursive texts* (the threads/posts published on the forum), but also the *interactive artifacts* (the user-generated game levels) and how these two components (*discursive texts* and *interactive artifacts*) engender and support *constructive practices*.

A new approach to interests. The diffusion, diversification, and complexity of out-of-school learning and creative practices call for a new approach that requires a heartfelt and interested stance. I argue that we need to go beyond *investigating* interest worlds by intimately *resonating* with them (Piantanida & Garman, 2009), in order to deepen our understanding of practices that carry a profound value for their participants. In other words, researchers should strive to become *insiders* (Gee, 2010) who know and care about the investigated interests from a participatory stance, which also applies to practitioners. In this context, Thomas (2007), discussing a specific interest (fan fiction), urges educators to "recognize the value of writing fan fiction and participating in the texts of pop culture" (p. 162), which echoes arguments on the need of a new stance toward outside-of-school cultures and practices that carry value for their participants, especially youth and children (Lankshear & Knobel, 2007). In this context, Marsh and Millard (2000) argue that if we ignore such cultures and practices the risk is that "children may not

only be less motivated within school, but left feeling that literacy practices outside of school are meaningless and irrelevant" (p. 185).

In order to achieve this goal, as educational researchers and practitioners, we need to shift the way we look at people's interests, abandoning an *instrumental approach* (i.e., using students' interests to achieve teachers' goals) to embrace an *empowering approach* (i.e., using teachers' expertise and experience to proactively encourage, expand, and deepen students' interests). In other words, it is not enough to *build on students' interests*: we need to *build up students' interests* in order to meet their needs and develop their potential through a renewed consideration for practices they deeply care about and value. By empowering students' interests we can help them to develop a deep and aware *passion for interests*, which, in turn, can lead to a lifelong and life-wide passion for learning and creativity.

New literacies, Discourses, and interest worlds. In the last two decades social environments have flourished, thanks to the diffusion of personal computers, digital media, and the Internet (Ito et al., 2010). They have been investigated in the framework of *new literacies* (Black, 2007; Coiro, Knobel, Lankshear, & Leu, 2008; Gee, 2004; Jenkins, 2006; Jenkins, Purushotma, Weigel, Clinton, & Robinson, 2009; Lankshear & Knobel, 2007, 2008, 2011), an approach that acknowledges the multifaceted, contextualized, and evolving nature of literacies, emphasizing the social use of technologies for communication, meaning-making, learning, self-expression, and creativity. In this context, "literacy" should not be

intended as simply "reading and writing" or as a set of skills required to encode and decode texts, but rather as a form of deep understanding that emerges through active participation in a shared context.

The diversification and complexity of today's interest worlds makes it impossible to fathom them as a monolithic phenomenon and, to a certain extent, explains the reason why we talk about new literacies, in the plural. In fact, each of these worlds carries specific sets of rules, languages, and habits that we commonly define as a *culture* or a *Discourse*. Gee (2010) defines Discourse (with the capital "D") as a "way of being" that people enact through the use of a specific social language and practices to achieve valued social goods, acceptance, or recognition in a situated time and space. Building upon Gee's work, I consider a Discourse as *the embodiment of a culture through participation* and I define interest worlds as *interest-driven Discourses that carry meaning and value* (in alternative to terms like "fandom" and "subculture"). We can better understand these phenomena by looking at them from a historical perspective that acknowledges an increasingly participatory role of the public, fostered by the diffusion of technologies, as I will illustrate in the following section.

The rise of participatory cultures. Forty years ago McLuhan and Nevitt (1972) predicted that the proliferation of consumer electronic devices would have progressively transformed users into producers, or *prosumers* (Hall, 1993; Ritzer & Jurgenson, 2010; Tapscott, 1995; Toffler 1980). This portmanteau term combines the

words *proactive*, *producer*, or *professional*, and the word *consumer*. It denotes the active participation of users in the design and production of texts and artifacts that are shared or distributed in social settings. Another term used to indicate the blurring edges between professional and consumer domains is *Pro-Am* (Professional-Amateur), that indicates a fusion of roles fostered by the diffusion of powerful and relatively inexpensive tools, technologies, and means of communication that are made available to a large number of creative and passionate people (Leadbeater & Miller, 2004). The *Web 2.0* perfectly embodies this trend: a social environment in which millions of people participate as active creators of texts, artifacts, and practices, constructing and negotiating identities, understandings, and meanings.

Shared interests (e.g., the design of game levels) and shared practices (e.g., designing and sharing game levels) take place in social spaces that can be interpreted in the framework of *knowledge cultures* (Lévy, 1997) and *participatory cultures* (Jenkins, 2006; Jenkins et al., 2009). Knowledge cultures represent social environments in which people construct, organize, and share information, seek and give advice, review products and services. In these spaces knowledge is socially constructed, distributed, and constantly available, as a manifestation of a *collective intelligence* (Lévy, 1997). Participatory cultures are characterized by low barriers to participation and engagement, mutual support, individual contributions, collaborative efforts, and social connections that promote the creation and sharing of texts and artifacts (Jenkins et al., 2009). In these spaces, both

personal and social dimensions play an important role, as knowledge flows from expert users to novices through multiple forms of support, mentoring, and apprenticeship, but also through the development of shared repositories of knowledge (e.g., discussion forum threads, FAQs, and wikis) that benefit all participants and help the community to progress as a system. Each of these spaces involves a Discourse, with its specific ways of thinking, talking, and being (Gee, 2004, 2010; Lankshear & Knobel, 2007). One of the prominent Discourses among contemporary interest worlds involves gaming and game design (Gee, 2007b). In order to better understand the complexity and variety of the gaming interest world, it is important to understand the recent evolution of digital games that now offer a broad range of integrated tools for self-expression, social interaction, and creativity, as I will illustrate in the following section.

The evolution of contemporary digital games. In recent times, digital games have evolved as open-ended, creative, and social environments. The *Grand Theft Auto* series (Rockstar Games, first: 1997; *Grand Theft Auto 4*: 2008, PlayStation 3, Xbox 360, PC) and *The Sims* series (Maxis/Electronic Arts, first: 2000) are noteworthy examples of popular open-ended "sandbox-style" games that allow free exploration of interactive worlds that encourage the invention and pursuit of player-set goals. Other games, such as *ModNation Racers* (United Front Games, 2010, PlayStation 3, PSP) empower players with creative tools that allow the construction and sharing of game features and even entirely new player-generated game levels. These

features represent a popularization and "democratization" of *modding* (Steinkuehler & Johnson, 2009), the practice and art of modifying digital games and software to augment or completely remodel their functions or appearances, diverging from what was originally intended by their designers and developers. On the other hand, games like *World of Warcraft* (Blizzard Entertainment, 2004, PC, Mac) let thousands of players be simultaneously part of collaborative and competitive adventures online.

Will Wright's *Sim City* series (Maxis/Electronic Arts, first: 1989, PC, Mac) and *Spore* (Maxis/Electronic Arts, 2008, PC, Mac) are considered milestones in the evolution of open-ended, creative, and social games, but it was *LittleBigPlanet* (and its evolution *LittleBigPlanet 2*) that pushed even further this concept by offering an unprecedented range of integrated creative and social tools. In fact, the games in the *LittleBigPlanet* series are "play, create, and share hybrids" that include advanced, yet easy to use, "modding tools" that promise professional results. Furthermore, by playing these games, users develop understandings and skills that can be applied in the creation of user-generated game levels that can be shared with other players (Sotamaa, 2010). In this sense, I consider these games "participatory platforms" that offer *explorative*, *creative*, and *relational* affordances and tools and empower players in terms of *freedom*, *expression*, and *social interaction* (Fig. 1). I explore this potential in detail in Chapter 2, in the dimensions of *play*, *design*, and *participation*.

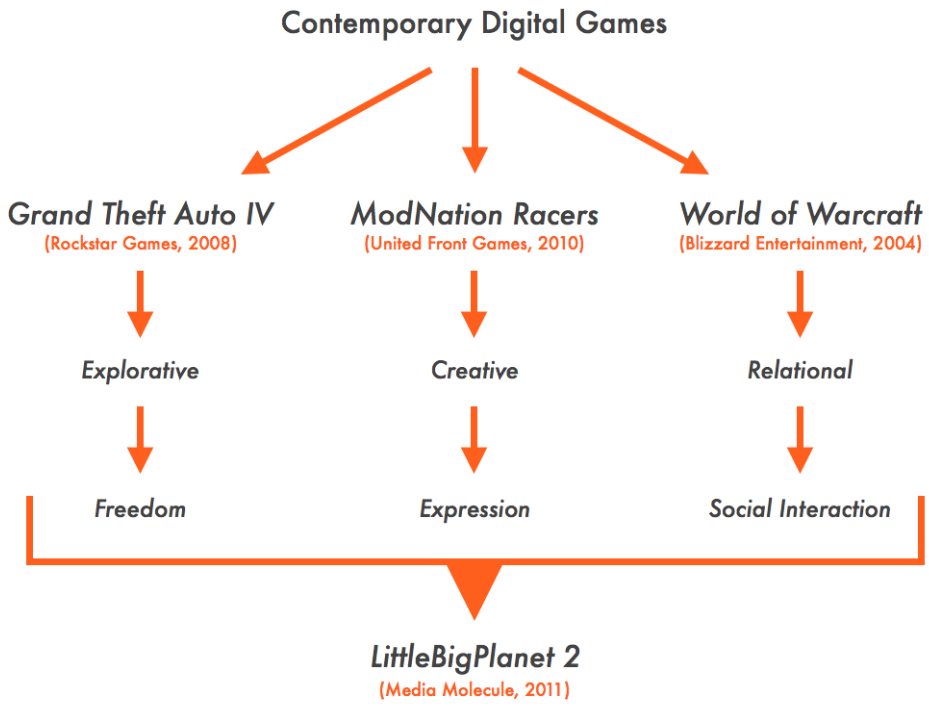


Figure 1. The evolution of contemporary digital games.

Research Problems

After looking at Discourses and interest worlds in the framework of new literacies and participatory cultures, and at the evolution of contemporary digital games, in this part of the chapter I will focus on the research problems framed by this context: the "missing link" between generations, the distance between formal and informal learning environments, and the overlooking of interests and interest worlds.

The "missing link" between generations. In the "global village" (McLuhan, 1962) young generations are exposed from a very early age to media and technologies. They have been called "digital kids" (Papert, 1996), "digital natives" (Ferri, 2011; Prensky, 2001, 2006), "millennials" (Howe & Strauss, 2000), and "the net generation" (Oblinger & Oblinger, 2005; Tapscott, 1998). These definitions caused some debates on the existence of actual "risks" for inadequate educational contexts that involve "natives" (i.e., students) and "immigrants" (i.e., teachers) (Bennett, Maton, & Kervin, 2008). Nevertheless, recent studies (Black, 2007; Duncan, 2012; Durga, 2012; Games, 2010; Hayes & Lee, 2012; Lammers, 2012; Owens, 2010) demonstrate that new generations actually participate in *new practices* (what they do) with *new technologies* (what they use) that involve *new literacies* (how they use them and how they make sense of them).

These practices entail a *new ethos*, that is a new approach and a new mindset to social, learning, and creative activities enacted to achieve and sustain a collective benefit. These *new ethos practices* involve active participation, collaboration, experimentation, hybridization, sharing, rule breaking, multitasking, decentered authorship, diffused authority, reciprocal support, openness, and generosity (Lankshear & Knobel, 2007). Given this scenario, when we think of the gap between "digital natives" and "digital immigrants," we must consider that this gap is caused not only by youth's dexterity with new technologies, but, most importantly, by the different

attitudes and practices that these technologies facilitate and, in some circumstances, engender (Von Hippel, 2005). This difference is particularly relevant in formal and informal learning environments, as I will discuss in the following section.

The distance between formal and informal learning environments. In the previous section I discussed how the divide between "digital natives" and "digital immigrants" emerges through attitudes and practices that are distant from those enacted in traditional educational settings. Research has demonstrated the importance of informal learning, but the long-established norms and rules of formal education have often put learning in an "esoteric bubble" (i.e., school) that keeps out informal practices, technologies, and ethos discussed in the previous section.

The separation of these two distinct approaches and settings (formal/informal) may induce learners to perceive a *discontinuity* between an abstract system of symbols and real-life problems and situations (L. B. Resnick, 1987; Schoenfeld, 1988), between what one learns in school and what one learns outside of it. Unfortunately, *everyday cognition* (Rogoff, 1984) and *learning-in-practice* (Lave, 1988, 1996) are seldom considered or integrated in formal educational settings. Furthermore, the academic system rarely recognizes, supports, or values learning outside of school, especially in contexts that are distant from the academic perspective and that involve social, cultural, or generational divides (e.g., urban cultures, youth music, or digital games). In other words, with the exception of some "avant-

garde" occurrences driven by the passion and dedication of teachers, the educational system seems to overlook people's interest worlds. As a matter of fact, "prescribed" educational practices in today's schools generally disregard interests and non-academic forms of learning and creativity in favor of focus on isolated activities to meet mandated academic standards and prepare students for one-right-answer questions on high stakes tests. This prevents an understanding and integration of valuable interests and practices, as I will illustrate in the following section.

The overlooking of interests and interest worlds. Interest-driven activities are a major attribute of learner-centered educational approaches that try to include personally relevant practices in educational settings. However, the complexity and sheer number of today's interest worlds makes it difficult for any teacher to "grasp" the Discourse of any specific interest. In this context, I argue that we need to shift our *interest-mindset*, acknowledging the complexity, specificity, and importance of these interest worlds. For example, if we say that one of Sonny's interests is "composing music," we may be missing the point. Sonny may compose *dubstep* songs with *complextro* influences, instrumental *folk metal* ballads, or West Coast *hip-hop* tracks, and all these different music genres carry very specific (and very different) Discourses (e.g., musical instruments, cultural references, ways of talking, being, and interacting).

Driven by their interests and passions, people extensively (and intensively) participate in social spaces to communicate, learn, design

and share texts and artifacts, constructing identities, relationships, and meanings. In fact, we must acknowledge that each of these interests (and interest worlds) carries *personal relevance*, *social presence*, *cultural identity*, and *historical legacy* (Fig. 2).

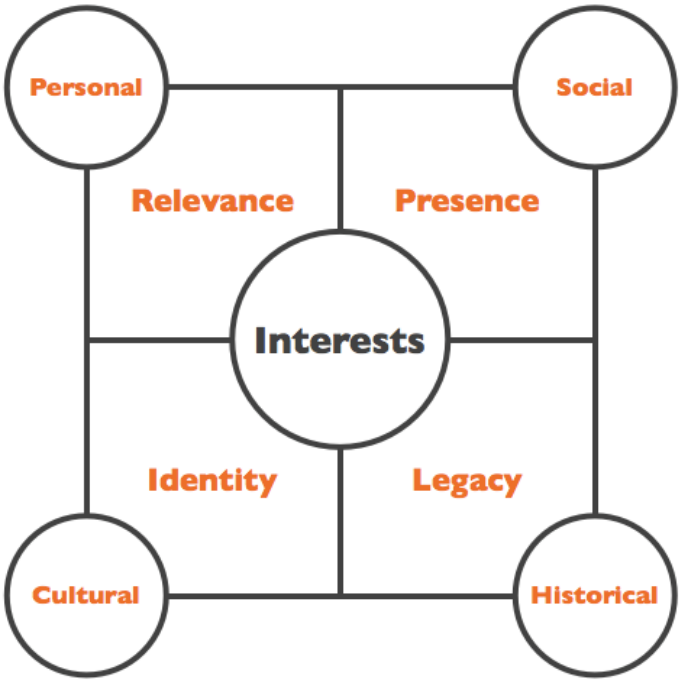


Figure 2. The dimensions of interests.

Let's take, for example, a young person interested in electronic music. He/she experiences this interest in different ways: by passionately listening to compositions, enthusiastically participating in discussion forums, painstakingly looking for new artists, and systematically saving money to buy songs/albums and equipment to compose his/her own songs. As a matter of fact, interests require an *investment* (that carries *value*) and an *engagement* (that carries *meaning*), on at least four different and interrelated levels: *emotional*, *participatory*, *temporal*, and *economic* (Fig. 3).

From this perspective, I define interests as *an inner force leading to practices that are held valuable and meaningful, as well as worthy of investment and engagement*. Returning to the example of electronic music, this interest has a *social presence*, as people attend concerts, participate in social media, and share compositions. It also has a *cultural identity*, as electronic music is not jazz or classical music, and it involves different forms of production and consumption. These differences derive from the dynamic nature of interests that change together with the evolution of technology and society, carrying a *historical legacy* that is embedded in every instance of its manifestation. For example, the origins of electronic music can be traced back to the late 19th century, with the invention of the first audio recording devices, the early 20th century with the experimentations of Futurist artists such as Luigi Russolo, the invention of the Hammond organ and the rise of electroacoustic tape music in the Forties and Fifties, the *musique concrete* movement and

the pioneering work of Karlheinz Stockhausen in the Fifties and Sixties, the invention and diffusion of the synthesizer in the Sixties, Seventies, and Eighties, and the development and popularization of computer music in the Nineties of the previous century.

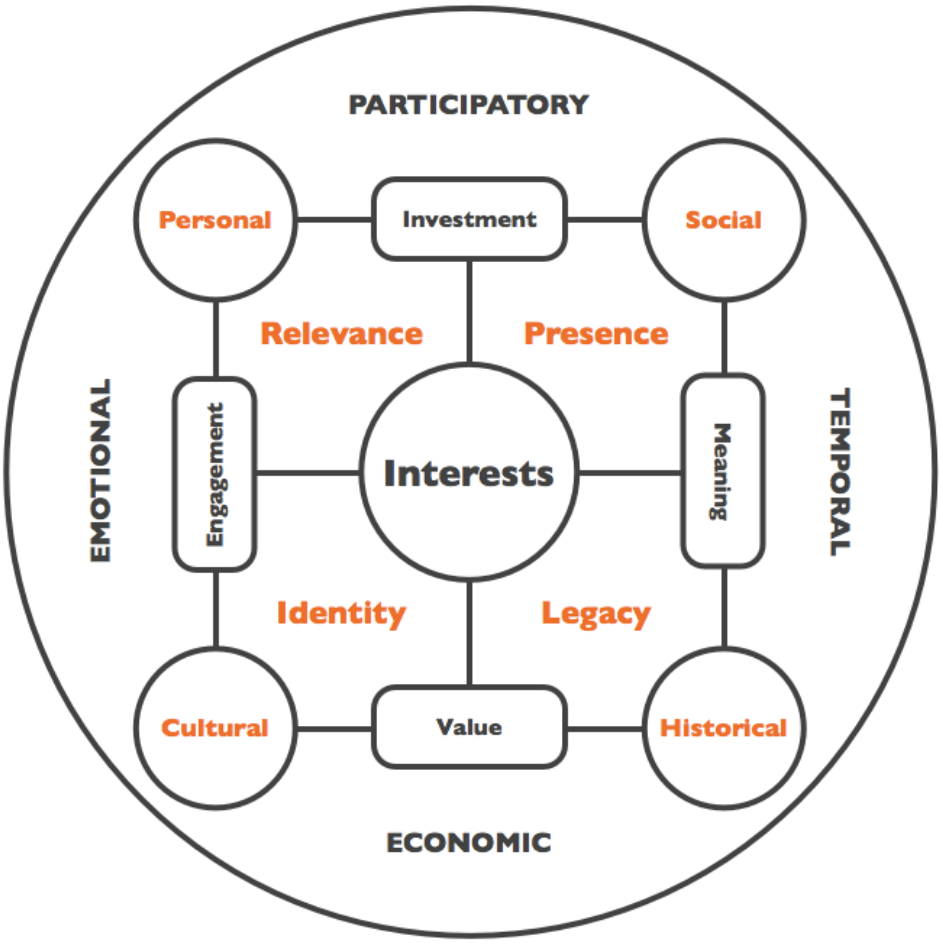


Figure 3. The dimensions of interests (expanded).

If we listen to a contemporary song in the electronic music genre, it is difficult to "perceive" these influences; still its historical legacy is what makes it what it is today. Last, but definitely not least, the *personal relevance* of interests is expressed in a number of individual and social practices that demonstrate passion and dedication.

Vygotsky introduced the concept of the *zone of proximal development* (ZPD), or "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In other words, the ZPD equates to what a person can learn under specific learning conditions with the facilitation of a *more knowledgeable other* (MKO) in a culturally mediated interaction (with the aid of language and symbols) that produces cognitive change (Bruner, 1984; Bruning, Schraw, Norby, & Ronning, 2004; Cobb, 1994; Puntambekar & Hübscher, 2005). Through these interactions, learners construct their knowledge by integrating new elements with previous understandings, in an active and mediated process that takes place in a sociocultural and historical context.

From this perspective, I argue that interests act as *discursive more knowledgeable others* (DMKOs) in the zone of proximal development: they not only motivate people from within, but, most importantly, they engage them in an active discourse that unfolds on a personal, social, cultural, and historical level (Fig. 3). In fact, we can

think of interests as inner *mediators* and *boosters* of learning and creativity that invite us to action, reflection, and participation. In other words, when we are dedicated to our interests, we enter in a dynamic and multidimensional discourse with them, which stimulates our engagement and investment in social, creative, and learning activities, above and beyond our "un-interested self" (i.e., a self bereft of interests).

Interests are particularly relevant in the context of learning and creativity because students who show passion for a subject will *willingly* engage in reading, writing, and sharing texts about it, texts that are much more complex than those related to topics that they consider as neutral (carrying no relevant personal meaning) or boring (Gee, 2004; Squire, 2011; Steinkuehler, Compton-Lilly, & King, 2010). The texts triggered by their interests are above and beyond their supposed, or expected, level of development, expertise, and knowledge. In interest-driven social spaces, participants learn to articulate their thoughts and communicate with others by using the specialist "insider's" language (Gee, 2010) of the specific interest and community. By becoming literate about their interests, learners make sense of the related interest worlds, each of which represents a Discourse with specific rules, ways of being, and terminology.

As discussed above, in interest-driven spaces participants enact situated identities by producing, sharing, and critiquing texts, artifacts, and practices with new ethos and new technologies. Unfortunately, most of these endeavors are seldom allowed in school. As a matter of

fact, when students step into the classroom, they are often asked to abandon at the entrance door their everyday interests, practices, and technologies. I consider this as an illegitimate and belittling looting that contributes to the perception of school as a *non-place* (Augé, 1995), an aseptic locus in which human beings are forced by circumstances or necessity, places such as supermarkets, hotel rooms, or airports. Students are "abducted" from their natural social and learning environments, spoiled of their digital devices, and forced to leave their interests and practices at home, as if they were not appropriate in school, less important than school, if not held trivial at all.

It is "the educated man," after all, who labeled as "subcultures" digital games, comics, heavy metal music, and other non-academic interests and practices. Given the personal value they carry for the participants of these interest worlds and the impact they have on people and society, I would rather consider them as Interests and Cultures (following Gee's line of thought, with a capital "I" and a capital "C").

From a critical stance, centered on interested (therefore, interesting) human beings, I argue that we need to stop *sub-labeling* youth practices and start *super-listening* to them. In other words, borrowing from Jacques Rancière (1991), we need to take the stance of an "ignorant schoolmaster," stopping to *simulate* (if ever) our interest in their practices and starting to *stimulate* their own interests as a drive for meaningful learning, personal development, and self-

expression. But how can we stimulate students' interests if we do not understand their languages and if we do not even listen to their voice? The problems discussed here are the foundation of the purpose of the study, which I will discuss in the following section.

Purpose of the Study

I believe that the "missing link" between generations, discussed in previous sections, can be found in the interests people deeply care about, share, and nourish in social spaces. By deepening our knowledge of the interest worlds in which these interests flourish, we can build intergenerational bridges of empathy and understanding as powerful conductors for meaningful educational and creative experiences rooted in people's passions. Furthermore, by understanding how people socially construct interest-driven learning and creativity "in the wild" (Hutchins, 1995) we can rethink *all* educational practices from the ground, thus breaking the boundaries between inside-of-school and outside-of-schools worlds. In this context, the purpose of the study is to further our understanding of the social construction of learning and creativity in one of these interest worlds through the analysis of situated texts, artifacts, and practices. More specifically, this study aims at:

1. Fostering a critical approach to interests.

2. Advancing the knowledge on interests and interest worlds as personal and social dimensions for interest-driven learning and creativity.
3. Advancing the knowledge on "participatory platforms" (i.e., digital games in the dimensions of *play*, *design*, and *participation*) and "participatory spaces" (i.e., informal and interest-driven social environments) for learning and creativity.

Guiding Research Questions

Given the context, problems, and purpose of the study presented above, the guiding research questions of the study are:

1. How do people discursively construct learning and creativity in an online participatory space dedicated to the interest world of gaming and game design?
2. What is the role of discursive texts, interactive artifacts, and constructive practices?

Positionality Statement

As a scholar active in a community of discourse (Sills & Jensen, 1992), I position myself within the interpretivist paradigm of research (Angen, 2000), which assumes that knowledge and reality are socially and intersubjectively constructed in a situated culture, space, and time. My research is directed toward the study of the relationships among people, media, and technologies, and how these dynamic

interactions can support the development and expression of individuals and societies. This interdisciplinary and holistic approach reflects my personal history and interest in learning and creativity as intertwined and reciprocally reinforcing phenomena. Through my research, I strive to make sense of complex social and creative practices. From a qualitative standpoint, I consider myself both an instrument of inquiry (Starks & Trinidad, 2007) and an interpretive link between the object of the research and the reader.

This study is focused on a community dedicated to creating, sharing, and critiquing user-generated game levels, within the broad interest world of gaming and game design. In this context, I do not consider myself a "hardcore gamer," but I am fascinated by the powerful – and empowering – affordances of contemporary digital games, that transform players into creators (I call them "playators").

In my research I want to emphasize the importance of informal and non-traditional learning environments that stimulate and facilitate learning and creativity by fostering the pursuit of personal interests and passions. Inspired by the work of Reuven Feuerstein, my mentors, and my personal experiences, I would like to direct my future investigations to new horizons, exploring how emerging technologies can contribute to offering equal opportunities for those who may not have had the chance to "learn how to learn," due to social, economic, or cultural challenges. In this context, my ambitious, yet heartfelt, goal is to help redefine the approach to institutionalized educational and

cultural endeavors, shifting the emphasis from society-driven *mirages of success* to personal and meaningful *opportunities for development*.

Given the exponential growth and diffusion of information and communication technologies, one of my goals is to spread among software developers and educators the idea of a *reflective use and design* of tools and environments, in order to transform every technological device and space into an instrument for change. Considering our species as *Homo ludens* and *Homo creator*, acknowledging the playful and creative dimensions of learning, I want to advance the research and knowledge on innovative tools and environments, to inspire, motivate, and empower people of every age *from within*, leading to a paradigm shift from a framework that considers education as a scaffold, to an approach that embraces learning as the creative lifeblood of existence.

Theoretical and Conceptual Framework

This study is situated in the framework of new literacies studies and "critical educational research that values the forms of learning that occur outside of formal instruction" (Duncan & Hayes, 2012, p. 4). By considering learning and creativity as interconnected, situated, and social-constructive phenomena, this research looks at how they develop in an online participatory space dedicated to the interest world of gaming and game design. The study builds upon learning theories that consider learning as a social, constructive, and situated endeavor that develops in informal environments, in the context of communities

of practice, virtual communities, and affinity spaces. It also looks at learning and creativity from the angle of game studies, game design, and game-based learning.

Digital games involve a constant engagement in experiential interactions with virtual persons, objects, and situations (de Freitas, 2006; Sandford & Williamson, 2005; Shaffer, 2006) in which players actively construct understandings and meanings (Jonassen & Land, 2000) by navigating virtual models, exploring *microworlds* (Minsky & Papert, 1971; M. Resnick, 1994), reverse-engineering systems of symbols and rules, and constructing experiential knowledge (Kirschner, Sweller, & Clark, 2006) by de-constructing experiences of interaction. These endeavors involve acting like a scientist (Solomon, 1994), formulating and testing hypotheses, implementing alternative techniques through exploration and decision-making, proceeding by incremental approximations (Papert, 1981), and building context-knowledge in a process of discovery (Bruner, 1961). Failure is considered a natural, and even fun, part of the process (Squire, 2011).

As held by situated cognition theory, this process takes place in situated and informal contexts. In well-designed digital games "knowing that" (declarative knowledge) and "knowing how" (procedural knowledge), knowing and doing, are merged. In fact, in a digital game, knowing that a particular move will help to defeat an enemy is intrinsically connected to the process of constructing such knowledge. Being exposed to different games that feature analogous rules and patterns of action can help players to transfer skills and

knowledge. For example, if a player in a specific digital game collects a piece of wood and a piece of metal, and combines them to build a hammer that can be used to fix a raft to cross a river, he/she constructs decontextualized knowledge ("by collecting and combining objects one can create tools to solve problems") that can be applied in other games and in real-life situations.

If we look at digital games from the point of view of social constructivism and constructionism (Harel & Papert, 1991), we can argue that they are exceptional tools and environments for learning and creativity. In fact, they prompt manipulation and construction of artifacts that are personally meaningful and socially interpreted and shared. Digital games can also act like cognitive mediators and "virtual" more knowledgeable others supporting learning and creativity in the zone of proximal development. This process can be expanded and amplified by synchronous and asynchronous social activities that involve play, design, and participation. In fact, an increasing number of digital games (e.g., *LittleBigPlanet* and *World of Warcraft*) encourage peer collaboration in real time adventures, while online social spaces create shared environments that transcend the barriers of space and time. These spaces reflect the principles of communities of practices (Lave & Wenger, 1991; Wenger, 1998), virtual communities (Renninger & Shumar, 2002; Rheingold, 1993), affinity spaces (Gee, 2004; Hayes & Duncan, 2012), and participatory cultures (Jenkins, 2006; Jenkins et al., 2009).

In my study I inquire into one of these online environments in order to further our understanding on how people, driven by their interests and passions, socially construct learning and creativity. I look at how meanings are constructed and negotiated through culturally, historically, and socially mediated *practices* (e.g., designing user-generated game levels), *texts* (e.g., the threads/posts about them in an online forum), and *artifacts* (e.g., the actual game levels).

Contemporary digital games can be considered "participatory platforms" that realize some of the core assumptions of social-constructivist and situated theories of learning in the dimensions of *play*, *design*, and *participation*. By transforming content into problems that are interesting to explore and fun to solve, they can nurture and support a participatory approach to learning. In fact, in this study I look at digital games as interactive problem solving spaces complemented by the social environments that gravitate around them (such as discussion forums, blogs, and fan websites), in order to investigate the social construction of learning and creativity in an informal environment.

Previous Research

Gee (2004) introduced the concept of *affinity spaces* to indicate social and semiotic sites (physical and virtual) in which informal learning practices emerge through the pursuit of common endeavors and that lead to multifaceted trajectories of participations. Affinity spaces are more "fluid" and "loose" social environments, if compared

to communities of practices (a concept introduced by Lave and Wenger in 1991), which challenges the constructs of "member" and "membership."

From the analysis of previous research on learning and creativity in *affinity spaces* (and in particular studies on affinity spaces that used discourse analysis as a tool of inquiry to look into the process of social construction, sharing, and critiquing of digital artifacts) emerged an almost unidirectional focus on spoken/written texts and a lack of attention to the digital artifacts produced and, consequently, to the interplay between these artifacts and the texts about them (see the section titled "Affinity Spaces" in Chapter 2).

In fact, even if these studies enlighten important features of the discourse, they seem to ignore what actually are the drives, goals, and objects of the efforts of the participants of these social spaces (i.e., the digital artifacts created, shared, and critiqued in the community). I consider this overlooking as an "unforced error" due to the involuntary trivialization of people's interests, especially if they are not related to accepted and valued literacy practices, such as reading and writing (Thomas, 2007). Gee (2010) would say that this might be a consequence of the "figured world" of youth practices hold by the "academic community." In other words, even if numerous studies acknowledge the learning developing *around* the artifacts produced in informal contexts, they seem to consider these artifacts as marginal, trivial, or at least not worthy of further investigation.

These studies seem to imply that, for example, producing *a game* (any game) is as important as producing *that game* (a specific game discussed in the community, that has specific features, references, and meanings). I argue that, in order to advance our understanding of these social spaces, we need to have a comprehensive vision that includes texts, artifacts, and practices, which, in turn, calls for a hybrid methodological approach, as I will discuss in the following section.

Methodology and Methods

In this qualitative study I look at the interplay between texts, artifacts, and practices, and at how they build the discourse on learning and creativity in an informal online space. I analyzed *discursive texts* (threads/posts in a discussion forum) using discourse analysis (Gee, 2010; Potter, 1997; Wood & Kroger, 2000) and *interactive artifacts* (user-generated game levels) using a studio critique approach (Buster & Crawford, 2007; Darracott, 1991; Santoro, 2013; Staples, Riechert, Marone, & Greenberg, 2012). I then considered the *constructive practices* (deigning, sharing, and critiquing game levels) that connect the discursive texts and the interactive artifacts through categories derived from design process analysis (Koberg & Bagnall, 1991), as described in detail in Chapter 3 (“Methodology and Methods”).

Significance of the Study

This study enlightens the interrelationships between discursive texts, interactive artifacts, and constructive practices from a multimodal and intertextual perspective (Kress, 2011). By furthering our understanding of a situated interest world, this research advances our knowledge on informal participatory spaces in which learning and creativity emerge as intertwined phenomena that develop through social-constructive endeavors. In the following sections I discuss the significance and worthiness of the study in specific areas.

Critical merit. This study proposes a renewed stance toward people's interests challenging superficial or trivializing approaches. It suggests that, in order to engender a fruitful cultural and educational discourse between generations, we need to enter people's interest worlds with deep respect, sincere interest, and vivid curiosity, considering their texts, artifacts, and practices as non-trivial endeavors and carriers of meaning and value on personal, social, cultural, and historical levels.

Theoretical merit. This study proposes a new conceptual understanding of digital games as "participatory platforms" for social learning and creativity in the dimensions of play, design, and participation. It also furthers our understanding of interests and interest-driven environments in the framework of "participatory spaces," conceptualizing and situating interests as a driving force for learning and creativity. In this context, the study introduces two original graphical representations that illustrate such

conceptualizations, effectively displaying the interrelated dimensions of *interests* and *interest-driven learning and creativity*. Another theoretical merit of the study is the introduction of the concept of "proximity" for the analysis and evaluation of digital games and gaming in social contexts, which carries value for the understanding, application, and assessment of digital games in social sciences. For example, *proximity of time* involves the evaluation of gameplay as "synchronized," "real-time," or "turn-based," which carries implications for the affordances of digital games and, consequently, the methods of analysis needed to investigate them in social contexts. I discuss this concept in the section titled "Digital Games as *Participation*" in Chapter 2).

Methodological merit. The study offers a significant methodological contribution to the investigation of texts, artifacts, and practices in the framework of new literacies and affinity spaces research by introducing a new *hybrid intertextual methodology* that draws upon discourse analysis (Gee, 2010; Potter, 1997; Wood & Kroger, 2000), studio critique (Buster & Crawford, 2007; Darracott, 1991; Santoro, 2013), and design process analysis (Koberg & Bagnall, 1991). I present this approach in detail in Chapter 3 ("Methodology and Methods").

Practical merit. In Chapter 5 ("Discussion, Conclusions, Implications, and Recommendations") I introduce a series of recommendations for practitioners that can be applied in everyday

educational practices and can be useful for the design of innovative curricula.

Heuristic merit. Given its interdisciplinary breadth, the study appeals to a wide and diversified audience that includes, among others, scholars, practitioners, students, and game designers.

Scholars. This work carries interest for scholars in the fields of education, learning environments, communities of practice, instructional technology, new literacies, game design, game studies, media studies, creativity studies, discourse analysis, and computer mediated communication.

Practitioners. Practitioners who might be interested in this work include K-12 teachers, college professors, instructors, and online tutors and facilitators. Practitioners can compare and contrast the findings of the study with their everyday practices, furthering their understanding on outside-of-school environments that support learning and creativity, drawing inspiration to implement new activities, or complement and enrich established practices.

Students. Students can develop understanding and awareness on practices that they usually do not consider from a "serious" (let alone "educational") standpoint. This study can help the "inhabitants" of interest worlds and participatory spaces to make sense of their experiences from a more informed, reflective, and aware stance, or, at least, from a different point of view.

Game designers. Game designers can benefit from this study on different levels. In fact, an increasing number of digital games

includes a "creator's mode" or a "designer's toolkit" that allow players to create and share game levels, game character, and "virtual goods" of any kind, thus expanding the social, creative, and expressive dimensions of digital games. This study offers insights into this phenomenon by looking at digital games as "participatory platforms" that prompt and facilitate the creation and sharing of digital artifacts in social contexts. From this study, game designers can deepen their understanding on activities that entail creating, sharing, and critiquing user-generated content. Furthermore, this study is rooted in social-constructive theories of learning and creativity, thus offering insights for the development of new educational games, tools, and environments for social learning and creativity.

Limitations

The limitations of the study represent the factors that cannot be constructed as part of the research design. Even though the focus of discourse analysis is on language *uses* rather than language *users* (Potter & Wetherell, 1987; Wood & Kroger, 2000), the study is limited by the fact that it is not possible to know the demographics of the participants of the investigated participatory space, such as age, gender, and origin.

Another limitation that I must acknowledge involves the "digital production gap" (Schradie, 2011) and, more broadly, issues of "digital inequality" (Robinson, 2009) in the consumption, creation, and sharing of digital content. This study makes claims about the

necessity to overcome a series of divides (e.g., digital, intergenerational, cultural), however, it focuses on a commercial platform and a commercial digital game (as opposed to open source software) that limit the production and sharing of content to those who can afford (or have regular access to) a PlayStation 3 console, a copy of *LittleBigPlanet*, and Internet connectivity. Nevertheless, I hope that this study will reach and inspire a large number of decision-makers willing to invest in these and similar resources to create innovative programs that can spread and support a social and interest-driven approach to learning and creativity.

Delimitations

The delimitations of the study are the aspects of the research design purposefully restricted by the researcher. Given the distinctiveness and complexity of new literacies practices, as discussed in previous sections, the study is delimited to a specific interest world (gaming and game design), a specific participatory space (the *LittleBigPlanet Central* website, and, in particular, the "Level Showcase" subsection of the discussion forum), related to a specific digital game (*LittleBigPlanet*), available on a specific gaming platform (the PlayStation 3 game console). I have also delimited the number of analyzed threads/posts, as specified in Chapter 3, in the section titled "Research Design and Procedures."

Organization of the Study

This study is divided into five chapters:

1. Introduction to the Study
2. Review of the Literature
3. Methodology and Methods
4. Findings
5. Discussion, Conclusions, Implications, and Recommendations

In the first chapter ("Introduction to the Study") I situate the study and present the research problems, the purpose, the guiding research questions, the positionality statement, the theoretical and conceptual framework, and previous research related to the study. I continue the discussion by illustrating the methodology and methods, significance, limitations, delimitations, and organization of the study. I conclude the chapter by presenting definitions of relevant terms and concepts.

In the second chapter ("Review of the Literature") I analyze a broad and interdisciplinary body of literature. In the first part of the chapter I look at learning theories and environments such as constructivism, situated cognition, social constructivism, informal learning environments, communities of practice, virtual communities, and affinity spaces. I also introduce the concept of "participatory spaces" and discuss technology-supported social creativity. In the second part of the chapter I focus on the potential of digital games as

"participatory platforms" for learning and creativity through the dimensions of play, design, and participation.

In the third chapter ("Methodology and Methods") I discuss an approach to educational research from a qualitative standpoint that considers the researcher as the instrument of inquiry. Subsequently, I present the research methodology and methods that include discourse analysis, studio critique, and design process analysis. I then illustrate the sources of data and the research design and procedures, addressing data selection, collection, and analysis, as well as copyright, ethical, and privacy issues. I conclude the chapter with the section titled "Warranting" in which I address issues of reliability, validity, trustworthiness, and soundness.

In the fourth chapter ("Findings") I report and illustrate the findings of the study based on my analysis.

In the fifth chapter ("Discussion, Conclusions, Implications, and Recommendations") I discuss the findings of the study, present conclusions, implications, and recommendations directed to researchers and practitioners. I also introduce a visual representation of interest-driven learning and creativity. The work is completed by a detailed list of references.

Definition of Relevant Terms and Concepts

In this section I define terms and concepts relevant for the study. Terms such as "emoticon" and "game level" are popular in online and gaming communities, while "participatory platform" and

"participatory space" are descriptors that I have created to define and make sense of specific social tools and environments that constitute a significant part of this work. In this section I also describe *LittleBigPlanet* (a digital game) and *LittleBigPlanet Central* (a website and community dedicated to the game), which respectively represent the "participatory platform" and the "participatory space" that I investigate in this study.

Affordance. The term "affordance" was introduced by Gibson (1977) and indicates a quality of an object that allows or calls for a function or action. For example, a button affords pushing and a knob affords twisting.

Emoticon. An emoticon (a *portmanteau* term that combines the words "emotional" and "icon") is a graphic representation of a facial expression achieved by using combinations of punctuation marks, letters, ASCII characters, and numbers. Emoticons are extensively used in online spaces such as chats, blogs, and discussion forums in order to express moods and feelings, as well as to emphasize or counterbalance written sentences and words.

Game level. Many digital games are made up of progressive "levels" that represent discrete game spaces that need to be explored and overcome in order to proceed to subsequent stages of the game. In this study, a "game level" denotes a standalone "mini-game" created and shared by users in the online community. In this context, a "game level" is not large enough to be technically considered a full-fledged digital game, nevertheless it represents a distinct and discrete

interactive artifact, which is usually unattached to earlier or subsequent levels. If we compare a commercial digital game to a tall building or a skyscraper, with each story being a game level, we may say that the game levels analyzed in this study are tiny single-story houses situated in the large neighborhood made up of all the game levels created by the users in the community.

LittleBigPlanet. *LittleBigPlanet* (Media Molecule/Sony, 2008) and its evolution *LittleBigPlanet 2* (Media Molecule/Sony, 2011), sometimes abbreviated as "LBP" and "LBP2," are digital games for the PlayStation 3 (PS3) game console. The more recent of the two, *LittleBigPlanet 2*, is a puzzle, "platformer," and adventure game that includes elements of other game genres, such as action, sports, and "old style" arcade games.

A particular feature of this series is that it allows the creation of professionally looking user-generated game levels (the object of this study) that can be shared with other players. In this study, in order to avoid confusion, I generally refer to both games (*LittleBigPlanet* and *LittleBigPlanet 2*) as *LittleBigPlanet*. I describe the game in detail in Chapter 3 in the section titled "Sources of Data."

LittleBigPlanet Central. *LittleBigPlanet Central* (www.lbpcentral.com) is an online website and community dedicated to the digital games in the *LittleBigPlanet* series. In this study I analyzed threads/posts retrieved from the "Forum" section of the website.

Participatory platform. Some contemporary digital games offer a wide range of affordances (Gibson, 1977) that invite players to synchronous and asynchronous forms of engagement and participation. These games can be played, modified, discussed, shared, and critiqued, in both face-to-face and online settings. It is nowadays hard to define where the "actual" game ends and where its social dimension begins. For example, modern game consoles (such as the PlayStation 3) allow for multiplayer online gaming with voice and text chat features, sharing of virtual items, reviewing games, and much more. In other words, contemporary digital games offer an integrated virtual and physical environment that enables and prompts social practices and participation. For these reasons, I define them as "participatory platforms."

Participatory space. Building upon the concept of *legitimate peripheral participation* developed by Lave and Wenger (1991) in the framework of communities of practice, the work of Jenkins (2006) on *participatory cultures*, and the notion of *affinity space* put forward by Gee (2004), in order to unify these convergent approaches and bodies of work (discussed in detail in Chapter 2, "Review of the Literature"), I propose the term "participatory space" to define informal interest-driven communities/spaces that enable and stimulate social interactions, learning, and creativity.

Chapter 2

Review of the Literature

This study is founded on the assumption that "learning is not just related to creativity; rather, the construction and use of new knowledge is a special case of creativity" (Plucker, Waitman, & Hartley, 2011, p. 435). I look at this relationship from a social-constructive perspective in the interest world of gaming and game design, from an integrated perspective that encompasses instructional technology, learning theories, new literacies studies, creativity studies, communities of practice, virtual communities, design studies, and game studies, in order to make sense of learning and creativity in an affinity space (Fig. 4).

The Need for an Interdisciplinary Approach

In this study I investigate learning and creativity in an informal interest-driven online space (defined as an "affinity space" and, later in the study, as a "participatory space") in which users create, share, and critique digital artifacts. This topic is complex in its nature and calls for an interdisciplinary approach (Bullough, 2006), anchored in heterogeneous fields of inquiry, and needs to be considered in a broad social, cultural, and historical context.

In the first chapter I introduced important frameworks for the contextualization of the study, such as new literacies, Discourses, interest worlds, and participatory cultures.

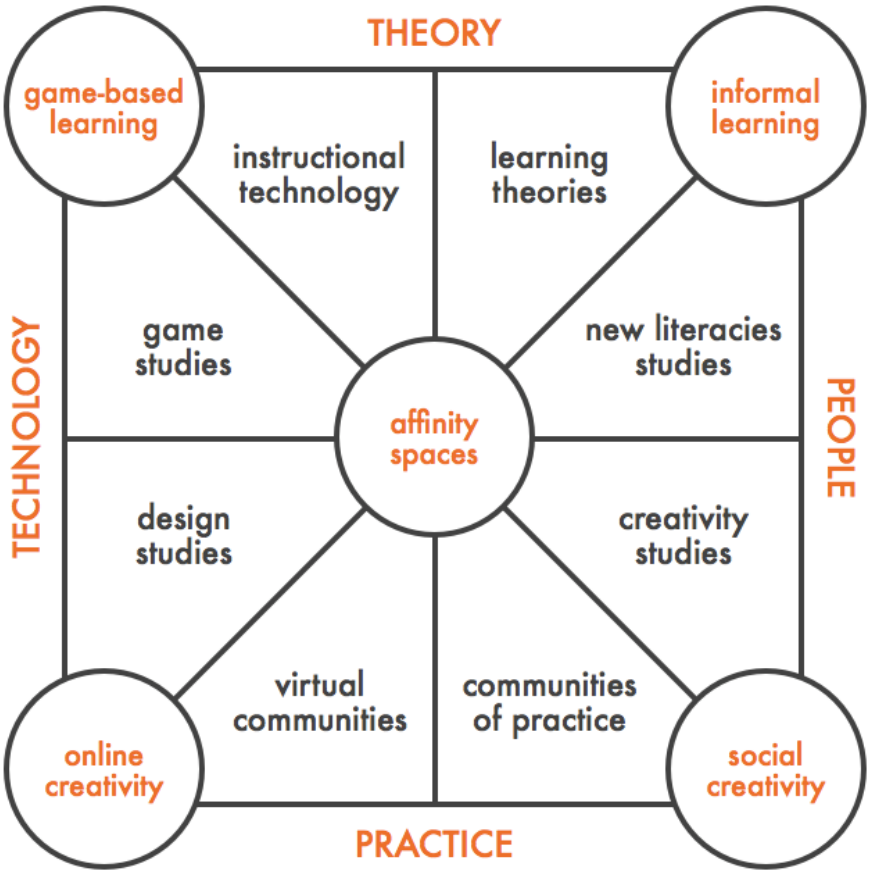


Figure 4. An interdisciplinary approach to the study.

Continuing on this path, in this chapter I deepen my investigation by approaching the matter of the study from different, yet intertwined, angles. After a discussion of important search criteria for the review of the literature, I define learning as a social-constructive and situated phenomenon by analyzing research and

theories of learning that inform and frame such perspective. I then turn my attention to informal learning environments and social learning environments in the framework of communities of practice (Lave & Wenger, 1991). I continue my examination zooming in on social learning environments supported and facilitated by digital technologies and the Internet in the framework of virtual communities (Rheingold, 1993).

Approaching the themes of creativity and digital games, I move toward the analysis of affinity spaces (Gee, 2004), an influential framework for the study of informal social environments. In that section, I present a review of previous research on affinity spaces and, in particular, on affinity spaces dedicated to gaming and game design. I also discuss important methodological issues that will be further developed in Chapter in 3 ("Methodology and Methods") in the context of this study. In the following section I propose enhancements to the subject vocabulary related to the field of the research (Boote & Beile, 2005) by introducing the definition of "participatory space," which acknowledges and connects influential theories and studies that investigate learning and creativity in social environments (Gee, 2004; Gee & Hayes, 2010; Jenkins, 2006; Jenkins et al., 2009; Lankshear & Knobel, 2007; Lave & Wenger, 1991). This definition is complemented by the constructs of "interest world" (defined in Chapter 1) and "participatory platform," that I introduce in subsequent sections of the chapter in order to represent and make sense of contemporary digital games as sophisticated tools and environments

that feature a wide range of explorative, creative, and relational affordances.

After inquiring into affinity spaces and introducing the definition of "participatory space," I explore creativity from a social-constructivist perspective in technology-supported spaces, in relation to categories of creative problem solving that embody the design process (Koberg & Bagnall, 1991) and inform the methodological approach illustrated in Chapter 3. The design-oriented perspective presented in that section reflects the activities enacted in the investigated social space (i.e., creating, sharing, and critiquing user-generated artifacts).

I continue the review of the literature by exploring definitions and perspectives on play, games, and digital games. Successively, I narrow my field of investigation by focusing on digital games as participatory platforms for interest-driven learning and creativity in the dimensions of play, design, and participation. I conclude the chapter by providing a synthesis of the review of the literature.

Search Criteria

In my review of the literature I used several databases and search engines, such as ERIC, JSTOR, SAGE Journals Online, Google, Google Scholar, Academia.edu, and the catalogs of the University of Padua and the University of Tennessee. I also looked at reference lists and citations in recent articles in the investigated field

proceeding “backwards” in order to identify seminal books, handbooks, and articles.

Some of the keywords and descriptors that I used (in different combinations and at different times) include:

1. “affinity spaces”
2. “apprenticeship”
3. “collaborative learning”
4. “communities of practice”
5. “computer assisted learning”
6. “computer mediated communication (CMC)”
7. “constructionism”
8. “constructivism”
9. “conversation analysis (online/in CMC)”
10. “cooperative learning”
11. “design process analysis”
12. “design thinking”
13. “digital/video games and learning”
14. “digital literacy/literacies”
15. “digital natives”
16. “discourse analysis (online/in CMC)”
17. “educational digital/video games”
18. “game(s)-based learning”
19. “(digital/video) game design”
20. “informal learning environments”

21. “intertextuality”
22. “learning theories/theories of learning”
23. “*LittleBigPlanet*/Little Big Planet/LBP”
24. “modding”
25. “multimodality”
26. “new literacy/literacies”
27. “new media”
28. “online communities”
29. “online participation”
30. “participatory culture(s)”
31. “situated cognition”
32. “social cognitive theory”
33. “social constructivism”
34. “social creativity”
35. “social learning”
36. “social spaces”
37. “studio critique”
38. “user-generated/created content”
39. “virtual communities”
40. “virtual learning environments”

In order to review empirical studies related to my research, after looking at research on affinity spaces (Gee, 2004), I restricted the field through three selective criteria: the environment (*online affinity spaces*), the topic (*gaming and game design*), and the research

methodology (*discourse analysis*). I consider them important variables in qualitative research, as different methodologies applied to different topics in different environments lead to different findings (Boote & Beile, 2005). For this reason, in this part of the review of the literature, I decided to exclude studies that did not concurrently meet the aforementioned criteria. I considered the criterion related to research methodology to be particularly relevant, since methodological approaches are one of the greatest concerns in the field of affinity spaces (Duncan, 2012; Lammers, Curwood, & Magnifico, 2012) as well as one of the major intended contributions of this study.

Starting with the following section, I will look into important theories of learning that frame and contextualize the study.

Constructivism and Situated Cognition

Constructivism is a theory and a philosophical approach that investigates the nature and process of learning. It holds that individuals, through experience and interaction with persons, objects, and situations, actively *construct* most of their knowledge, rather than just *acquiring* it (Bredo, 1997; Bruning et al., 2004; Geary, 1995; Greeno, 1989). My personal interpretation and understanding of learning is in agreement with this theory, as the learner is not considered an "empty box" to be filled with information, but rather a scientist (Solomon, 1994) who actively constructs knowledge and discovers the world through the interaction with its physical and

symbolic elements, testing tentative interpretations until a viable construction satisfying learning goals emerges (Perkins, 1991a; Savery & Duffy, 1995).

Constructivism assumes that learning is a "process of meaning-making, not of knowledge transmission" and a "conscious activity guided by intentions and reflections" (Jonassen & Land, 2000, p. v). This perspective is reflected by the goal-oriented and self-directed endeavors of the investigated affinity space, in which participants actively construct their knowledge. Furthermore, constructivism holds that learning is *personal*, because it is based on beliefs, experiences, and expectations (Clancey, 1997; Cobb & Bowers, 1999; Cole, 1992; Mayer, 1992; Simpson, 2002), *socially interpreted and supported* (Rogoff, 1984), and *situated* (Seely Brown, Collins, & Duguid, 1989; Suchman, 1987), as it takes place in a specific time and context (Bredo, 2006; Driscoll, 2005). The framework of *situated cognition* is strictly related to constructivism and some authors even consider it part of the constructivist paradigm (Schunk, 2012), while others treat it as a "standalone" theory of learning (Driscoll, 2005).

The situated perspective assumes that thinking and learning do not reside solely in a person's mind, but rather are an outcome of the interaction between an individual and the environment or social context (Anderson, Reder, & Simon, 1996; Cobb & Bowers, 1999; Derry, 1996; Greeno, 1989; Kirshner & Whitson, 1997). In this "ecological" and reciprocal relationship (Gibson, 1979), declarative knowledge ("knowing that") and procedural knowledge ("knowing

how"), knowing and doing, are merged (Driscoll, 2005; Lave, 1990; Seely Brown et al., 1989), as knowledge is constructed through meaningful and "lived" practices in situated contexts (Lave & Wenger, 1991; Lemke, 1997). Such perspective is embodied by the relationships between texts, artifacts, and practices investigated in this study, as they develop in a situated and goal-oriented environment in which *knowing* and *doing* are merged together.

The constructivist paradigm implies that teachers and educators, instead of transmitting information to students, provide well-designed environments in which students can play an active role in the construction of their knowledge through manipulation of materials and social interaction with peers and more knowledgeable others. In fact, self-regulation, interdisciplinary study, and active exploration of personal interests are crucial elements of a constructivist learning environment (Bruning et al., 2004; Geary, 1995).

While the roots of constructivism can be traced back to the developmental research of Piaget and Vygotsky, there are a number of constructivist theories reflecting different interpretations of the conditions under which the construction of knowledge occurs (Bruning et al., 2004; Driscoll, 2005). One way of interpreting constructivism is to think of learning as discovery (Bruner, 1961). *Discovery learning*, at times defined as problem-based, inquiry, or experiential learning (Collins & Stevens, 1983; Hmelo-Silver, 2004; Kirschner et al., 2006) encourages the implementation of learning

environments in which students can perform *discovery activities*, such as searching, manipulating, and exploring. These activities are directed to the construction of domain-relevant knowledge and general skills, such as problem solving, information gathering, and formulating/testing of hypotheses (Bruner, 1961). Discovery should not be considered a "random" event, even if intuitive guessing can be part of a process that aims at self-direction and intentionality (Bruner, 1973). Teaching for discovery, both in the classroom and online, involves an opening scenario (a discovery situation) followed by questions and problems to be solved by students through reasoning and discussion, starting from expectations of relationships and regularities. The intervention of the instructor should be consistent with the difficulty of the task, available time, learning objectives, and students' previous knowledge (Tuovinen & Sweller, 1999). Savery and Duffy (1995) propose an interesting dual interpretation of the word *discovery*: on the one hand it suggests that there is a "hidden" truth or knowledge that needs to be uncovered, which leads to the acquisition of a pre-determined content (*teacher-centered approach*), or, on the other hand, that this knowledge needs to be personally constructed by the learner through exploration (*student-centered approach*), expanding one's ability to learn (A. L. Brown et al., 1993). From this standpoint, I believe that affinity spaces are excellent *discovery environments* in which learners/creators construct their knowledge through problem-posing and problem-solving activities in

which social reasoning and discussions are complemented by a *self-directed* and *community-disclosed* process of exploration.

Other approaches to constructivism (Driscoll, 2005; Schunk, 2012) include *exogenous constructivism*, which stresses the importance of the external world (e.g., experiences, teaching, and models) in the construction of knowledge, and *endogenous constructivism*, which suggests that knowledge is constructed through a process of abstraction that accommodates new mental structures on earlier ones. *Dialectical constructivism* (also defined as *cognitive constructivism*), a perspective close to social cognitive theory (Bandura, 1969, 1977, 1986, 2001), assumes that knowledge is an outcome of *mental contradictions* generated by interactions between the mind and the environment (Derry, 1996).

One of the most important and historically influential "variations" of constructivism is represented by *social constructivism*, which I will discuss in the following section.

Social Constructivism

Social constructivism stresses the importance of social interactions (e.g., *learning in groups* and *learning with peers*) in the active construction of knowledge and the development of the individual (Ratner, Foley, & Gimpert, 2002; Tudge & Scrimsher, 2003). Learning is considered a culturally, historically, and socially mediated process that takes place in social environments in which learners negotiate meanings and shape identities with the aid of tools

and mediation systems (Jonassen & Land, 2000; Vygotsky, 1978). This theoretical approach is particularly relevant for this study, as it offers a structured framework for the understanding of constructive practices in social contexts.

From Vygotsky's point of view, social interactions play a primary role in the development and cognitive growth of individuals. He argues that these interactions must be interpreted in their complexity, considering their "here-and-now" elements and their cultural-historical facets. In Vygotsky's theory, development and learning are achieved with the aid of cognitive mediators, such as language, symbols, and signs (Karpov & Haywood, 1998; Moll, 2001). He points out that these tools are culturally and socially transmitted and internalized by learners, who use them as mediators (process of *mediation*) for the construction of more advanced learning tasks and higher cognitive abilities. Vygotsky argues that, in the development of an individual, language (which is considered to be the most important tool) moves from *social*, to *private*, to *inner speech*, in a process of *internalization* that is critical for the forming of self-regulation (Bruner, 1973; Meece, 2002; Schunk, 1999; Vygotsky, 1978).

To reveal the importance of social interactions for human learning and development, Vygotsky introduced the concept of the zone of proximal development. One of the applications of this concept refers to learning settings based on peer collaboration (Cohen 1994; Edelson, Pea, & Gomez, 1996; Webb, 1995) in which learners work

on a common task through social interactions (Bruner, 1984; Ratner et al., 2002; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003). In particular, *peer-assisted learning* is a social-constructivist approach to teaching and learning in which peers have an active and reciprocal role in the construction of knowledge (Rohrbeck et al., 2003) through *peer tutoring* (Strain, Kerr, & Ragland, 1981), *reciprocal teaching* (Palincsar & A. L. Brown, 1984), or *cooperative learning* (Slavin, 1995). This approach can have a positive influence on academic and social motivation (Ginsburg-Block, Rohrbeck, & Fantuzzo, 2006) and can be used in *formal* (in-school), *non-formal* (organized outside-of-school), and *informal* (non-organized) settings (Eshach, 2007). In this context, I consider affinity spaces as powerful *informal* (see next section, "Informal Learning Environments") *peer-assisted social environments* in which learning and creativity are reciprocally stimulated and supported in order to achieve personally and socially meaningful goals (e.g., a well-designed game level).

Building on the theories of constructivism, situated cognition, and social constructivism, in the following sections I will focus on the social construction of learning in informal learning environments, communities of practice, virtual communities, and affinity spaces.

Informal Learning Environments

Defining "informal learning" is not an easy task, as it carries different meanings, depending on how it is contrasted with "formal" or "academic" forms of learning. First of all, informal learning should

not be considered merely as "incidental" (Marsick & Watkins, 2001; Rieber, 1991), but rather as a self-directed, purposeful, and intentional activity (Jackson, 1968) that takes place in a specific time and space in outside-of-school settings. When the learning activity is prompted and guided by the interests, goals, and perceived needs of the learner (Perkins, 1991b), informal learning can be defined as *free-choice learning* (Dierking & Falk, 2003), which is also characterized by purpose, meaning, and intentionality (Bruner, 1986), facilitating student ownership and self-regulation in learning processes and outcomes (Duffy & Cunningham, 1996).

Research has demonstrated the importance of informal learning environments in a number of situations (Lave, 1988; McLellan, 1993; L. B. Resnick, 1987; Seely Brown et al., 1989). In one of the seminal works in this field, L. B. Resnick (1987) highlights some of the major differences between formal and informal learning environments. She suggests that these different environments imply the development and use of different kinds of intelligence: a "school intelligence" (academic/abstract) and a "practical intelligence" (everyday/real-world). The author illustrates four characteristics that set apart inside-of-school and outside-of-school learning (pp. 13-15).

Individual cognition vs. shared cognition. Even if, from time to time, students are engaged in group-activities in school, they are mostly assessed by their individual performances. L. B. Resnick writes: "For the most part, a student succeeds or fails at a task independently of what other students do (except for the effects of

grading on a curve!)" (1987, p. 13), yet most outside-of-school activities take place in social contexts (e.g., family, friends, work, sports, and recreation) in which knowledge and skills are socially distributed and negotiated.

Pure mentation vs. tool manipulation. Tests and examinations dispensed in schools require that students demonstrate their ability and knowledge without the aid of physical or cognitive instruments (e.g., dictionaries, calculators, or computers). On the other hand, objects and tools play an important role in most social interactions and learning experiences. Of course, tools cannot substitute learning, but they can facilitate, augment, shape, and enable cognition. In other words, tools cannot "do the learning," but they can help students to "level up" their learning experiences. Cognitive work and intellectual tasks can be shared with tools and, indirectly, with those who have created them. In fact, tools that are considered to be "smart" (e.g., pocket calculators) carry the systemic intelligence that connects their designers (those who made them) with their users (those who utilize them). When a new tool is introduced in a practice or environment, cognitive demands change (e.g., how to operate a calculator vs. how to perform calculations) allowing learners to allocate mental resources to more advanced or more specific tasks.

Symbol manipulation vs. contextualized reasoning. The school system is heavily based on abstraction and symbols detached from situated contexts, while in outside-of-school environments the cognitive process is connected to concrete objects and events, as a

natural way of solving problems and making sense of reality. Abstraction can also lead to oversimplification of problems that in real-life situations are actually more complex, ambiguous, and articulated.

Generalized learning vs. situation-specific competencies. The school system aims at teaching "generalizable" or "transferrable" concepts and skills, while it frequently falls short of guiding students in the acquisition of concrete problem solving skills. Situation-specific forms of knowledge are often ignored and dismissed as "low-end learning." The transfer, when successfully achieved, seems to take place across academic disciplines, rather than between academic and real-life situations. This clash prevents an approach to learning in which goals define meaning (Bruner, 1986) and knowledge is a means to deal with real-life situations (Seely Brown et al., 1989).

In this context, Dewey (1897) wrote: "I believe that the school must represent present life – life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the play-ground" (p. 78). Discussing the social and situated aspects of learning, Lave (1996) went even further by affirming that "the 'informal' practices through which learning occurs in apprenticeship are so powerful and robust that this raises questions about the efficacy of standard 'formal' education practices in schools" (p. 150). While the themes of "deschooling" (Illich, 1971) and "unschooling" (Holt, 1981) are beyond the scope of this writing, the importance of informal learning environments should not be underestimated, especially if we

consider the possibilities offered by technology-enhanced learning and social environments that are widely used outside of school (e.g., discussion forums, blogs, and social media such as Facebook, Twitter, and YouTube).

One way to interpret and understand these social, situated, and informal learning environments is through the framework of *communities of practice*, as I will illustrate in the following section.

Communities of Practice

A community of practice is a social environment made up by a "set of relations among persons, activity, and the world" (Lave & Wenger, 1991, p. 98) in which members learn from each other by sharing competences and negotiating meanings. This perspective assumes that learning takes place "in the context of our lived experience of participation in the world" and "is, in its essence, a fundamentally social phenomenon, reflecting our own deeply social nature as human beings capable of knowing" (Wenger, 1998, p. 3). Distinctions (and often contrapositions) between learning vs. doing and individual knowledge vs. social identity are blurred (Lave, 1996; Scribner, 1986; Varisco, 2002) as "the process of engaging in practice always involves the whole person, both acting and knowing at once" (Wenger, 1998, pp. 47-48).

Wenger does not consider *practice* as an antonym of *theory*, but rather as an ongoing social process made up by interactions. Learning is a natural result of *involvement* and *participation* that

develop "by the sustained pursuit of a shared enterprise" (Wenger, 1998, p. 45) in "an interplay of experience and competence" (p. 50). In this sense, communities of practices are spaces in which the *activity* is inseparably intertwined with the *discourse*, and one informs and gives meaning to the other (Orr, 1996; Seely Brown & Duguid, 2000).

Participation, *belonging*, *negotiation of meaning*, *mutual engagement*, *a joint enterprise*, and a *joint repertoire* are essential components of a community of practice (Wenger, 1998; 2003). In particular, Wenger describes participation as "a complex process that combines doing, talking, thinking, feeling, and belonging" and as a reciprocal "source of identity" (Wenger, 1998, p. 56).

Communities of practice can also be considered as "shared histories of learning" (Wenger, 1998, p. 86) in which old-timers and newcomers dynamically negotiate continuity and discontinuity, as old meanings are challenged and new meanings introduced. In their seminal work, Lave and Wenger (1991) define this process as "legitimate peripheral participation," or the motion from *peripherality* to *full participation* that is accompanied by an acquisition of legitimacy granted by "senior members" to "newbies."

Communities of practices are collaborative problem solving spaces with a shared context that includes social conventions, language, and protocols, in which members share thoughts or artifacts about common interests, needs, activities, or goals (Whittaker, Issacs, & O'Day, 1997). Scardamalia and Bereiter (1994), discussing "knowledge building communities," argue that *all* the participants of a

community should gain a desired level of understanding and knowledge. But if we look at these social spaces as *communities of learning*, instead of *communities of learners* (Rogoff, 1994), the focus shifts from individual outcomes (*learners*) to socially diffused practices (*learning*) that have an impact on the community as a whole (Pea, 1992). These communities are based on distributed expertise with culturally based patterns of interaction in which learners construct productive discussions (Hoadley & Pea, 2002; Pea, 1994) interacting with each other, but also with the underlying culture of the community and with the world.

Communities of practice are informal in their nature, not because they lack structure or organization, but because their life emerges and unfolds through mutual engagement and participation. Relationships, goals, and meanings are negotiated among members (*old-timers*/*newcomers*), through different levels of participation (*peripheral*/*central*), and contacts with the external world (*boundaries*/*peripheries*). In other words, the evolving nature of communities of practice and their permeable borders preclude forms of rigid institutional control, as boundaries, meanings, and identities are continuously negotiated, in a dynamic relation between the local and the global (Wenger, 1998).

With the diffusion of information and communication technologies and the Internet, communities of practice found an ideal environment to flourish, connecting and giving voice to millions of people meeting in virtual spaces to interact and nourish discourses on

a multitude of practices, interests, and passions, as I will illustrate in the following sections.

Virtual Communities

Computers helped to widen the forms of social interaction and collaboration, from discussion and communication (Pea, 1994), to sharing of digital artifacts and media, beyond the limits of time and space (Edelson et al., 1996). This field of research has been defined as "Computer-Supported Collaborative Learning" (CSCL) or "Computer Support for Collaborative Work" (CSCW) (Galegher & Kraut, 1990; Koschmann, 1996) within the broader field of "Computer Mediated Communication" (CMC). Virtual communities (Rheingold, 1993), sometimes defined as "virtual communities of practice" or "online communities of practice," are collaborative environments that feature synchronous (e.g., chats) and asynchronous (e.g., discussion forums) tools for interaction. They are spatially and temporally dislocated places for self-expression and social exchange (Davidson & Schofield, 2002) in which participants contribute to discussions and activities. They also provide a computer-supported space for problem posing, problem solving, and scaffolding (Bruner, 1986; M. J. Hannafin, K. M. Hannafin, Land, & Oliver, 1997).

These continually evolving "multilayered communicative spaces" (Shumar & Renninger, 2002, p. 12) are characterized by intentionality, interest, autonomy, and investment of participants. They can be defined as computer supported social networks

(Wellman, 1999) in which members communicate with each other and learn from each other, sharing resources, artifacts, and knowledge, using information and communication technologies in a "mutual knowledge-building process" (Hunter, 2002, p. 96). In this sense, most virtual communities are defined by *what* is shared (ideas/opinions/artifacts) and *why* it is shared (interests/needs/goals), rather than *where* (flexibility of space), *when* (flexibility of time), *with whom* (flexibility of participants), or *how* (peripheral to central participation). In particular, flexibility of time and flexibility of space are achieved through constant availability of information, resources, and records of interactions (Shumar & Renninger, 2002).

Virtual communities can be "internetworked" with physical learning spaces (such as classrooms and laboratories) building collaborative bridges that blend teaching and learning, working and playing, the virtual and the physical, as well as the local and the global. These "internetworks" allow connecting with contributors from different parts of the world, with different experiences, skills, and cultural backgrounds (Hunter, 2002). For example, a teacher could invite students to join an online community in order to let them participate in an ongoing discourse with other students from all over the world. Students could then share cultural, curricular, and methodological perspectives, affecting not only the virtual space of the community, but also the local system of learning environments, which includes formal, non-formal, and informal settings (e.g., school, after-school programs, and family).

After looking at communities of practices and virtual communities, in the next section I will turn my attention to the construct of affinity spaces.

Affinity Spaces

Defining affinity spaces. Some virtual communities directed to *task support relations*, rather than *social support relations* (Haythornthwaite, 2002), are characterized by a lack of a continuing sense of obligation, intimacy, affective and emotional ties, which contrasts with some traditional sociological definitions of "community" (Bender & Kruger, 1982). These social spaces, generally characterized by weaker bonds between members, have been defined in the literature as "communities of interest" (Wenger, McDermott, & Snyder, 2002), "networks of practice" (Seely Brown & Duguid, 2000), and "affinity spaces" (Gee, 2004; Gee & Hayes, 2010; Hayes & Duncan, 2012). The first definition stresses the interests around which such communities are created, the second emphasizes the connections that these interests entail, while the third looks at the fluid, open-ended, and "on-demand" nature of interest-driven environments in which participants engage in passionate, self-structured, and intrinsically motivating activities (Frederick & Ryan, 1995; Gee, 2004; Malone, 1980, 1981).

The construct of affinity space was first introduced by Gee in 2004 in his book titled *Situated Language and Learning: A Critique of Traditional Schooling*. It is, therefore, a relatively young

conceptualization, yet a very influential one in the field of informal learning environments fostered by users' interests. In fact, the affinity space literature is in constant expansion and evolution, following the development of contemporary interest worlds, social media, and technologies.

Gee (2004) describes affinity spaces as social sites in which informal learning practices emerge through the social pursuit of common endeavors. Affinity spaces are organized repositories of creative literacy practices in which participation is carried out through self-directed, goal-oriented, and multimodal practices, beyond generational and geographic boundaries. On the one hand, affinity spaces are *showrooms* in which users exhibit their creations to a potentially unlimited audience; on the other hand they are *social laboratories* in which the audience is also an active crowd of critiques, collaborators, and creators. Social enterprises are valued and promoted, knowledge is shared and distributed, and leadership is fluid and continuously negotiated. In fact, these spaces offer different pathways to learning, creativity, and participation that cannot be inscribed in the more structured theoretical framework of communities of practice (Lave & Wenger, 1991).

Participation in affinity spaces does not move from *peripheral* to *central* because in affinity spaces *there is no center*, or, rather, the center is a fast-moving object, both on a personal and a social level. In fact, in affinity spaces, new "on demand" roles can always emerge, as new needs and opportunities arise (Lammers et al., 2012).

Acknowledging such openness and fluidity, Squire (2011) defines affinity spaces as "groups that voluntarily gather to learn" and specifies that those with "longer history, deeper culture, closer social ties, stronger commitment to the group, and mechanism of enculturation" (p. 64) become communities.

Previous research on affinity spaces. Research on affinity spaces is as old (or, rather, as young) as the construct itself (Gee, 2004). When we look at the literature in this field, three important categories of analysis need to be considered: the environment (e.g., physical/virtual, synchronous/asynchronous), the interest world (e.g., gaming, fan fiction, cinema), and the methodology.

Most of the research in affinity spaces is dedicated to online environments (Duncan & Hayes, 2012), as modern technologies and the Internet allow for countless social activities without the constraints of time and space. In fact, one of the salient features of affinity spaces is that they are focused on people's interests and passions, rather than age, country of residence, or level of education. The interest worlds that animate affinity spaces form a heterogeneous galaxy that include a multitude of interests such as *gaming* (Durga, 2012; Gee, 2005; Gee & Hayes, 2012; Hayes & Lee, 2012; Lammers, 2012; Steinkuehler, 2007; Thorne, 2012), *game design and "modding"* (Duncan, 2012; Games, 2010; Owens, 2010; Steinkuehler & Johnson, 2009), *music* (Baym, 2007), *comics* (Black, 2008), and *TV series* (Ellcessor & Duncan, 2011).

After reviewing research in a variety of interests worlds in affinity spaces, I present here a few representative studies focused on gaming and game-design, in order to illustrate the complexity and richness of these interests and spaces, as well as the heterogeneous approaches used to make sense of them. A critical synthesis and methodological analysis of the literature follows the discussion.

Hayes and Lee (2012) investigated a community dedicated to the digital game *The Sims* (one of the most popular game franchises), in order to make sense of the social construction and use of "specialist language" (Halliday & Matthiessen, 2004) through the analysis of interactions among novices and expert users in an online discussion forum. The methodology was based on a structural, semiotic, and pragmatic approach to discourse analysis. This study highlights the importance of specialist language (which was extensively used by the participants of the analyzed forum) as a *meaning-making* and *context-structuring* tool. Specialist languages embody the situated and goal-oriented use of discursive tools and structures enacted to communicate identities, build relationship, and negotiate ways of knowing. The construction of specialist languages requires an active participation in social contexts, far beyond the mere acquisition of a sophisticated vocabulary or set of grammar rules. The study and interpretation of such languages in affinity spaces can help researchers to better understand the interests (common endeavors), the relationships, and personal/social routes to learning and creativity within informal social environments.

A comparable approach can be found in analyses dedicated to user-generated narratives inspired by digital games. For example, Lammers (2012) studied an affinity space dedicated to digital storytelling related to the digital game *The Sims 2* using a discourse-centered online ethnography method derived from the work of Androutsopoulos (2008). Her research confirmed Gee's considerations on different routes to learning and participation in affinity spaces embodied by situated and fluid roles of the participants and by the production and sharing of multimodal and intertextual artifacts (Kress, 2011). In my opinion, the greatest merit of this study is its ability to represent the complexity of human interactions that can influence the practices and goals of an entire community shifting its focus to unforeseeable directions through a dialogic process that does not exclude conflict. In fact, from Lammers' work emerges that *community* is not always a synonym of *harmony*. I argue that such internal contrasts can be interpreted not only as manifestations of divergent personal views, but also as an opposition between situated "social roles" (Black, 2007) that are in constant evolution and that shape the organization and tension within the affinity space.

Moving to contexts that involve game design and user-generated modifications to digital games, Owens (2010) explored the discursive practices in a "modding" affinity space dedicated to the digital game *Civilization III* (a popular "historical" turn-based strategy game) using text analysis (Fairclough, 2003) informed by Gee's approach to discourse analysis (2010). His investigation focused on

players' conversations about the relationship between science, technology, and society in the context of the aforementioned digital game and its affordances as a tool to interactively represent social-historical events and dynamics. He argues that such discussions "could have occurred in any university classroom" (p. 2), however, they took place in an online forum dedicated to gaming and game design. This study is a great example of how participants in affinity spaces engage in multilayered and interdisciplinary conversations that spur from their interests (in this case, digital games and gaming). In these texts, the talk about the gameplay is intertwined with the talk on historical and societal issues, in an interest-driven, goal-oriented, and situated social discourse. This article also shows how digital games can be used in educational contexts to construct and use interactive models to instantiate complex issues "inside the sandbox that the game provides" (p. 3) and discuss about them outside and beyond the game-space.

Critical synthesis of the research. The critical synthesis of research on affinity spaces reveals some important (and interrelated) findings and issues. First of all, the specificity and complexity of the practices engendered in the investigated environments emerge as constitutive characteristics of all affinity spaces. In fact, these studies suggest that there is no "one right answer" or "one correct practice," and participants are free to explore different paths to learning and creativity through social interactions. These studies seem to confirm that participants have different interests, motives, and purposes

(Duncan, 2012; Ito et al., 2010) that shape, sometimes through contrasts (Lammers, 2012), the organization and evolution of the affinity space. This *situatedness* is also associated with an evident and widespread *goal-orientedness* reflected by the creative use of specialist languages (Gee, 2011; Halliday & Matthiessen, 2004; Hayes & Lee, 2012) that build upon insider's knowledge of shared interests and practices, a knowledge that is socially constructed and negotiated between *experts* and *novices* through a combination of technical and vernacular language. For example, Lammers (2012, p. 37) talks about a practice called "frankensteining" (or "franking"), that is "remixing" pictures of parts of characters of the game (*The Sims 2*) in order to create new "mashed-up" characters. Furthermore, such languages are enriched by *multimodal* and *intertextual* practices that include creating and sharing screenshots, videos, and links to external sources. From this perspective, affinity spaces can be considered *multimodal hubs* and *intertextual gateways* to participation, learning, and creativity.

The social construction and negotiation of knowledge and meanings appear as consistent features across the analyzed studies and Gee's postulated "common endeavors" (2004) emerge as the predominant driving force of affinity spaces. In this context, I think that scholars need to find a more precise definition and categorization of social endeavors and spaces. In fact, the analysis of the literature reveals that *interaction*, *socialization*, and *friendship* are at times interchangeably used to make sense of social practices (Ito et al., 2010; Lammers, 2012). Furthermore, the very construct of *affinity*

space (Gee, 2004) is sometimes confusing, as it is used to characterize single spaces (such as an online discussion forum) or a network of such spaces (related to the common endeavor). Another important issue that emerges from the review of the literature, arguably the most important one, is related to methodological approaches to the study of affinity spaces, which I will address in the following section.

Methodological issues and perspectives. The review of the literature revealed that one of the main concerns in the field of affinity spaces research is methodology. In fact, Duncan (2012) argues that "One of the challenges in moving affinity space research forward to date has been primarily methodological" (p. 52). This concern is epitomized by a recent article by Lammers et al. (2012) titled *Toward an Affinity Space Methodology: Considerations for Literacy Research*, in which the authors urge the development of a new methodological framework to investigate today's affinity spaces.

When Gee put forward the concept of affinity spaces, the "social ecosystem" on the Internet was very different. His pioneering work could not anticipate social media and creative platforms and containers such as YouTube, Flickr, Facebook, Twitter, Tumblr, and DeviantArt. Furthermore, new creative tools and devices such as the iPhone, the iPad, and advanced game consoles such as the PlayStation 3, are constantly expanding and changing the context of affinity spaces, as well as the production and consumption of multimodal media. For example, if we think of *LittleBigPlanet*, we can consider it a digital game, a creative platform, and a social environment. From

this perspective, I believe that the methodological problem is, to a large extent, elicited by the multimodal and intertextual nature of texts, artifacts, and practices that animate affinity spaces. In fact, scholars acknowledge that it is not sufficient to analyze online texts to make sense of multimodal practices (Androutsopoulos, 2008; Lammers et al., 2012) and there is an ongoing debate on methodological approaches. However, from the analysis of previous research emerges a unidirectional focus on spoken/written texts and an overlooking of the digital artifacts produced, and, consequently, to the relationship between these artifacts and the discourse around them.

I believe that methodologies that consider only written/spoken text are not well suited to the study of multimodal/intertextual practices, as the object of the research and the methodology used to investigate it need to be consistent. In this context, Lammers et al. (2012) argue that "For an affinity space researcher, attending to the multimodal nature of the literacy practices within the space impacts data collection and analysis" (p. 49), which echoes Duncan's (2012) standpoint, when he affirms that the nature of artifacts produced in design oriented gaming affinity spaces "may affect the forms of talk" (p. 60). In other words, it is not enough to analyze talk, since texts, artifacts, and practices in affinity spaces influence and build on each other. In this context, I argue that, in order to make sense of these phenomena, we not only need *new terminology* (e.g., interest worlds, participatory platforms, and participatory spaces) but also a *new methodological approach*. As with all complex human endeavors, I do

not think that there is a "right" way to approach them, but new methods can emerge from a constructive dialogue between researchers that try to make sense of similar environments and phenomena. From this perspective, the *hybrid intertextual methodology* that I propose in this study (see Chapter 3, "Methodology and Methods") is tentative and provisional, yet grounded on previous research and methods. The practical and scholarly merit of this new methodology can be found in its integrated nature, as it considers not only the *texts*, but also their interplay with *artifacts* and *practices*, thus contributing to a more comprehensive insight into affinity spaces.

After looking at affinity spaces, in the following section I will introduce and define the concept of "participatory spaces."

Participatory Spaces

The different approaches and definitions of social environments discussed in previous sections (communities of practices, virtual communities, communities of interest, networks of practice, and affinity spaces) are important to acknowledge the complexity and multifaceted nature of online social spaces; nevertheless, it is difficult to trace a clear dividing line between one kind of community/space and another. For example, an affinity space, in which the relationships among its participants appear to be weak or superficial (it is difficult to identify who is and who is not a "member"), may represent just a stage in the life of a more structured

community, which reflects the inherent evolving and organic nature of communities of practice (Wenger, 1998; Wenger et al., 2002).

It is important to note that in affinity spaces people interact around *shared interests and passions*, rather than *personal affinities*, such as "backgrounds, age, status, gender, ability, sexual orientation, race, ethnicity, or values unless these are integral to the passion" (Gee, 2012, p. 238). Given this interpretation, it may be somehow confusing, or at least ambiguous, to call them "affinity spaces" (Gee, 2004) or "passionate affinity spaces" (Gee, 2012), rather than, for example, "interest spaces" or "interest-driven spaces." In fact, the concept of "affinity" recalls *empathy*, *kinship*, and even *sympathy*, while the social spaces discussed by Gee seem to be inherently *interest-driven* (not *friendship-* or *relationship-driven*). As a matter of fact, Gee opts for the word "space," instead of "community" or "community of practice" (Wenger 1998), to remark the openness of these social environments in which "membership" seems no longer a viable category to interpret and understand social participation. In this context, to connect Gee's definition of "passionate affinity spaces" (2012), Lave's and Wenger's concept of "legitimate peripheral participation" (1991), and Jenkins' framework of "participatory cultures" (2006), I propose the broad definition of "participatory spaces."

After looking at different frameworks that inform the research on informal learning environments, in the next section I will focus on social and technology-supported approaches to creativity.

Social Creativity in the Digital Age

The common perception of creativity is linked to the image of the "solitary genius," an inspired visionary spirit that works and creates in isolation. For example, if we think of Michelangelo, Chopin, or Edison, we tend to see their uniqueness as individuals, rather than their role as members of a social network integrated in the evolution of a culture and society. However, if we take a closer look at their creative lives, we start to notice the role of teachers, mentors, collaborators, colleagues, sponsors, and friends without whom their work would not have been possible. If we broaden our look at the tools they were using (constructed by other people), we can argue that none of them could have conceived and created their masterpieces and inventions as we know them without these tools and people. Furthermore, if they did not find an audience, their art and creativity, and probably their lives, would have taken other directions. If we think of creativity in terms of *collaborators*, *supporters*, *tools*, and *audiences*, we can understand that the creative individual is also a social entity.

In recent years, scholarly research on creativity has broadened its focus from an individual to a social, distributed, and participatory dimension (Hutchins, 1995; John-Steiner, 2000; Sawyer & DeZutter, 2009), also considering the development and diffusion of tools and technologies that support these collective efforts (Fischer, 2004, 2005; Fischer, Giaccardi, Eden, Sugimoto, & Ye, 2005). Creativity is no longer considered uniquely as the product of individual factors

(personality, motivation, genetic and neurobiological characteristics) and environmental factors (Csikszentmihalyi, 1990; Feldman & Goldsmith, 1986; Gardner, 1993; Seitz, 2003; Sternberg & Lubart, 1991), but also as the outcome of social and collaborative efforts (Connery, John-Steiner, & Marjanovic-Shane, 2010; Mercer, 2000; Seitz, 2003).

Seitz (2003) brings forth the example of a movie, in which the collective effort of different figures (writer, editor, director, makeup artist, actress, actor, and many others) produces a work that draws on a *tradition* (previous movies), uses *tools and technologies* (video cameras, lights, editing software), and comes to life in a *social context* made up by reviewers, advertisers, distributors, and viewers. Given this scenario, creativity can be considered from both a micro perspective (*individual*) and a macro perspective (*social*), in which the products of creativity are dynamically constructed through the work of multiple contributors across space and time (Bakhtin, 1981).

But social creativity is not an exclusive domain of art. For example, if we look at the academic and research world, we notice that scientific knowledge, creativity, and innovation advance through a scholarly discourse in communities that are strongly based on interaction and collaboration. For example, submitting an article to a peer-reviewed journal implies the attention and evaluation of experts in the field who decide on its success, based on their knowledge, which, in turn, builds on previous writings, experiences, and social interactions. Once the article is approved, it is published and reaches a

network of experts and peers, but also a larger audience made up of those who may be peripherally approaching the field (Wenger, 1998) and even some "casual" readers.

Besides the artistic and professional worlds, the advancement and diffusion of information and communication technologies fostered the proliferation of virtual communities dedicated to creative endeavors. In these "creative networks" (Gaggioli, Riva, Milani, & Mazzoni, 2013) or "communities of creators" (Sylvan, 2007) people learn skills, present their works, give and receive feedback, share resources, and negotiate understandings. We may say that in these participatory spaces people socially *construct meanings* and collaboratively *design worlds*.

Information and communication technologies, as well as new digital tools and environments, support, facilitate, and encourage a participatory dimension of creativity on different levels (Fisher et al., 2005). For example, modern tools and environments allow the construction of "creative repositories" that include not only the digital artifacts created (e.g., user-generated game levels) but also the discourses enacted to produce and critique them (e.g., the threads/posts in a discussion forum). Such repositories offer an environment for personal and social reflection that is constantly available and open to further contributions, in a continuous process of social construction and negotiation of meanings in which learning and creativity emerge as interconnected and inseparable components.

Defining creativity (Cropley, 2011) is a complex task beyond the scope of this writing; however, I want to observe that new creative practices call for new approaches to creativity. For example, conventional categories associated with creativity, such as *novelty* and *usefulness* (Amabile, 1983), need to be reinterpreted in the framework of the "prosumer" revolution (Hall, 1993; Leadbeater & Miller, 2004; Ritzer & Jurgenson, 2010; Tapscott, 1995; Toffler 1980) and the diffusion of participatory cultures (Jenkins, 2006; Jenkins et al., 2009), which I discussed in Chapter 1. For example, when we consider the *novelty* of a creation in a participatory space, how can we draw a dividing line between "remixing," "recycling," "assembling," "imitating," "copying," and "replicating?" "Mash-ups" represent an important part of new creative practices in the framework of "new literacies" (Lankshear & Knobel, 2007) and they cannot be fathomed through traditional categories and approaches to creativity.

This study acknowledges the complexity of the matter and considers creativity as a sociocultural, social-constructive, and situated phenomenon. In particular, it looks at *creativity as design* (Koberg & Bagnall, 1991; Schön, 1988), and, more specifically, as the expression of the iterative design process *guided by* and *oriented to* creative problem-solving (Newell, Shaw, & Simon, 1962; Osborn, 1963; Wertheimer, 1945) that involves the creation, sharing, and critiquing of *multimodal* and *intertextual* texts, artifacts, and practices in a social environment.

Multimodality (Jenkins, 2006; Jenkins et al., 2009; Kress, 2011) reflects the variety of tools, techniques, and environments involved in the production and consumption of artifacts and media. For example, a digital game can feature graphic elements, animations, sound effects, music, written and spoken texts, narrative threads, interactive affordances, and much more. *Intertextuality* (Barthes, 1977; Kristeva, 1986; Lankshear & Knobel, 2007; Marsh & Millard, 2000) represents the complex threads that connect different texts, practices, and media. For example, a user could create a game level graphically inspired by the *Super Mario Bros.* series of digital games, with characters resembling protagonists of Japanese comics (*manga*), and a soundtrack featuring classical music played with electronic instruments.

From this multimodal and intertextual perspective (see also Chapter 3), echoing the systemic approach of Amabile (1983), I consider creativity from three interrelated dimensions: as *creative texts*, *creative artifacts*, and *creative practices*. These dimensions are embodied by the objects of inquiry considered in this study, that is the *discursive texts*, *interactive artifacts*, and *constructive practices* analyzed through a *hybrid intertextual methodology* that draws upon discourse analysis, studio critique, and design process analysis. Furthermore, this study does not aim at "rating" or "assessing" the products of creativity from a researcher's standpoint. In fact, I look at the quality and qualities of creative efforts through the words of the

participants (i.e., through what they make relevant about creativity in the discourse).

In the framework that considers creativity as design, Koberg and Bagnall (1991, pp. 34-41) describe specific creative behaviors associated with seven steps of the iterative design process (*acceptance*, *analysis*, *definition*, *ideation*, *idea-selection*, *implementation*, and *evaluation*) that alternate between convergent thinking stages (*acceptance*, *definition*, *idea-selection*, and *evaluation*) and divergent thinking stages (*analysis*, *ideation*, and *implementation*). *Acceptance* involves self-motivation, dedication, accountability, purposiveness, and enthusiasm. *Analysis* entails an open-minded approach, curiosity, fact-finding, data-gathering, questioning, and comparing. *Definition* requires focus, pattern-finding, conceptualization, and essence-finding. *Ideation* implies a speculative, non-judgmental, inventive, option-finding, and loose approach. *Idea selection* calls for an assertive, judgmental, discerning, logical, and strategic stance. *Implementation* demands a passage from abstract to concrete, giving form to ideas, and translating dreams into realities. Finally, e*valuation* involves a critical stance directed to self-improvement, artifact-improvement, and process-improvement, by testing, comparing results with intentions, and considering external feedback. In this study I used these seven steps/categories to analyze constructive practices, as discussed in detail in Chapter 3.

In the next section, building on the first part of this chapter, I will narrow the field of investigation by focusing on digital games as

interactive artifacts, creative tools, and social environments, analyzing them in the dimensions of *play*, *design*, and *participation*, in order to explore their potential as participatory platforms for social learning and creativity.

Digital Games as Participatory Platforms

Contemporary digital games engage players on different levels. They let them interact with virtual worlds and with other players, implement modifications to existing games ("mods"), or even create completely new games that can be shared online. In this sense, contemporary digital games are just one of the elements of an augmented gaming experience that goes beyond the "game in the box" and involves an interconnected network of tools, environments, and resources, both human and technological. These elements expand the affordances (Gibson, 1977) of digital games, transforming them into participatory platforms that inspire, boost, and support social interactions, learning, and creativity by expanding the gaming experience in the dimensions of *play*, *design*, and *participation*.

For example, when we purchase a game like *LittleBigPlanet*, we get much more than a disc in a colorful box. In fact, we can enjoy the game by playing it on our own or with friends who are in the same room with us, or even in another continent (thanks to Internet connectivity), participating in collaborative or competitive adventures (*play*). We can also sketch new backgrounds, construct virtual machines, or design completely new game levels, on our own, or with

the help of friends around the world (*design*). We can then share our game levels with the community, explore their efforts, comment on them, and receive feedback on our own creations; we can share ideas, pictures, and videos participating on social media and fan websites, and we can even create our own spaces (such as blogs or discussion forums) to interact with people who share our passion for this specific game or for gaming and game design in general (*participation*).

By entering the interest world of gaming and game design in a "grassroots" participatory space we can further our understanding of valued practices thus laying a foundation for the design and implementation of new social tools and environments for the learners and creators of the 21st century. In order to better understand this interest world, in the next part of this chapter I will look at digital games as participatory platforms in the interrelated dimensions of *play*, *design*, and *participation*.

Digital Games as *Play*

The traditional approach to a definition of digital games is commonly portrayed as a narrowing of the spectrum of analysis (Puentedura, 2006) proceeding from *play*, to *games*, to *digital games* (Fig. 5). In fact, some scholars consider digital games as traditional games enhanced by technology (Gredler, 1996), while others stress their multifaceted, and somehow "uncatchable" nature of "bizarre digital hybrids" that "appear as some kind of weird, hermetic monolith" (Poole, 2000, p. 30).

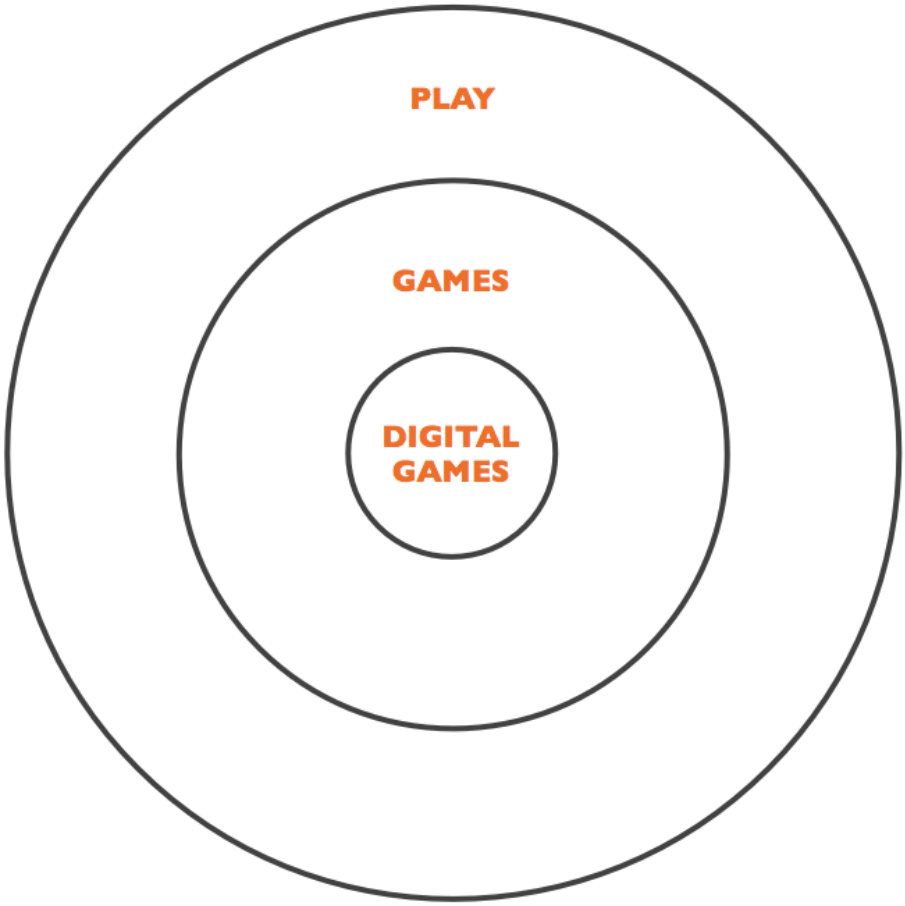


Figure 5. Situating digital games: the traditional perspective.

To frame the problem and to better understand the complexity of the topic, in the next part of this section I will present a few influential definitions of *play*, *game*, and *digital game*.

Huizinga in his classic work *Homo Ludens* defines play as:

> A free activity standing quite consciously outside "ordinary" life as being "not serious," but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. (Huizinga, 1949, p. 13)

Caillois defines play as an activity that is free, voluntarily, circumscribed, uncertain, undetermined, unproductive, governed by rules, and "make-believe." The author remarks that play involves the perception of a "free unreality" or "a special awareness of a second reality" (Caillois, 1961, p. 16).

In the early Seventies, Abt offered one of the most popular and influential definitions of game, one that has been quoted and reinterpreted by many later scholars:

> Reduced to its formal essence, a game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context. A more conventional definition would say that a game is a context with rules among adversaries trying to win objectives. (Abt, 1970, p.6)

Expanding on Abt's definition, Suits (1978) focuses on the foundational and somehow counterintuitive function of rules in games and argues:

> To play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, where the rules prohibit more efficient in favor of less efficient means, and where such rules are accepted just because they make possible such activity. (p. 34)

Crawford (1984) talks about *representation*, *interaction*, *conflict*, and *safety*, as the defining factors of most games. Juul (2003), in his extensive study on digital games, presented and confronted a number of definitions of play and game, considering not only the formal nature of games as systems, but also the relationships between players and games, games and the rest of the world, and game mechanics and dynamics. Salen and Zimmerman (2003), in their classic study *Rules of Play*, define a game as "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome" (p. 96).

All these perspectives constitute just a partial picture of the numerous attempts made by scholars and game designers to define play and games. Acknowledging these definitions, in the effort to better understand the role of *digital* games for learning and creativity, we must consider them in their complexity, as unique interactive artifacts that need to be investigated from different angles through an interdisciplinary approach. Non-digital games, like board games and role-playing games, have long been used and considered productive in supporting learning, both in educational and training settings

(Druckman, 1995). This study acknowledges the role and potential of traditional games in educational contexts, but looks more in depth at digital games as participatory platforms that boost and support social learning and creativity. Moving from play, to games, to digital games, in the following part of this section I present three conventional frameworks of reference that consider digital games as *systems*, *microworlds*, and *models* (Squire, 2011).

Digital games can be considered *systems* in which different elements interact one with another in response to rules set by designers and commands controlled by artificial intelligence or the player. In a game like *SimCity*, the player, as the mayor of a city, controls different aspects of its life and growth, like electricity, roads, buildings, services, and taxes. All these elements are interrelated and contribute to defining the outcome of the game. For example, lowering taxes will attract more population, causing a higher demand for jobs and real estate, while at the same time increasing traffic and pollution.

Some of these complex systems can be explored in multiplayer mode (in the same room or online). For example, games in the MMORPG (Massively Multiplayer Online Role-Playing Game) genre, like *World of Warcraft*, allow thousands of players to be simultaneously part of the gaming experience. Players have different roles, powers, and levels of experience and need to aggregate in groups to defeat enemies that can be overcome only through a collaborative effort. These groups can be considered as situated *sub-*

systems (formed in a specific time to defeat a specific enemy) within the *game system*, but also as elements of a global *hyper-system*, as they expand the game (that features spaces, characters, and rules) by connecting people from different parts of the world.

Given this "ecosystemic nature," digital games have been defined as *microworlds* (Minsky & Papert, 1971; M. Resnick, 1994), small "planets" with specific rules and affordances, which may or may not mimic those of the "real world." But a microworld is not merely a simplified version of reality. In a microworld we can be someone else, performing actions, embodying identities, and experiencing adventures in a safe environment, doing things and being persons (or even being things) we could not do or be in our everyday life (e.g., being a racing car driver, fighting aliens, or traveling through time).

Digital Games can also be considered *models* (or *systems of symbols*), representing imaginary or real world experiences with different levels of abstraction (Crecente, 2009; Squire, 2011). These representations can help us to formulate and test hypotheses to better understand and solve complex problems. As opposed to realistic representations or simulations, digital games are *less detailed*, but *more usable*, models. For example, a graphical map of the transportation system of a city that includes only a limited set of information relevant to travelers (going from point A to point B using public transportation) is more usable than a satellite picture that represents a detailed view of the area. From gaming, designing, and learning perspectives, models are easier to control, manipulate, and

understand, and are better suited to represent complex problems and promote solutions that can be transferred to other contexts.

These three frames of reference (*systems*, *microworlds*, and *models*) help us to envision the multifaceted nature of digital games. Squire (2006) defines them as *designed experiences* while Gee (2007b, 2012) frames them as sets of well-ordered problems (not just facts or information) supported by copious feedback (e.g., points and audio-visual signals). In well-designed games, problems are interesting to approach and fun to solve. In this context, one of the biggest misconceptions about digital games is that they are inherently fun. Actually, there are games that are more frustrating than fun, or not fun at all. "Fun" is not the defining characteristic of digital games (Shaffer, 2006) and there is a substantial difference between "fun" and "engagement." We may say that a well-designed digital game is engaging, *therefore* it is fun. In this sense, the application of digital games in education should not aim at "making learning fun," but rather at making it engaging. In fact, from a constructivist point of view, players/learners should be able to actively participate in environments that allow for personally meaningful choices directed to the achievement of goals that are challenging but attainable, with the assistance of human (peers or more knowledgeable others) or virtual (designed or programmed) mediators (Bruner, 1986; Vygotsky, 1978). Vygotsky (1978) argues:

> Play creates a zone of proximal development of the child. In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself (p. 102).

Well-designed digital games, by acting as "virtual more knowledgeable others" and by offering ideal levels of challenge in the zone of proximal development, allow us to be "a head taller than ourselves," extending and expanding our possibilities of *doing* and *being*. From this perspective, Driscoll (2005) suggests that "a well-designed computer-based tutor, may serve in the role of inquiry teacher as effectively as an adult instructor" (p. 238). Well-designed digital games embody this dual nature of *challenging* and *tutoring* environments in which players/learners are presented with problems, tasks, and missions that are progressively adjusted to match their current level of competence. In this context, two important factors to be considered are *constant progress feedback* (Schunk & Rice, 1991) and *overlapping goals* (Squire, 2011). Digital games continuously "tell" us where we are and process our actions to set an ideal level of difficulty (Csikszentmihalyi, 1990) which enables us to achieve short-, mid-, and long-term goals by solving problems that are demanding but doable.

Squire (2011) argues that "we're naturally motivated to learn when the world does not conform to our expectations" (p. 89), echoing Dewey's thought about *perturbations* of understanding as

stimuli for learning (Duffy & Cunningham, 1996; Savery & Duffy, 1995). From a cognitive-constructivist perspective, Piaget describes this condition as *disequilibrium*: creating *incongruity* (also defined as *cognitive conflict*) between environmental inputs and cognitive structures of an individual brings forth a *disturbance* in cognitive structures that fosters development through *assimilation* (adapting external reality to earlier cognitive structures) and *accommodation* (modifying internal structures to adjust to external reality). From a different perspective, Bruner talks about the *unknown*, or the *mystery*, that leads to the discovery through construction and testing of hypotheses, exploration, experiential problem solving, contrast, and reflection (A. L. Brown, & Campione, 1994; Bruner, 1961, 1973; Kirschner et al., 2006; Klahr & Simon, 1999).

Discovery learning, as discussed in the section dedicated to constructivism and situated cognition, implies the active involvement of the learner in problem solving activities that foster the development of inquiry skills (Bruner, 1961). While this approach values both *content* and *process*, its application through the years has vastly privileged the first of the two. In fact, "learners quickly discover that the goal is not inquiry or exploration of a domain but rather discovering what the teacher wants them to discover" (Savery & Duffy, 1995, p. 14), which reflects a teacher-centered, not a student-centered, approach. On the other hand, well-designed digital games offer genuine possibilities of exploration and discovery that stimulate play as a problem solving and hypothesis-testing experience (Klahr &

Simon, 1999), allowing the player to follow multiple paths to achieve incremental goals (Bonk & Dennen, 2005; Gee, 2007b; Papert, 1981). To describe this condition "urging" an individual to search for the solution of intriguing problems, Savery & Duffy (1995) introduce the term *puzzlement*.

Whatever we want to call it (*perturbation*, *disequilibrium*, *cognitive conflict*, *contrast*, or *puzzlement*), this element is at the heart of most digital games. We may even consider the intrinsic motivation to solve problems and progress through the game as a desire to learn (Cordova & Lepper, 1996; Malone, 1980, 1981). In this context, echoing Bruner's constructivist approach to learning, Duffy and Cunningham (1996) argue that "the active struggling by the learner with issues *is* learning" (p. 5). This conception shifts the educational focus from *content* to *problems*, suggesting that, to make content relevant and engaging, we need to transform it into problems that are meaningful to approach and interesting to solve, which requires player/learner-centered environments that facilitate exploration, tinkering, and discovery, that value alternative solutions, worldviews, and styles, and that consider failure as a natural element of the learning process. This approach has been investigated as "problem-based" and "inquiry-based" learning in the constructivist framework (Hmelo-Silver, 2004; Jonassen, Peck, & Wilson, 1999; Kirschner et al., 2006; Savery, & Duffy, 1995).

Research shows that well-designed digital games, by engaging the player with interesting problems and by offering effective "just-

when-you-need-them" tools to solve them, can awaken motivation in learners that have low levels of interest or confidence (Klawe, 1994) and even boost self-esteem (Dempsey, Haynes, Lucassen, & Casey, 2002). The constant and copious feedback provided by these games (Gee, 2007b) can be considered as *continuous assessment*: the player/learner always knows his/her achievements, present level of knowledge and skills, and what needs to be done next. These *goal-directed* and *feedback-reinforced* enterprises foster the active construction of knowledge and improve problem posing and problem solving skills.

If problems are personally relevant to the learner, the problem solving experience becomes even more compelling. Following this principle, well-designed digital games can be considered as interactive environments that foster *interest-driven learning* (Bruning et al., 2004; Geary, 1995; Squire, 2011), which reflects the learner-centered principles developed by the American Psychological Association (APA) as guidelines for a constructivist approach to learning and teaching. In particular, these principles stress the relationship between intrinsic motivation and learning (Deci & Ryan, 1985), which takes place when general tasks are tuned in to interests that are relevant to the learner (American Psychological Association [APA], 1997).

Solving meaningful problems is an essential component of any engaging digital game, but a well-designed gaming and learning experience is not focused exclusively on performance, but also on experience. In fact, well-designed digital games are not only

performative, but also *transformative*. To a certain extent, this feature can be found in virtually all digital games. For example, controlling an avatar in a digital game can be considered a process of *hybridization*: we become one with our "digital embodiment" and with its experiences, victories, and downfalls, that become our own, and vice versa (Gee, 2007b). This *reciprocity of play* creates a connection between the player and the game that emphasizes the *flow* of the experience (Csikszentmihalyi, 1990). We may say that, as we play the game, the game "plays us" (Gadamer, 1989).

This reciprocity develops in a safe environment, in which one can make mistakes and progressively work to fix them (Papert, 1981), instead of "shooting for the right answer" or struggling to avoid the wrong one at any cost. This approach to learning can be considered an actualization of *discovery learning* (Bruner, 1961). In fact, digital games make failure a natural and, sometimes, even fun part of the process, thus encouraging repeated play and exploration of new solutions. Cazden (1981) defines this approach *performance before competence*: players apply *learning by doing* (Dewey, 1897, 1916) rather than *learning before doing*. The "failure space" is part of the identity of digital games and players/learners are encouraged to explore it. Bennahum (1998), talking about his experience with digital games says:

> I could lose privately. No one to laugh or yell at me for missing. … This was bliss. (p. 15)

Interestingly, this perspective reflects the paradigm of *cooperative learning* (Slavin, 1995), which holds that learners feel safer when working within a group and presenting their work as part of a collective effort, which helps them to overcome mistakes by sharing responsibilities through distributed tasks. Playing a digital game or working in a group contributes to a distribution (and delegation) of roles and power (Bazerman, 1997) that creates an environment in which it is safe to experiment, fail, and explore alternative possibilities. We could say that both playing digital games and working in cooperative groups let us safely act and learn (counter-paraphrasing Vygotsky) as "less knowledgeable others."

This "freedom to fail" amplifies the freedom to explore, tinker, and invent rules, goals, and missions. In fact, one of the most motivating and fun experiences related to digital games is the possibility to create user-set goals, different from those originally conceived to beat the game. For example, a player in a war game, instead of taking a side in the conflict, could try to pacify the two sides (an example reported by Will Wright, the creator of *The Sims* series). This kind of approach to gaming is called "transgressive play," as it goes against (or beyond) the rules and goals originally set by the designers of the game (Poole, 2000).

The perception of freedom and the active participation in digital games is reinforced by the narratives that accompany them and by the narratives that players create *within* the games or *around* the games, in social spaces. Players enter worlds and stories that give

meaning to their actions, or create their own stories that help them to frame their actions through a process of *meaning-making* (Jonassen & Land, 2000) that can be generative on both a personal and a social level. Furthermore, some digital games let players explore *interactive stories* (Barab et al., 2010; Crawford, 2005; Murray, 1997) in which users can concurrently play the role of audiences, performers, and authors, influencing with their choices the events and outcomes of the story. In *interactive storytelling* (also defined as *interactive narrative*), dilemmas are experienced through *interaction* ("a mutual or reciprocal action or influence," as defined by The Merriam-Webster dictionary) and *agency*, defined by Murray (1997) as "the satisfying power to take meaningful actions and see the results of our decisions and choices" (p. 126). In other words, every choice performed by the player, through a process of reflection and decision-making, has a consequence on the development of the story and, in turn, the story influences the actions and decisions of the player. These choices are personal and meaningful and can lead to deep self-reflection (Murray, 1997). There is an ongoing debate on the "impossible marriage" between story and agency, narrative and interaction, as one seems to mutually exclude the other. There are good examples of games that involve interactive storytelling, such as *Façade* (developed by Michael Mateas and Andrew Stern, Mac, PC, 2005) and *Heavy Rain* (Quantic Dream/Sony Computer Interactive, PlayStation 3, 2010), but this field has yet to be fully explored and needs an interdisciplinary

approach that considers film and theatre criticism, narratology, and media studies.

In the next section I will switch the focus from digital games as *playable artifacts* to digital games as *constructible artifacts* that can be conceived, designed, and developed by "everyday users," not only by professional game designers. Throughout the analysis, I will consider important implications of this approach for learning and creativity.

Digital Games as *Design*

As held by McLuhan (1964), using a particular technology is a powerful experience, more profoundly transformative than the content of any specific book (Shaffer, 2006). Creating computer-based artifacts (Schwarz & Hershkowitz, 2001), using a specific technology, can be an even more powerful and transformative experience. In fact, building a digital artifact means making a personal investment in the project, taking decision throughout the process, and evaluating the progress, both individually and in social settings (Driscoll, 2005).

Through the design of interactive artifacts (such as digital games) people learn to think with a system of symbols (Gee, 2007b; Squire, 2011) learning an *iterative method* that can be transferred to other contexts and situations. *Design thinking* (Hayes & Games, 2008; Kafai, 1995) and *Learning through designing* (diSessa, 2000; Duncan, 2010, 2012; Kafai & M. Resnick, 1996) involve the development of problem solving and collaborative skills. Interestingly, "thinking like

designers" is important even when players are "just" playing (not designing) games, as they need to unveil and fathom the system of rules hidden underneath the interface of the game (Gee, 2007b, 2012).

In the late Sixties, the work of Seymour Papert on *Logo* (a programming language designed for learners) paved the way for other programming languages and environments for non-experts, particularly children, to be used in educational contexts. This type of software (a simplified version of professional applications) makes programming accessible to users of virtually every age, in a visual and streamlined environment. Papert's approach to learning was in part influenced by the work of Maria Montessori (1870-1952), who developed the "Montessori Method." The central point of this system of educational practices is called *normalization* and implies a self-directed approach to learning, mediated by a teacher, whose role is to guide students in the development of their interests through activities that require engagement, attention, and concentration, in an environment suitable for the task, as a natural part of their social and psychological development.

The Montessori curriculum provides a number of activities that allow students to interact with concrete and abstract materials, visually organized in the environment from lower (*concrete*) to higher (*abstract*) shelves. Learners can progress along at their own pace and see what they have achieved (*accomplishment/reward*) and what is next (*stimulus/curiosity*). The Montessori class is also an environment that stimulates social interaction among students of different skills and

ages, fostering collaboration and modeling based on activities, rather than individual attributes. The Montessori Method gives learners *choice* (they are free to select the activity) and *control* (they master the material and self-assess their performances, for example, with the help of control cards). *Self-contained* and *self-correcting* materials help students in these tasks.

Squire (2011) affirms that "the Montessori system provides a model of what a game-based learning system should look like" (p. 49). Brian Crecente, the Editor in Chief of one of the most popular websites dedicated to gaming, Kotàku.com, argues that "the more than four hundred pages of Maria Montessori's book, *The Montessori Method*, is packed with lessons that seem at times written as much for game development as they are for education" (Crecente, 2009). This excerpt is taken from an interview with Will Wright, the creator of popular games like *SimCity*, *The Sims*, and *Spore*, who himself went to a Montessori school, and often quotes the Montessori Method as an inspiration to his work as a game designer and his way of thinking.

In the spirit of the Montessori Method, Papert developed computer tools to engage students in activities that involve the construction and sharing of digital artifacts in a social environment that encourages cooperation and negotiation of meanings, a perspective close to social constructivism. In fact, Papert's learning theory is called *constructionism* and implies the programming of digital artifacts that are shared in a social space (Carbonaro et al., 2006; Harel & Papert, 1991; Hayes & Games, 2008; Kafai, 1995,

2006; Kafai & M. Resnick, 1996; Salen, Torres, Wolozin, Rufo-Tepper, & Shapiro, 2011). Papert worked with Piaget in the late Fifties and early Sixties (Ackermann, 2001) and his approach has been influenced by Piagetian constructivism, as both approaches consider the learner as an active constructor and organizer of knowledge. Papert (1991) expresses the relation between the two theories in these terms:

> Constructionism – the N word as opposed to the V word – shares constructivism's connotation of learning as "building knowledge structures" irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe. (p. 1)

We may say that constructionism values learning through *making* and *sharing* things. The assumption is that when we construct something for someone else we are actively involved in the process of understanding and making sense of the object from different perspectives. For example, if students create a digital game on prime numbers, they have to approach the topic thinking with the "player's mind," thus reflecting on how they understands this topic, and how they can help the potential player of the game in this understanding. In other words, constructionism holds that if we create an artifact about a topic for someone else, we learn that topic better ourselves, especially

through a "hands on" approach that involves the construction of artifacts that are shared in a social space.

Papert's *Logo* pioneered the idea of programming environments as learning tools. With new technologies and research, these tools have evolved into more elaborate and powerful environments. Some of the most notable evolutions of *Logo* include *StarLogo*, *NetLogo*, and *Scratch*.

StarLogo is "a programmable modeling environment for exploring the behaviors of decentralized systems, such as bird flocks, traffic jams, and ant colonies" (M. Resnick, 2008) developed at the Media Laboratory and Teacher Education Program at the MIT in Cambridge, MA. The main idea behind this software is to show how complex patterns and systems can emerge without centralized control by assigning simple commands to virtual "turtles" (agents) that interact one with another. The original *Logo* software allowed creating drawings and animations with a single "turtle," while *StarLogo* is capable of running thousands of "turtles" in parallel at the same time. It also introduces the concept of "patches" (environments) that can interact with the virtual "turtles" in the simulation.

NetLogo was authored by Uri Wilensky at the Center for Connected Learning (CCL) and Computer-Based Modeling at Tufts University in the Boston, MA area (in 2000 the CCL moved to Northwester University, Evanston, IL). It is a free and open-source multi-agent programmable modeling environment that allows to simulate natural and social phenomena, and, more generally, complex

systems developing over time (Wilensky, 1999). *NetLogo* is widely used in education. Students can explore the behavior of virtual agents that operate independently, and analyze the relationships between the micro-behaviors (*discrete*) and the macro-patterns (*systemic*) emerging from their interactions. Through a participatory tool called *HubNet* students can work together on a given simulation. For example, a teacher can assign to each student one of the agents in the simulation to see how they interact over time.

One of the most popular and "radical" evolutions of these environments is *Scratch*, a graphic programming language developed by Mitchel Resnick and his Lifelong Kindergarten group at the MIT Media Lab. *Scratch* allows drag-and-drop programming in a visual environment that simplifies and makes available to children otherwise complex programming concepts like variables, arrays, and conditional statements. The program allows users to create interactive presentations, games, and animations that can be shared online in the dedicated community. So far (June 2013), more than three million projects have been posted on the website (http://scratch.mit.edu). Once a project is uploaded by a member, not only can it be played by other members, but it can also be modified and personalized, or, in *Scratch* language, "remixed." In fact, the name "Scratch" was inspired by the DJ technique called "scratching," while "remixing" is a technique used in music to create alternative versions of a song adding new elements or combining parts of different songs. The programming code is available for download with each project. This feature allows

users to “deconstruct” or “reverse engineer” a project and see how it works “under the hood,” and then publish a new “remixed” version.

Scratch is being used in thousands of schools and educational programs around the world and is supported by a website dedicated to educators, called *ScratchEd* (http://scratched.media.mit.edu), with multiple resources divided by educational level, content type, curricular area, and language.

Other programming languages for non-experts that are used in education include *AgentSheets* (www.agentsheets.com), *Alice* (www.alice.org), *Storytelling Alice* (www.alice.org/kelleher/storytelling), and *Kodu* (www.kodugamelab.com), while *Gamestar Mechanic* (www.gamestarmechanic.com) is focused on game design rather than programming. The evolution of contemporary digital games, the development of programming languages, and the diffusion of the Internet paved the way for the development of digital games such as *LittleBigPlanet* that provide a comprehensive environment for entertainment, expression, socialization, learning, and creativity.

After looking at digital games as *playable* and *constructible* artifacts, in the next section I will explore how these dimensions intersect and develop in social and participatory contexts.

Digital Games as *Participation*

The interest world of gaming and game design can be interpreted in the framework of participation. Jenkins et al. (2009)

present participatory cultures in a very effective and informative definition:

> A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing creations, and some type of informal mentorship whereby experienced participants pass along knowledge to novices. In a participatory culture, members also believe their contributions matter and feel some degree of social connection with one another. (p. xi)

If we carefully analyze this definition, we can find some of the major features of several interest-driven social environments. First of all, we must acknowledge the *cultural* nature of these spaces, as opposed to a *trivial* perception of topics dealt in some of these communities, such as the construction of "virtual furniture" for the inhabitants of the digital game *The Sims* or the creation of spin-off stories based on the *Harry Potter* novel series. Another element that emerges from the definition is the "permeability" of these cultures. They have "relatively low barriers" that allow participation of people on the basis of their interests, not of their age, background, or skills. They are open to the external world through connections and resources shared by participants (Baym, 2007; Lammers, 2012; Watson, 1997), fostering the construction of understandings and

meanings that are *individual* (personal), *distributed* (within the community), and *disperse* (beyond the community).

Online social spaces offer multiple opportunities for *consumption* (e.g., reading the posts in a discussion forum), *production* (e.g., posting a video that illustrates "hidden" features of a game), and *socialization* (e.g., interacting in a chat). In this context, Gee (2004) argues that "learning becomes both a personal and a unique trajectory through a complex space of opportunities … and a social journey as one shares aspects of that trajectory with others" (p. 81). Through personal and social trajectories (Wenger, 1998) people explore their identities, share opinions, ideas, and artifacts, express themselves, negotiate meanings, and learn from each other (Hayes & Duncan, 2012). We may say that people actively participate in these spaces *to influence* and *to be influenced.*

Rogoff (1994) argues that in communities of learners "learning occurs as people participate in shared endeavors with others, with all playing active but often asymmetrical roles in sociocultural activity" (p. 209). This *dynamic asymmetry* is a crucial factor for the creative potential and evolution of a community and reflects the diversity of its participants. In fact, one of the defining characteristics of most participatory spaces is their *openness* to members of different backgrounds. This diversity is also embodied by different *roles* (e.g., moderator, member), *types of contribution* (e.g., asking, answering), and *levels of experience* (e.g., expert, novice). The ability to understand these differences, with their intrinsic and extrinsic values,

their features and biases, situating them in a sociocultural context, is part of the *new literacy skills* needed for an active, aware, and responsible participation in the "digital world."

As a condition to their existence and prosperity, participatory spaces are regulated by both official and unwritten rules, shared and maintained by their members. Participation in a community means engaging in a shared activity within a group of people in an "ecosystem" of roles, rules, and patterns of interaction (Steinkuehler, 2006). Jenkins (2006) argues that these spaces express a "collective intelligence" (see also Lévy, 1997), because the community "knows" more than each of its members.

In some participatory spaces the core activity is the creation and sharing of personal artifacts. Sylvan (2007) defines them as "Online Communities of Creators" (OCOCs):

> Personal creations are objects that people make as a form of personal expression and can include content such as photographs, music, stories, songs, and computer programs. In an OCOC, a network of people is brought together by the projects they share. Participants in OCOCs may post their creations in public forums, comment on each other's work, and tag their projects to describe their meaning. In some communities they may download the work of others, manipulate it, and then upload it for review. (p. 24)

Sylvan describes three core features of these creative social environments: 1) the possibility to share creations; 2) the possibility to comment on each other's work; and 3) the possibility to associate each contribution to their creators.

The author includes in the category of "online communities of creators" websites such as *Flickr*, in which users share and comment on pictures. In my opinion, defining such social spaces as "communities of creators" can be misleading. For example, taking a picture of a car and sharing it on the Internet can certainly be considered a social activity, but I would not go as far as calling it a "creative effort." To give another example, shooting a video of a cat and posting it on YouTube is a considerably different activity than writing, directing, and editing a short movie. Furthermore, from my perspective, interest-driven communities in which people create and share artifacts are not about the *quality of the products* they create and share, but rather about the *quality of the efforts* employed to produce them. We could say that the first activity (shooting a video of a cat) represents *capturing*, while the second one (producing a short movie) embodies *creating*. In this context, it is important to focus on the *intention of creation* (why we make something: e.g., to document, self-express, or have fun) and the *intention of sharing* (why we share it with others: e.g., to receive feedback, show progress, or receive appreciation).

Digital games are one of the most popular interest worlds that spark these participatory spaces, prompting social interaction,

generous support, and creative efforts (Gee, 2007b, 2012; Jenkins, 2006). Gaming communities (Bonk & Dennen, 2005), as other communities of practice, give access to opportunities of interaction with experts, as opposed to the traditional classroom model that "filters" content through one expert (the teacher), positioning students according to their age (the class), and not to their interests and skills. In these teacher-centered contexts there are few opportunities for self-development through a progressive acquisition of responsibility. We may contrast the *imposed authority* of the teacher in a classroom with the *emergent leadership* of a member in a community of learning: the first one cannot be questioned, while the second one is always negotiable (new leaders may emerge) and situated (a member may be a leader on specific topics in a given timeframe).

The progress and the achievements shared in a participatory space dedicated to digital games can lead to a spontaneous *evolution of the role*, from peripheral to central (Wenger, 1998), from *reader* to *author*, and from *player* to *designer*, contributing to the development of gaming *strategies* (solutions and techniques), *assets* (levels, tools, characters, etc.), and *understandings* (about and beyond the game). This progression of roles and variety of opportunities for contribution is important for self-efficacy and can encourage players to look for opportunities of personal development and social impact beyond the gaming world, in real life settings. Gee (2012) affirms that "a lot of the good learning that goes on when people play games does not happen just in the game, but also in social interactions around the

game" (p. 235). In fact, contemporary digital games are naturally intertwined with participatory spaces: blogs, forums, fan-pages, websites, and social media can be considered as their natural "extensions." In this sense, we can consider digital games as participatory platforms for social learning and creativity.

Squire (2011) argues that "a great pleasure of gaming is becoming an *expert* … and being recognized as such socially" (p. 147). In other words, the envisioned achievements in a game motivate the player both *intrinsically* (beat the game) and *socially* (beat the game better than others do). I would suggest that this state of "mastery" or "superior competence" makes the player recognizable and valuable not only for his/her achievements, but also for the opportunity to become a guide and mentor to other less skilled or less experienced players (beat the game better than others do to acquire the expertise and "status" to guide them). From this perspective, *mastering* a game becomes a bridge between *learning* the strategies to beat the game and *teaching* these strategies to others.

By participating synchronously and asynchronously in situated and social experiences (Bruner, 1986; Gee, 2007b; L. B. Resnick, 1987), people learn from each other as *apprentices* (Lave, 1996; Rogoff, 1995), exploring creative solutions to problems, negotiating worldviews, and socially constructing skills and knowledge. In apprenticeship settings (Rogoff, 1990, 1995), novices work on tasks that are beyond their existing skills along with experts (or more knowledgeable others) to achieve common goals, thus learning new

skills, processes, and "hidden rules" necessary to successfully perform the intended work. This social activity, that reflects Vygotsky's theory of the zone of proximal development (Vygotsky, 1978), allows users to develop a shared and experiential understanding of problems, procedures, and solutions in a situated, authentic, and culturally-mediated setting (Cobb, 1994; Cobb & Bowers, 1999). Given the complexity and "hidden rules" of most digital games, peer-collaboration (Bruner, 1984; D. Fuchs, L. S. Fuchs, Mathes, & Simmons, 1997; Slavin, 1995) can help to master them by reducing the cognitive load and facilitating the achievement of goals through a shared effort (Kirschner, Paas, & Kirschner, 2009). In this context, the potential of digital games as participation, discussed in this section, can be gathered in two main categories: *synchronous participation* and *asynchronous participation*.

Synchronous participation can take place in a number of ways. For example, we can play a digital game in multiplayer mode with our relatives in our living room, sitting on the same couch, commenting on their efforts, victories, and failures; or we can play a "vintage" digital game with a couple of friends in a public space, such as an "arcade room"; or we can join thousands of players online in a massively multiplayer online role-playing game, interacting with them by voice (e.g., with a headset) or by text (e.g., in a live chat window embedded in the game).

Asynchronous participation involves the *discourse* about digital games, generally when we are not playing them. Some

examples include: reading reviews on newly released games, posting comments in a discussion forum, recording and posting "walkthroughs" (i.e., step-by-step guides to beat difficult levels), creating short movies with pictures and scenes taken from games (a practice called "machinima"), writing stories or songs about game characters, exploring online leaderboards, sending suggestions to game developers for improvements and new features to be implemented in future releases, attending gaming conferences, developing wikis that describe the game-world with its characters and places, "modding" the game by developing new levels for other players, creating fan-websites, posting special codes or "tricks" on a blog, launching gaming competitions, assigning new goals and missions to be accomplished within the game, sharing game achievements on social media like Facebook or Twitter, drawing fictitious characters inspired by the game, and much, much more.

These multifarious forms of "gaming participation," both synchronous and asynchronous, can be influenced by a combination of *proximity factors* that are relevant to the gaming experience: *proximity of space* (e.g., on the same couch, in the same room, on the Internet), *proximity of time* (e.g., synchronized, real-time, turn-based), *proximity of relation* (e.g., with relatives, friends, casual/unknown co-players), *proximity of ability* (e.g., expert/novice, all experts, all novices,), and *proximity of interest* (e.g., passionate, indifferent, conflicting).

Beside these proximity factors, there are a number of variables to contemplate when looking at digital games in social contexts. For

example, if we compare *console games* to *computer games*, we need to consider different settings (e.g., couch vs. desk), different output devices (e.g., TV set vs. monitor), different input devices (e.g., joypad vs. keyboard/mouse), and even different kinds of games (Marone, 2011). These different tools and settings offer different social affordances for play, design, and participation. For example, a gaming console is usually located in the living room, a space of the house that is accessible to all the members of the family when the gaming activity is in progress. This may stimulate interest and discussion about the game among family members, and even encourage family participation in learning and creative activities that involve the game.

These considerations, related to participatory dimensions (synchronous or asynchronous), proximity factors, tools, environments, and affordances are important because they underline the range of possibilities offered by digital games. In fact, we cannot think of them as standardized "one-fits-all" tools. On the contrary, we need to acknowledge their complexity and richness, as multimodal participatory platforms that offer an extensive range of possibilities for entertainment, socialization, learning, and creativity.

Through participatory activities connected to gaming and game design players/learners negotiate their identities as actors and authors in a specific space and time (R. Brown & Renshaw, 2006). In this context, the concept of *chronotope* developed by Bakhtin (1981), which describes the inseparability of space and time, offers a dynamic interpretive framework of learning and creativity in a participatory

space dedicated to the creation of interactive artifacts. Users discursively shape and reshape activities, meanings, and identities in a collaborative effort (Bakhtin, 1981; R. Brown & Renshaw, 2006; Hirst, 2004) that involves their previous experiences (*past*), present involvement (*here and now*), and envisioned goals and applications (*possible uses and users*), which reflects a social-constructivist and situated approach to learning. The multiple voices of the students (Bakhtin, 1981), individual and collective, emerge from interactions that are *intentional*, *productive*, and *reflective*. By engaging in these social-constructive endeavors learners "absorb part of the culture that is an integral part of the community, just as the culture is affected by each of its members" (Jonassen & Land, 2000, p. vi).

This situated and social process is reified by the playful and collaborative construction of digital games in participatory spaces. The playful element that emerges from gaming (M. Resnick, 2003, 2004) contributes to unpredictable, lateral, imaginative, and creative thinking. The social setting stimulates the negotiation of ideas, roles, and identities, while the process of design and construction engages learners in participatory activities aimed at transforming personal and social meanings into concrete artifacts that can be shared with others. Creating interactive artifacts *with others* and *for others* means to socially create "possible worlds" and "possible futures" (Bruner, 1986), which reflects the idea of digital games as "possibility spaces" (Squire, 2011).

If we look at the graphical representation of the process (Fig. 6), we can see that the individual voices (represented by the square, the circle, and the triangle) emerge in three dimensions: "I" (*past*; *experience*), "us" (*present*; *here and now*), and "I + us for others" (*future*; *possible uses and users*). As we can see, the individual is not "dissolved" in the final product, but rather discursively recreated (or "remixed") through the participatory process of construction of artifacts, identities, and meanings.

This interpretation reflects a situated and social-constructivist approach to learning tools and environments, as effectively conveyed by Jonassen and Land (2000):

> Not only does knowledge exist in individual and socially negotiating minds, but it also exists in the discourse among individuals, the social relationships that bind them, the physical artifacts that they use and produce, and the theories, models, and methods they use to produce them. (p. vi)

Conclusions

As scholars, we can learn a lot about learning and creativity by investigating participatory spaces dedicated to the interest world of gaming and game design. Squire (2011) argues that "the design exercise requires entering the player's head, speculating what he or she might be thinking, and then using that knowledge to enable academically valuable interactions" (p. 88).

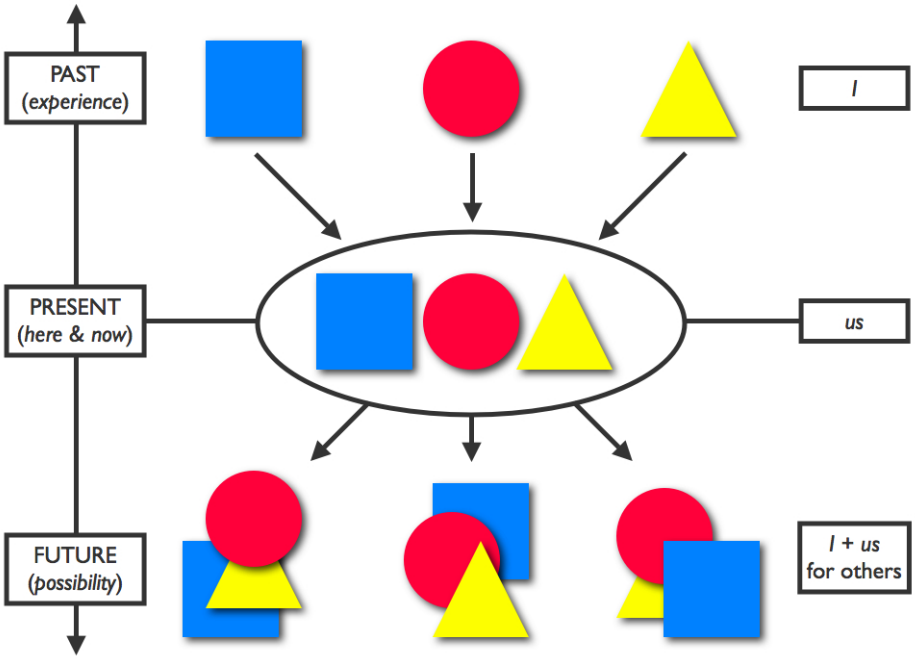


Figure 6. Chronotopes and game design in participatory spaces.

Even if researchers are not allowed to look into the practices of professional game designers at work and there are only few related examples in the literature (Daer, 2010; Malaby, 2009), an alternative approach is to look at online communities dedicated to *consumer* and *prosumer* game design, analyzing the texts, artifacts, and practices that spark and support the social construction of learning and creativity.

In my review of the literature I approached this topic from an interdisciplinary perspective, building a case for the significance of the study. Theories of learning such as constructivism, situated

cognition, and social constructivism helped me to define and articulate my understanding of learning in social environments. Narrowing my focus on informal learning environments, I approached the construct of affinity spaces from a historical perspective looking into communities of practices and virtual environments.

After the first part of this chapter, the analysis of social perspectives on creativity in technology-supported contexts served as a bridge to the second part of the chapter in which I looked into digital games, gaming, and game design as multilayered participatory platforms that represent the interest world investigated in this study.

Even if it is not easy to condense such a wide analysis in a few words, I dare to say that from the review of the literature, and more broadly, from the approach to this study, two keywords play a major role: *multimodality* and *intertextuality*. These important concepts frame the methodological issues that emerged from the review of the literature in the field of affinity spaces research and inform the methodological approach of this study, which I will discuss in the following chapter.

Chapter 3

Methodology and Methods

In this chapter I present the methodology and methods of the study. In the first part, I share some reflections on qualitative approaches to educational research and the researcher as the instrument of inquiry. I then discuss the methodology through the frameworks of Discourse (Gee, 2010), multimodality, and intertextuality (Kress, 2011). In subsequent sections I introduce the research methods of the study (a hybrid intertextual approach based on discourse analysis, studio critique, and design process analysis), the sources of data, and the research design and procedures. In the last part of the chapter I address issues of warranting in qualitative research and, more specifically, in discourse analysis.

A Qualitative Approach to Educational Research

Qualitative research is "a systematic, empirical strategy for answering questions about people in a particular social context, … it is a means for describing and attempting to understand the observed regularities in what people do" (Locke, Spirduso, & Silverman, 2007, p. 96). This perspective reflects the guiding paradigm of this study, in which I tried to look into the richness and complexity of human texts, artifacts, and practices that entail learning and creativity in an interest-driven social environment. I argue that these endeavors cannot be "compressed" and "translated into numbers." In this context, in order to investigate the object of this research, I decided to apply a

qualitative approach, which appears to be the most appropriate strategy to address the research questions of this study.

The Researcher as the Instrument of Inquiry

This study is inscribed in an interpretive paradigm of inquiry that looks at learning and creativity as socially constructed phenomena. Bullough (2006) argues that "Interpretation involves imposing order and form on experience, gaining perspective and getting oriented by using categories and concepts to name a situation in order to make sense of it" (p. 7). Broudy, Smith, and Burnett (1964) hold that "the interpretative use of knowledge is the most fundamental of all, for without a prior interpretation of the situation we are not sure what we shall replicate, associate, or apply" (p. 54). From this perspective, the act of reconstructing the meaning of an experience is itself an instance of learning and a pivotal element of interpretive inquiry (Dewey, 1916).

The interpretive way of knowing reality assumes that the researcher *is* the instrument of inquiry (Starks & Trinidad, 2007): an insightful interpreter of experiences and events (rather than a distant and "objective" observer or measurer) who looks for meanings and understandings into complex human affairs in situated contexts (Piantanida & Garman, 2009). As a reflective practitioner (Schön, 1983), the qualitative researcher *experiences* and *resonates with* the investigated phenomenon in an iterative process of meaning-making, providing a "unique, personal insight into the experience

under study" (Eisner, 1991, p. 33) and "getting at things" through a stance of attentive listening and deliberate receptiveness.

In this context, claims of knowledge have a positional nature, as they express the *positionality* of the researcher, or a contextualized and personal stance toward the research process and the object of inquiry. Knowledge is considered a subjective phenomenon that is constructed and negotiated in situated social, cultural, and historical contexts. The patterns and perspectives emerging from the study of such contexts are *heuristic* in their nature and should be evaluated by the thoughtfulness, quality, and originality of the interpretations (see below the section titled "Warranting"), rather than by criteria of causality, correlation, and replicability (Piantanida & Garman, 2009). The term *heuristic* is used in social sciences to deal with working hypotheses that are not meant to explicate "facts," but rather to suggest possible explanations and understandings (Bullock, Stallybrass, & Trombley, 1988). In this framework, my goal is to provide meaningful interpretations of situated phenomena, relationships, and interactions between texts, artifacts, and practices, as well as between the researcher and the reader (Polkinghorne, 1997), in order to make sense of the social construction of learning and creativity in a participatory space.

Research Methodology

Discourse. The methodological approach to this study is guided by the assumption that *texts*, *practices*, and *artifacts* cannot be

separated (Armstrong, 2002), as "saying things in language never goes without also doing things" (Gee, 2010, p. 2) and "language has meaning only in and through social practices" (p. 12). In other words, "saying things" (*texts*), "doing things" (*practices*), and "things" themselves (*artifacts*) need to be considered as a systemic and coherent whole. Following this line of thought, I argue that practices and artifacts *are* texts, or *texts-in-action* (Prior, 2008), that need to be investigated and understood in their networked complexity as integrated components of a coherent and dynamic social system or Discourse. Gee (2010) argues that Discourses (with the capital "D") involve:

> a) situated identities; b) ways of performing and recognizing characteristic identities and activities; c) ways of coordinating and getting coordinated by other people, things, tools, technologies, symbol systems, places, and times; d) characteristic ways of acting-interacting-feeling-emoting-valuing-gesturing-posturing-dressing-thinking-believing-knowing-speaking-listening (and, in some Discourses, reading-and-writing, as well). (p. 40)

Discourses are characterized by *social languages* that represent particular styles or varieties of language (e.g., vernacular, technical, or academic) associated with ways of being different "kinds of people" (Gee, 2010, p. 34) in different contexts, in order to socially construct situated versions of the world (Burck, 2005). For example, a

high school student may use different social languages with his/her parents, teachers, and friends, enacting different identities to achieve different social "goods" and goals at different times, in different contexts. Social languages can be considered the spoken/written element of Discourses that develop through interactions between multimodal texts, artifacts, and practices (Kress, 2011), that, in turn, call for a hybrid intertextual methodology.

Multimodality and intertextuality. In previous sections I defined artifacts and practices as texts, or texts-in-action (texts with whom we interact and that interact with each other) that need to be investigated in their complexity and relationships through an intertextual approach. Kress (2011, p. 207) defines *multimodal texts* as "the result of semiotic work of design, production, and composition … resulting in ensembles composed of different *modes*." The author argues that learning and meaning-making are better understood from a multimodal approach that offers a richer perspective on social and constructive human endeavors. On the one hand, *multimodality* represents different *modes* (e.g., writing, drawing, or designing) that entail different *texts* (e.g., posts on a discussion forum, drawings on a blackboard, or user-generated game levels). On the other hand, *intertextuality*, or *inter-text-action* (Prior, 2008), represents the relationships, connections, and interactions between such texts and modes. Furthermore, text, artifacts, and practices frequently have multimodal features. For example, an advertisement in a magazine can

include photos, drawings, and words represented with different fonts and styles.

In this study I look at the interplay between *multimodal texts* (e.g., words, emoticons, and images), *multimodal artifacts* (e.g., game levels that include goals, rules, characters, graphics, and sound effects), and *multimodal practices* (e.g., designing, sharing, and critiquing game levels) as an expression of *intertextuality*. I consider intertextuality not only as an instance of "texts within texts" (e.g., quoting) and "texts related to other texts" (e.g., referencing or alluding to other texts) (Fairclough, 1992; Gee, 2010), but also as an expression of the relationships among different kinds of texts, that are not exclusively spoken or written. As an example of this intertextual play that leads to a *hybrid intertextual methodology*, let's consider an imaginary, yet plausible, scenario. If a member of the online forum called Elizabeth writes that her game level titled "Red Spiders" was inspired by the game level "Mechanical Reptiles" created by Arthur and discussed by LaVonna in her post titled "Scary Snakes!!!" in a thread started by Chen, titled "Game levels with dangerous animals," an intertextual approach would look at the threads/posts (*discursive texts*) published by Elizabeth, LaVonna, and Chen, at the game levels (*interactive artifacts*) created and shared by Elizabeth ("Red Spiders") and Arthur ("Mechanical Reptiles"), and at the relationships between the discursive texts and the interactive artifacts that represent the activities of designing, sharing, and critiquing such game levels (*constructive practices*). This example illustrates the complexity of the

endeavors investigated in the framework of new literacies (Black, 2007; Coiro et al., 2008; Gee, 2004; Jenkins, 2006; Jenkins et al., 2009; Lankshear & Knobel, 2007, 2008, 2011). I argue that, in order to better understand these texts, artifacts, and practices, we need an intertextual approach, which, in turn, calls for a hybrid intertextual methodology, as I will illustrate in the following section.

A hybrid intertextual methodology. Building upon the conceptual and methodological frameworks of Discourse, multimodality, and intertextuality (Gee, 2010; Kress, 2011) introduced in previous sections, in this study I look at the interplay between *discursive texts*, *interactive artifacts*, and *constructive practices* through a hybrid intertextual approach that draws upon discourse analysis (Gee, 2010; Potter, 1997; Wood & Kroger, 2000), studio critique (Buster & Crawford, 2007; Darracott, 1991; Santoro, 2013), and design process analysis (Koberg & Bagnall, 1991).

Discursive texts (the threads/posts on the discussion forum) represent the social "insider's" language, the relationships, and situated identities enacted in the community. They also express practices and activities that are not strictly connected to the creative/design process, but that represent the way people interact, socialize, and build common ground in a situated Discourse (Gee, 2010).

Interactive artifacts represent the virtual digital objects produced and shared within the community, that is the user-generated game levels. They are *artifacts*, because they are designed,

constructed, and shared in a culturally, socially, and historically situated context. They are *interactive*, because digital games allow and invite to interaction. In fact, we may say that the main affordance (Gibson, 1977) of digital games is interaction.

Constructive practices represent the creative and iterative design process that connects the discursive texts and the interactive artifacts. For example, a player could post a message on the discussion forum inviting other participants to play his/her new game level in order to receive feedback and enhance the game level, or apply such knowledge for future creations. Texts, artifacts, and practices are interconnected and interdependent "discursive gears" that engender, propel, and embody the Discourse in the investigated participatory space. They represent an *ecosystem* of ideas, actions, and objects in constant evolution that needs to be investigated through a hybrid intertextual methodology (Fig. 7). In the following sections I will introduce the research methods that realize this methodological approach.

Research Methods

Discourse analysis. Written texts mediate many aspects of social life in our contemporary world (Atkinson & Coffey, 1997; Peräkylä, 2005) and discourse can be considered both a *linguistic/semiotic* and a *social/constructive* phenomenon (Gee, 2010) that embodies a "means to achieve consensually produced understanding" (Kress, 2011, p. 207).

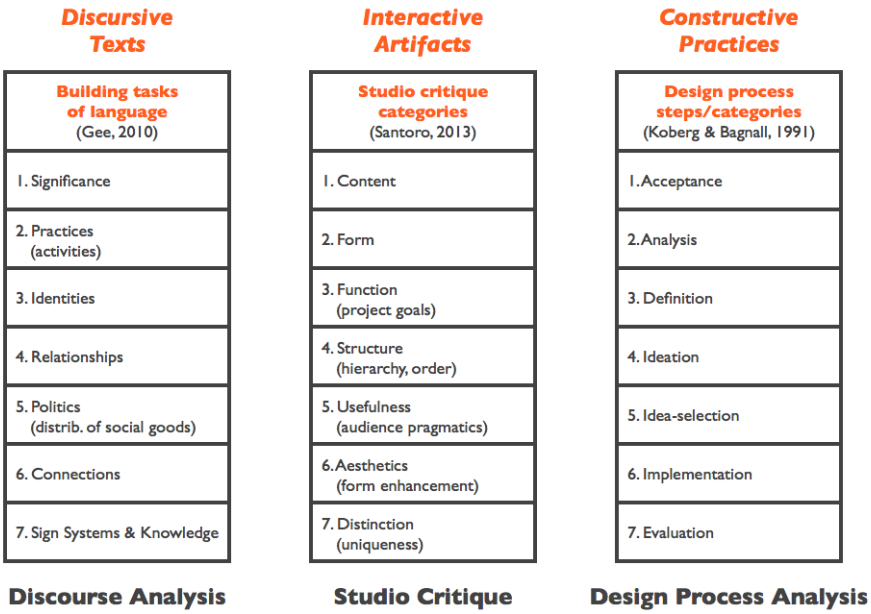


Figure 7. A hybrid intertextual methodology.

If it is true that "we make or build things in the world through language" (Gee, 2010, p. 17), discourse analysis offers "a framework for the deconstruction of meanings" (Burck, 2005, p. 249) that helps us to better understand the world that we socially construct by actively participating in situated Discourses.

A discourse analysis (DA) approach entails the study of situated language-in-use (Gee, 2010) as a *naturally occurring empirical material* (Peräkylä, 2005) in a social context (Lamerichs & te Molder, 2003). The definition of "naturally occurring texts" is used

to differentiate them from researcher-inducted and researcher-controlled texts, such as those in most experimental studies. Discourse analysis focuses on how people construct meanings and knowledge through talk-in-action in social contexts (Potter, 1997; Potter, Edwards, & Wetherell, 1993) and assumes that talk is not only *informing*, but also *performing*, as it executes a number of discursive actions that have consequences and implications that go beyond the transmission of information. In fact, discourse analysis does not look at talk as an expression of what people "really" think, but rather at structures and functions of talk "performing various kinds of discursive actions" (Lamerichs & te Molder, 2003, p. 452).

These discursive actions can take place *synchronously* and *asynchronously* in both physical and virtual spaces. Discourse analysis in computer mediated communication (CMC) looks at social interactions enacted through the use of information and communication technologies (Gao, Zhang, & Franklin, 2013; Mazur, 2004), and, in particular, at social online environments such as discussion forums, blogs, and chats. Different interpretive models have been conceptualized to make sense of the discourse in these virtual spaces (Gao, Wang, & Sun, 2009; Garrison, Anderson, & Archer, 2000; Gunawardena, Lowe, & Anderson, 1997; Henri, 1992; Newman, Johnson, Webb, & Cochrane, 1997). I acknowledge the importance and generativity of these models, but I argue that, by looking at discourse in the framework of new literacies, specific and complex objects of research require specific *models* and *modes* of

analysis and interpretation. In this context, the methodology used in this study is hybrid not only because it looks at texts, artifacts, and practice from a multimodal and intertextual perspective, but also because it features an integrated *bottom-up* and *top-down* approach to the analysis of the discourse. In fact, on the one hand, I used a technique of "unmotivated looking" (*bottom-up*), on the other hand I applied categories of analysis derived from discourse analysis, studio critique, and design process analysis (*top-down*) in order to track specific functions of the Discourse.

"Unmotivated looking" (Edwards, 1997; Mazur, 2004; Psathias, 1995; Sack, 1984; Schegloff, 1996; ten Have, 2007; Wood & Kroger, 2000) is a technique derived from conversation analysis that fosters an "examination not prompted by pre-specified goals" (Schegloff, 1996, p. 172). This approach helps the discourse analyst notice apparently unremarkable features of talk that may be disregarded in a study guided by predetermined categories of analysis (Burck, 2005; Lamerichs & te Molder, 2003). Through this technique the researcher takes nothing for granted, avoiding superficial *a priori* categories, thus directing the attention at what the discourse is *doing* in a situated context. As a matter of fact, "a discursive approach is participant-centered, that is it begins from the perspective of the participant rather than that of the researcher" (Lamerichs & te Molder, 2003, p. 459), acknowledging the importance of the understandings defined and expressed by participants, rather than researcher's "rudimentary" (Lamerichs & te Molder, 2003, p. 469) categories of

analysis that may hinder participants' perspectives and discursive actions.

In this study discourse analysis has a leading role as a method of inquiry. Not only does it offer analytic tools to interpret the discursive texts, but it also directs and "feeds" the analysis of the interactive artifacts and the constructive practices. In this context, the heterogeneous work of James Paul Gee in the fields of new literacies, education, digital games-based learning, linguistics, and discourse analysis informs and "harmonizes" the methodological approach within a coherent framework. In particular I used Gee's *seven building tasks of language* (2010) as tools of inquiry to analyze the construction of the Discourse in the participatory spaces through the use of social language:

1. Significance
2. Practices (activities)
3. Identities
4. Relationships
5. Politics (the distribution of social goods)
6. Connections
7. Sign systems and knowledge

Gee's building tasks of language prompt *discourse analysis questions* that can be used by the researcher to "interrogate" the texts and make sense of them. For example, the first building task

("Significance") entails the following question: "How is this piece of language being used to make certain things significant or not and in what ways?" (2010, p. 17). The researcher can use these questions as guiding parameters to make sense of texts in a thorough and profound way, beneath and beyond their surface.

Studio critique. Studio critique is an approach rooted in the design field and looks at artifacts created with functional and aesthetic purposes. With this approach I analyzed the interactive artifacts (game levels) created with *LittleBigPlanet* and discussed online by the participants. I did not look at these artifacts from a *judgmental stance* through categories of praise, blame, exculpation, or disapproval (Dewey, 1980; Graham, 2003), but rather through a participant-centered approach that considers the object of the critique/inquiry in relation to the declared intentions of the creator of the artifact and the critiques of other users (as expressed in the threads/posts in the online discussion forum) as well as through my own sensitivity, knowledge, and experience. In fact, I analyzed the features and functions of the game levels that were made relevant by the participants on the discussion forum, rather than personal preferences. My approach was close to what Attoe defines as "descriptive criticism," which focuses on helping the audience to "*see* what is actually there" (Attoe, 1978, p. 85), from a participant-centered stance. Dewey (1980) argued that:

> The material out of which judgment grows is the work, the object, but it is this object as it enters into the experience of the critic by

> interaction with his own sensitivity and his knowledge and funded store from past experiences. (pp. 309-310)

In other words, studio critique implies a dialogic interaction that involves both the *subject* (the critic/researcher) and the *object* of the critique/inquiry (Darracott, 1991), as well as the orientations of the *creators* and the *participants* expressed in the discussion forum. In particular, in this study I analyzed the game levels through the lens of seven categories derived from the studio critique approach (Santoro, 2013). In this process, I analyzed the threads/posts on the discussion forum in order to see if the studio critique categories were "picked up" or made relevant by the creators or the participants in relation to the artifacts shared and discussed in the community. The seven studio critique categories that I used are (adapted from Santoro, 2013, p. 28):

1. Content
2. Form
3. Function (project goals)
4. Structure (hierarchy, order)
5. Usefulness (audience pragmatics)
6. Aesthetics (form enhancement)
7. Distinction (uniqueness)

Design process analysis. After looking at the discursive texts and interactive artifacts, I turned my attention to the constructive

practices that reflect the actions and activities directed to the creation and sharing of game levels. In fact, constructive practices represent the *intertextual correspondences* between what is discussed on the online forum and the game levels created and shared in the participatory space (as well as between references to digital games and other texts and media). For example, if a user stated that his/her game level was inspired by another game level created by another user, I looked at both game levels in order to see if and how they related to each other and what the discourse was doing by pointing to another interactive artifact. Furthermore, I carefully considered *action verbs* in the discursive texts as "pointers" to constructive practices directed to the interactive artifacts. I examined these constructive practices through seven creative problem-solving steps/categories that embody a creative and iterative approach to the design process (Koberg & Bagnall, 1991), looking at how they are made relevant and negotiated in the online conversations and realized in the actual game levels:

1. Acceptance
2. Analysis
3. Definition
4. Ideation
5. Idea-selection
6. Implementation
7. Evaluation

Sources of Data

This study relies on two main interrelated corpora of data: (1) the interactive artifacts (user-generated game levels) created and accessed through the digital game *LittleBigPlanet 2* on a PlayStation 3 game console equipped with Internet access and connected to the *PlayStation Network*, and (2) the discursive texts (threads/posts) retrieved from the *LittleBigPlanet Central* discussion forum. Secondary data include external references (cited on the discussion forum or found in game levels) such as digital games, books, and movies.

LittleBigPlanet. *LittleBigPlanet* is a series of digital games that includes different titles: *LittleBigPlanet* (2008), *LittleBigPlanet 2* (2011), and *LittleBigPlanet Karting* (2012) for the PlayStation 3 (PS3) "home" game console; and two games for Sony's portable game consoles: *LittleBigPlanet* (2009) for the PlayStation Portable (PSP) and *LittleBigPlanet PS Vita* (2012) for the PlayStation Vita (PS Vita). In this study I analyzed game levels created with *LittleBigPlanet* and *LittleBigPlanet 2* for the PlayStation 3.

LittleBigPlanet 2 (Fig. 8) is a digital game promoted as a "platform for games" (http://www.mediamolecule.com/games/littlebigplanet2), thanks to its powerful creative and social tools. The protagonist of the game is a "Sackperson," and players can choose to play as *Sackgirl* or *Sackboy*.



Figure 8. LittleBigPlanet 2 (box artwork).

The goal of the game is to save the world of the protagonist from the "forces of evil," represented by a cosmic vacuum cleaner called the

Negativitron. In the opening sequence of the game the narrator presents *LittleBigPlanet* with these evocative words:

> Dreams. Fantasies. Ideas. Where do they go when life brings you tumbling back to the now? One by one they drift away to the cosmic imagisphere. From the atomic to the galactic, they dance and they whirl, unfettered by worry and concern. The heavenly ballet of the wonderplane. And, sometimes, this dance creates something astonishing. Out pops a transcendental dreamverse, a remarkable place where the real meets the fantastic. And this vast expanse of imagination has a name… …they call it LittleBigPlanet.

The game features a multiplayer mode that allows up to four players to be simultaneously present in the same game level to participate in a social adventure or solve specific problems that require a cooperative approach. These cooperative sections are identified by "x2," "x3," or "x4" inscriptions (Fig. 9) and require a minimum of two, three, and four players, respectively (they cannot by accessed by a single player).

From the "Pod" (a hub and command room) players can access different modes and sections of the game. The "Story" mode features the preset story line with the game levels created by the developers of the game. The "Community" section (dedicated to social interactions and user-generated levels) is divided into five subsections: "Drive In," "Cool Levels," "Mm Picks," "Text Search," and "More…." The

"Drive In" subsection allows players to join other players online in order to collaboratively explore and create game levels.



Figure 9. A cooperative section for two players ("x2") in LittleBigPlanet 2.

"Cool Levels" gives access to all the game levels created by the community. The "Filters" tool allows users to search for game levels that have specific names or features, for example by labels/tags such as "Challenging," "Scary," "Artistic," or "Cinematic."

The “Mm Picks” subsection includes user-generated game levels selected by the developers of the *LittleBigPlanet* series (“Mm” stands for “Media Molecule”). The “Text Search” subsection allows finding game levels using a text-based search engine.

The “More…” subsection allows users to locate friends, “Hearted Levels,” and “Hearted Creators” (users can “Like,” “Heart,” and “Review” game levels created by other players, as well as “Heart” their favorite creators). This subsection also allows finding recently played games, highest rated games, most played games, and most hearted games. In “Recent Activity” players can see their friends’ and their own activities, such as playing, rating, or scoring points. In this section they can also read news published by Media Molecule and by independent online communities dedicated to the game, such as *LittleBigPlanet Central*.

The “Me” mode is a personal space in which users can decorate their “Earth” (a space in which their game levels are published and shared), update their profile, check personal “Pins” (that represent game achievements, such as high scores or objects collected throughout the game), and create game levels on their “Moon.” This section features 66 tutorials that help players to master the game and create new game levels.

The construction of game levels can take place collaboratively (synchronously or asynchronously) or on an individual basis. So far (June 2013), more than eight million levels have been created and shared with *LittleBigPlanet* and *LittleBigPlanet 2* (http://lbp.me). A

unique feature of these games is that, by playing them, users learn skills and concepts that can be useful for the creation of new game levels.

The *PlayStation Network*. The *PlayStation Network* (PSN) is a platform and service provided by Sony Computer Entertainment for single-player and multiplayer online gaming, which also offers downloadable content and upgrades/updates for Sony consoles and games. Users can register for free through one of the PlayStation consoles (PS3, PSP, and PS Vita). Premium services are available for a fee. The *LittleBigPlanet* series takes advantage of the *PlayStation Network* by offering extensive online features, such as collaborative and competitive multiplayer game modes and the possibility to play, create, share, evaluate, and comment on user-generated game levels.

LittleBigPlanet Central. *LittleBigPlanet Central* (Fig. 10) is one of the largest online communities dedicated to the *LittleBigPlanet* series. The website features five main sections: (1) Forum; (2) Wiki; (3) Blogs; (4) Spotlights; and (5) LBPC XP. The Forum section (1) is divided into ten subsections, each with different subcategories dedicated to subtopics. As of June 2013, the Forum section has a total of 40 subcategories, more than 70,000 threads, 1,040,000 posts, and 27,000 members.

The Wiki section (2) (http://wiki.lbpcentral.com) is a *LittleBigPlanet* "encyclopedia" that explores features and "secrets" of all the games of the series. In the Blog section (3) users can create

their own blogs and share thoughts, comments, and achievements in the game and beyond.



Figure 10. LittleBigPlanet Central ("Level Showcase" subcategory).

In the Spotlights section (4) the administrators of the website present their favorite game levels created by the members of the community. The LBPC XP section (5) displays the experience ("XP") and level of contribution of the members of the community, with rankings, awards, and trophies assigned for user achievements (e.g., number of published posts).

Research Design and Procedures

Data selection, collection, and analysis. The guiding parameters for the identification of the size of the sample (Gee, 2010; Wood & Kroger, 2000) were a tentative judgment of *adequacy* (enough data to address the research questions) and *feasibility* (enough time to analyze data) as well as choices made by other researchers in analogous studies in relation to the *deepness* (micro/macro level) of the analysis. It is important to note that in discourse analysis "the units of analysis are texts or parts of texts rather than participants" (Wood & Kroger, 2000, p. 78) and "the sample is not well defined until after the analysis is done" (p. 79). In other words, the researcher doing discourse analysis needs to focus on the discourse, rather than on the size of the sample (or the number of participants), which is determined by considerations on whether there are sufficient data to put forward and justify interesting arguments related to the guiding research questions and the purpose of the study (p. 81). Furthermore, a larger sample does not necessarily imply a "better" study, as "close line-by-line data analyses can be rigorous even when using just several lines of transcription" (S. J. Tracy, 2010, p. 841).

In this study I analyzed the threads/posts in the "Level Showcase" subcategory, in the "*LittleBigPlanet* for PS3" subsection in the discussion forum section of the *LittleBigPlanet Central* website (*LittleBigPlanet Central* > *Forum* > *LittleBigPlanet for PS3* > *Level Showcase*). In order to avoid "cherry picking" in data selection (Duncan, 2012), I identified a sample defined by time and activity

rather than content. In fact, I considered the threads/posts in the first month of activity of the discussion forum, starting from the oldest thread in the "Level Showcase" subcategory (from 10/25/2008 to 11/24/2008). I then selected the same period of time (from 10/25 to 11/24) for the most recent year available (2012). I analyzed the threads with a minimum of 10 replies (i.e., a minimum of 11 posts per thread), excluding threads with fewer or no replies, as well as threads with more than 20 replies, because these threads are automatically moved to another section in the Forum.

In order to collect, organize, and code the threads/post retrieved from the *LittleBigPlanet Central* discussion forum I used *NVivo*, a Computer Assisted Qualitative Data Analysis Software (CAQDAS). I logged into the *LittleBigPlanet Central* website and navigated to reach the "Forum" section (http://www.lbpcentral.com/ forums/forum.php) and then the "Level Showcase" subcategory, in the "*LittleBigPlanet* for PS3" subsection (*LittleBigPlanet Central* > *Forum* > *LittleBigPlanet for PS3* > *Level Showcase*). In the upper right part of the screen I selected the "Search Forum" drop-down menu, and then "Advanced Search." In the "Advanced Search" section I applied the following criteria: "Forum(s): Level Showcase" (unchecking the "Also search in child forums" option); "Search by Prefix: (any thread)"; "Find Threads with: At least 10 Replies"; "Sort Results by: Thread Start Date, In Ascending Order." I did two searches: the first one to identify threads/posts with the aforementioned criteria starting in the first period of existence of the Forum section (October 2008);

and the second one to identify the same kind of posts in the same period of time (October 25 to November 24) in the most recent year available (2012) for a total of 826 posts retrieved from 54 threads. For each thread, these were the information available on the list of threads in the "Forum" section: "Title of the thread"; "Author" (who started the thread); "Date" (when the thread was started); "Number of replies"; and "Number of views." I accessed the analyzed game levels on a PlayStation 3 game console with an Internet connection, a TV set, and a copy of the digital game *LittleBigPlanet 2*.

Copyright issues. For this study I selected an independent discussion forum (*LittleBigPlanet Central*), not the official LBP forum hosted and monitored by Sony Computer Entertainment (http://www.community.eu.playstation.com), in order to avoid "censorship" of potential criticism and legal issues that could arise from copyright infringements. Nevertheless, the discussion forum selected, even if it is not "the official one," is still one of the largest and most popular in the *LittleBigPlanet* community.

Ethical and privacy issues. The nature of this study and the research questions addressed do not present major concerns about ethical and privacy issues. However, every effort was made to conduct and present an ethically responsible study. Data used for this study are publicly accessible on the Internet and the *PlayStation Network*.

Users on the discussion forum and the *PlayStation Network* utilize nicknames that cannot be associated with personal data and real names. To further protect users' anonymity and confidentiality, their

nicknames have been substituted with "second level nicknames." For this study, given the context of the research, the kind of analyzed data, and the research methods, it is reasonable to expect that the threat to the well-being, confidentiality, and privacy of participants is almost non-existent. An Institutional Review Board (IRB) "Form A" was submitted for expedited review based on limited impact on participants and approved.

Warranting

Warranting implies justifying and grounding the claims of a research (Wood & Kroger, 2000). As "the meanings derived from the study are not contained in the raw texts per se, but rather in what sense the researcher makes of them" (Piantanida & Garman, 2009, p. 268), in this study I tried to interpret the texts, artifacts, and practices with great attention to details and nuances, looking at them from different levels of width and depth. For example, I considered as units of analysis entire threads as well as small fragments of texts in a single post, in a line-by-line, and even word-by-word, analysis. I also strived to avoid analytic shortcomings of "poor" discourse analysis, such as under-analysis (through summary, taking sides, over-quotation, or isolated quotation), circular identification of discourses and mental constructs (leaving data to speak for themselves or posing "mental entities" beyond the text), false survey (i.e., over-generalizing findings), or simply "spotting features" (Antaki, Billig, Edwards, & Potter, 2003).

Addressing "quality" in qualitative research. The literature on quality criteria in qualitative research is wide and articulated (S. J. Tracy, 2010), ranging from approaches that oppose the pursuit of standardized criteria (Bochner, 2000; Lather, 1993; Schwandt, 1996), to cautionary arguments on their usefulness (Guba & Lincoln, 2005), to those championing conceptualizations and models (Dadds, 2008; Lather, 1986; Richardson, 2000). S. J. Tracy (2010) introduces an interesting differentiation between *means* (i.e., skills, practices, and methods) and *ends* (i.e., research goals) in qualitative research. She also proposes a comprehensive model with eight foundational criteria of methodological quality in qualitative research (pp. 839-848), which I will here discuss and link to my study: (1) *worthy topic*, (2) *rich rigor*, (3) *sincerity*, (4) *credibility*, (5) *resonance*, (6) *significant contribution*, (7) *ethics*, and (8) *meaningful coherence*.

The author argues that a *worthy topic* (1) needs to be relevant, timely, significant, and interesting, tackling contemporary issues or controversies through "a raised level of awareness … that has strong moral overtones and the potential for moral critique" (S. J. Tracy, 2010, p. 840). I addressed this criterion in Chapter 1 (in sections titled "Situating the study" and "Research problems") and throughout Chapter 5. *Rich rigor* (2) relates to the quantity, quality, and appropriateness of theoretical constructs, data, and time, as well as to the thoughtfulness and transparency of data selection, collection, and analysis. This criterion is addressed in this chapter in the sections dedicated to "Research Methods" and "Research Design and

Procedures," as well as throughout Chapters 4 and 5. *Sincerity* (3) relates to the authenticity and genuineness that can be achieved through self-reflexivity, honesty, and transparency about biases, vulnerabilities, and shortcomings of the researcher and the research. In this study, I tried to keep a persistent stance of *self-inquiry* (aiming at *awareness*) and *self-exposure* (aiming at *disclosure*), presenting my approach to problems and methods in a transparent way, accounting for methodological choices and decisions. In this context, throughout the research, I use the first person voice ("I") as a recurrent "pointer" to self-reflection and self-awareness, striving for the construction of an open and sincere relationship between the self, the object of research, and the audience (see also the section titled "The Researcher as the Instrument of Inquiry" in this chapter and the section titled "Positionality Statement" in Chapter 1). This criterion is also addressed in the "Limitations" section in Chapter 1. *Credibility* (4) is a criterion that entails a thick description (illustrating culturally situated meanings and providing abundant details), "showing" rather than "telling," immersion (spending a significant amount of time in the situated context of the research, as well as providing details about tacit knowledge, hidden assumptions, and context-specific meanings that may be taken for granted), crystallization and triangulation (using different sources, types of data, and theoretical frameworks converging in the same direction), and multivocality (approaching the object of the research through a practice of *Verstehen*, that involves the analysis of social interactions from the point of view of the

participant). I have been involved for more than three years in the Discourse of gaming and game-design in the context of the *LittleBigPlanet* universe, furthering my understanding of its situated language, tacit knowledge, and culture's values. Grounding this interdisciplinary study on a heterogeneous compound of theoretical frameworks (presented in detail in Chapter 2), I use a hybrid intertextual methodology that draws upon different approaches (discourse analysis, studio critique, and design process analysis). In this context, S. J. Tracy (2010, p. 843) argues that "Multiple types of data, researcher view-points, theoretical frames, and methods of analysis allow different facets of problems to be explored, increases scope, deepens understanding, and encourages consistent (re)interpretation." Nonetheless, it is important to note that triangulation and crystallization do not "confirm" or "validate" the findings of a qualitative study pointing to "the same truth," but rather open up new facets and angles that re-conceptualize the research problems and the investigated objects as more complex and articulated "crystals" (with more facets) that require sophisticated methodological approaches (see above the section titled "A hybrid intertextual methodology"). Furthermore, in discourse analysis, "the interpretation is not checked via agreement (i.e., against the coding of another researcher, as in conventional notions of interrater reliability)" (Wood & Kroger, p. 97). I also discuss the criterion of credibility in following sections ("Reliability and validity" and "Trustworthiness and soundness") and in the findings put forward in Chapter 4.

Through *resonance* (5) the researcher promotes and awakens in the audience feelings of empathy and identification with the object of the research and, more in general, with the study, which may be achieved through "aesthetic merit, evocative writing, and formal generalizations as well as transferability" (S. J. Tracy, 2010, p. 844). Aesthetic merit refers to the ability of the researcher to have an intellectual and emotional impact on the reader. Transferability (Lincoln & Guba, 1985) refers to the potential of the study to be valuable in different contexts and situations, rather than merely "replicable." In fact, this qualitative study looks at knowledge as a context-dependent, historically and culturally situated, and socially constructed phenomenon that cannot be formally "generalized" (as opposed to quantitative studies, which strive to predict "results" and replicate findings). Naturalistic generalization (Stake & Trumbull, 1982) assumes that it is not knowledge that leads to improved practices, but rather a feeling of personal experience. From this standpoint, qualitative research provides vicarious experiences that can help readers to make choices based on their understanding of the study, rather than straightforward directions and instruction. Throughout the dissertation, I tried to write in a vivid style that reflects criteria of consistency, parsimony, and elegance (Boote & Beile, 2005) in order to transform my heartfelt participation and attentive immersion in the study into an engaging and thought-provoking reading. In this context, I designed and presented cohesive

visual models that frame and, hopefully, enlighten the matter of this study.

Studies that carry *significant contribution* (6) extend knowledge, improve practices, generate ongoing research, liberate, empower, or, more generally, contribute to the understanding of social practices. In other words, significant studies "bring clarity to confusion, make visible what is hidden or inappropriately ignored, and generate a sense of insight and deepened understanding" (K. Tracy, 1995, p. 209). The significance of a study emerges on different levels/dimensions: *theoretical*, *heuristic*, *practical*, and *methodological*. Building on previous research, *theoretical significance* entails intellectual implications for the community of scholars by extending and problematizing theoretical assumptions through findings that can inform future studies and other contexts of research. A research has *heuristic significance* if it boosts curiosity and inspiration for new studies and for a variety of audiences, which can be achieved through final suggestions for future research. *Practical significance* relates to the usefulness and fruitfulness of the study, hypothesizing and suggesting applications to practitioners. *Methodological significance* is achieved through novel and insightful approaches to the object of research. We may say that, in general, the criterion of significant contribution looks at the "potential for change" of the research. In this context, I address the importance of this study in Chapter 1 ("Significance of the Study") and, more broadly, in Chapter 5.

An *ethical* (7) research takes into account the well-being, privacy, and confidentiality of colleagues, sponsors, readers, and, most importantly, of the participants of the study (Miles & Huberman, 1994). In the course of my doctorate I earned a certification on Institutional Review Board (IRB) procedures, I completed a course on Responsible Conduct of Research, and I furthered my knowledge and understanding on ethical issues in research in the graduate course on Writing for Professional Publication. Throughout this study I strived to constantly apply such knowledge to the practice of research, as specified in the section titled "Ethical and privacy issues" in this chapter.

Meaningful coherence (8) emerges from studies that "(a) achieve their stated purpose; (b) accomplish what they espouse to be about; (c) use methods and representation practices that partner well with espoused theories and paradigms; and (d) attentively interconnect literature reviewed with research foci, methods, and findings" (S. J. Tracy, 2010, p. 848). I carefully address this criterion in Chapter 5, in which I weave connections between the five chapters of the dissertation, with particular attention to those related to the review of the literature (Chapter 2) and findings (Chapter 4).

To acknowledge approaches that stress the specificity of different qualitative methods and domains (Bochner, 2000; Denzin, 2008; Guba & Lincoln, 2005), in the next sections I present issues and criteria of warranting in the context of discourse analysis (Gee, 2010; Goodman, 2008; Wood & Kroger, 2000).

Reliability and validity. Criteria of *reliability* and *validity* are best suited for the investigation of objects intended as *res naturam*, rather then as *res artem*, that is products of human endeavors that carry a multitude of meanings, none of which can be considered as purely "true" (Wood & Kroger, 2000). As a matter of fact, "in social science, the object is a subject" (Flyvbjerg, 2001, p. 32) and different methodological and epistemological approaches need to be considered. In other words, the claims put forth by qualitative researchers, and in particular discourse analysts, cannot be warranted by the traditional concepts of reliability and validity that draw upon positivist theories of science.

Reliability refers to producing consistent results under consistent conditions or "the extent to which a given finding will be consistently reproduced" (Haslam & McGarty, 2003, p. 25). Positivist claims of reliability are *context-independent*, while, from a situated and social-constructive perspective, meanings are always *context-dependent*. For example, the same word, sentence, or emoticon can have different meanings in different contexts, and different utterances can have the same meaning in different contexts. As a matter of fact, in discourse analysis, it makes more sense to ask whether an interpretation is *adequate* (i.e., supported by the text), *useful*, and *appropriate* for a purpose, rather than if it is "correct" or "true." Furthermore, "repetition" is not held as a criterion of warrantability, as discourse analysts look at "reliability" in terms of *attention to detail* and *refinement* (Wood & Kroger, 2000).

Validity represents the correspondence between what one wants to measure and what is actually measured or, in other words, claims on "research showing what it is claiming to show" (Goodman, 2008, p. 265). From a positivist perspective, validity implies the existence of a "reality" independent of our conceptions about it, while "the discursive perspective emphasizes the way in which the world is constructed discursively, both in the sense of discourse about the world and in the sense that discourse is part of the world" (Wood & Kroger, 2000, p. 166). Therefore, we cannot affirm that an interpretation is "valid" or "true" because it faithfully represents the world as it "really" is. Gee argues that a discourse analysis can have more or less validity, but it cannot be "100%" valid, true, or correct, as new interpretations and expansions of context are always possible. The author suggests that in discourse analysis "validity" equals to "trustworthiness" (Gee, 2010, p. 123), which I will discuss in the following section.

Trustworthiness and soundness. In order to warrant the claims of a discourse analysis, instead of criteria of *reliability* and *validity*, Wood and Kroger (2000) put fort criteria of *trustworthiness* and *soundness* that need to be supported by rigorous intellectual work and persistent scholarly judgment. The authors link the meaning of "validity" to the Latin word *valere*, "to be strong" (p. 167). They argue that *trustworthy claims* are based upon accountable and systemic procedures, while *sound claims* are based on logical procedures and evidence. Generally, trustworthy and sound claims

should be thorough and convincing, as well as able to withstand criticism and avoid misinterpretations.

Criteria of trustworthiness (Wood and Kroger, 2000, p. 169-173) include *orderliness* (clarity in research methods, conduct, and report), *documentation* (a textual criterion that refers to the thorough description of the research process and methods), and *audits* (an external check of methods, procedures, and findings). Criteria of soundness (pp. 170-177) include *orderliness* (as for trustworthiness), *demonstration* ("showing," not just "telling," that the analysis is grounded in the text, which is achieved by carefully analyzing the discourse and showing *what it does and how*, rather than just describing it), *coherence* (an analytic criterion that entails the entire set of claims about functions of the text through an analysis that accounts for exceptions and alternatives, thus building a cohesively persuasive argument, which is also achieved by comparing the sets of claims with the sets of goals put forth by the study), *plausibility* (the acceptability and praiseworthiness of the analysis, which should yield a sense of insight into usually unnoticed structures and functions of the discourse), and *fruitfulness* (making sense of new kinds of discourses and generating novel explanations). This last criterion is particularly relevant in discourse analysis as it bridges the study to future research in the community of scholars by suggesting productive ways to reframe and create links between known issues and, more generally, by raising interesting questions for the advancement of the field (Potter & Wetherell, 1987; K. Tracy, 1995).

Chapter 4

Findings

In this chapter I present the findings of the study. In particular, I consider how the participants of the investigated participatory space discursively construct learning and creativity through discursive texts, interactive artifacts, and constructive practices.

I start the chapter with methodological considerations on findings and an introductory section titled "The Use of Language." After that, I present the findings that relate to the *discursive texts*, which I have analyzed relying on Gee's (2010) building tasks of language (Significance, Practices, Identities, Relationships, Politics, Connections, and Sign systems and knowledge). In this context, I used them as "analytical aids," rather than strict interpretive categories, integrating them with an "unmotivated looking" approach (Edwards, 1997; Mazur, 2004; Psathias, 1995; Sack, 1984; Schegloff, 1996; ten Have, 2007; Wood & Kroger, 2000) in order to consider apparently unremarkable features of the discourse that may be disregarded in an examination guided only by predetermined categories of analysis (Burck, 2005; Lamerichs & te Molder, 2003). This part of the chapter is divided into three main sections: "Yelling at the editor": humor and its functions; "A big experiment in timed magnetic switches": naturally occurring specialist talk; and "keep in mind that I will be improving": The discursive functions of the opening posts.

In the second part of the chapter I present the findings related to *interactive artifacts* (Content, Form, Function, Structure,

Usefulness, Aesthetics, and Distinction), and in the third part I focus on findings related to *constructive practices* (Acceptance, Analysis, Definition, Ideation, Idea selection, Implementation, and Evaluation).

Methodological Considerations on Findings

The methodological approach of this study is *participant-centered*, *multimodal*, and *intertextual*. It is *participant-centered* because it directs its focus to what participants make relevant in the discourse through their interactions. It is *multimodal* because I examine different *modes*, that is *multimodal texts* (e.g., words, emoticons, and images), *multimodal artifacts* (e.g., game levels that include goals, rules, characters, graphics, and sound effects), and *multimodal practices* (e.g., designing, sharing, and critiquing game levels). It is *intertextual* because I consider these modes from a systemic and holistic perspective in their connections and relationships. More specifically, the methodology and methods of this study draw upon discourse analysis (Gee, 2010; Potter, 1997; Wood & Kroger, 2000), studio critique (Buster & Crawford, 2007; Darracott, 1991; Santoro, 2013), and design process analysis (Koberg & Bagnall, 1991).

In subsequent sections I will present my findings through thick descriptions, argumentative interpretations, and illustrative materials, such as textual excerpts and tables, in order to let the reader think with primary sources and construct personal interpretations, which may diverge from, confirm, or expand those I put forward. In this study, I

acknowledge the situatedness and goal-orientedness of the investigated participatory space, as well as of the endeavors enacted in it. I also acknowledge my positionality and my concurrent role as a researcher and an instrument of inquiry (Starks & Trinidad, 2007). From this perspective, the generalizability of the findings needs to be considered as a reflection of an *interpretivist construction* (Broudy et al., 1964; Bullough, 2006), rather than of an *objectivist discovery* (Edwards, 1997; Piantanida & Garman, 2009), which is situated in a historically, socially, and culturally mediated field of research. Furthermore, from a discursive standpoint, generalizability relies on criteria of trustworthiness and soundness (Wood & Kroger, 2000) that can be achieved through convincing claims based on insightful interpretations that connect discursive actions with interactional results (Goodman, 2008). In other words, this study does not aim at "uncovering facts," but rather at providing possible explanations and understandings (Bullock et al., 1988) on the social construction of learning and creativity through the analysis of discursive texts, interactive artifacts, and constructive practices.

The transferability of the study, that is its potential to be valuable in different contexts and situations (Lincoln & Guba, 1985), is achieved through a meticulous description of research methods and procedures (see Chapter 3), as well as through the use of categories of inquiry that can be transferred to different studies. For example, for the analysis of interactive artifacts (i.e., user-generated digital game levels), I use categories such as *content*, *form*, and *function* derived

from studio critique (Santoro, 2013) that can be applied not only to the analysis of digital games, but also of other products of creativity, such as pictures, videos, and posters.

Wood and Kroger (2000) argue that "the analysis of discourse and the writing of the research report are both discursive activities" (p. 179) as "the report … is another analysis, the latest although not necessarily the last version" (p. 186) since "there is always the possibility of a new interpretation" (p. 165). In this spirit, I will present the findings of this study in an open and thorough way, recognizing that my interpretations are *tentative* in their nature and *generative* in their scope. In fact, on the one hand, they rely on researcher's interpretations, while, on the other hand, they aim at reaching and making an impact on a broad audience that includes scholars, designers, learners, and practitioners. More broadly, the findings of this study can be applied as a framework of understanding of social learning and creativity in informal online environments that involve creating, sharing, and critiquing digital artifacts. For example, practitioners can use the themes, features, and functions of the discourse presented in this study to identify, interpret, and value learning and creativity in informal social spaces.

The Use of Language

Understanding the language in a participatory space is a challenging task that requires openness, time, and dedication. It also requires a stance of interest, curiosity, and respect, in order to make

sense of activities that carry a great deal of value for their participants. I argue that in order to understand the language of an interest world the researcher needs to construct a "design grammar" of the investigated "semiotic domain" or Discourse (Gee, 2007b, 2010). Gee defines a semiotic domain as "an area or set of activities where people think, act, and value in certain ways" or "any set of practices that recruits one or more modalities (e.g., oral or written language, images, equations, symbols, sounds, gestures, graphs, artifacts, etc.) to communicate distinctive types of meanings" (Gee, 2007b, p. 19).

Learning the design grammar of a semiotic domain (or Discourse) means understanding its situated principles and patterns and the rules that regulate them, besides and beyond its content. For example, knowing a list of cubist paintings (*content*) does not mean having the ability to recognize what principles and patterns determine cubist painting and the practices (ways of thinking, valuing, and interacting) enacted by people who are into Cubism (*design grammar*). In other words, it is not enough to know *what* people do in a semiotic domain to understand it, as we also need to look into *how* they do it, *why* they do it, as well as what they *value* and what kind of *practices* and *identities* they enact to express and negotiate such values in order to be recognized as insiders of the domain.

From this perspective, in this study I try not only to *read the word* (the texts on the discussion forum), but also to *read the world* (Freire, 2005; Gee, 2007b), aiming at constructing and sharing with the reader a "literacy of participation" in which texts, artifacts, and

practices are interpreted in their discursive features and functions as building blocks of learning and creativity.

In the next sections I will present the findings of the study related to the discursive texts. In particular, in the next section I will discuss the use of humor and how it is socially constructed and negotiated in the investigated participatory space.

Discursive Texts

"Yelling at the editor": humor and its functions. Humor in computer-mediated communication (CMC) is a fascinating topic. Without face-to-face interaction, humorous concepts need to be expressed without the aid of vocal tone, nonverbal gestures, or facial expressions, which changes the ways in which people express and interpret humor, as well as its functions in asynchronous settings. The participants of the analyzed forum extensively use humor in different ways and variations to perform different discursive actions, as I will illustrate in this section.

In one of the opening posts a user conveys humor by inventing and sharing a title and a cinematic description of his/her game level:

> [(02)-2008-10-26-(01/14)-Mike]
> When There's No Online
> Never mess with a LBP player who's angry because there's no online yet.
> [Link to YouTube Video]

> This was my first level in the full LBP- it's kind of short and simple, but it's very challenging.

The topic of this interactive artifact makes it a game level about *LittleBigPlanet* (LBP), the related online community, and a real problem affecting all players at that time (the game servers are offline). The title of the game level is "When There's No Online." Of course, the very activity of creating such a level is a humorous endeavor, but what this post is doing (and the related game level) is to let the *LittleBigPlanet* people (the developers of the game and the managers of the online platform) know that it is not fun to play the game without online access and that they need to do something about it (e.g., fix the servers). From this point of view, humor becomes a *means of protest and communication* deployed in order to "recruit rebels" and let their voice be heard. This humorous activity can therefore be considered as *a call to social action* enacted to achieve *change*.

Other users pick up the theme introduced by the first post and epitomized by the game level (servers are down, there is no online access):

> [(02)-2008-10-26-(06/14)-Dory]
> Well done dude, and i like your pod. Very minimalistic :D
> The servers don't really matter to me at the mo as i'm in the UK and we have to wait about another 10 days but i would still like to see

> the servers up so there will be more vids of levels that players film because they like em :)
>
> [(02)-2008-10-26-(08/14)-CPark]
> Nice level, very cool.
> Hopefully the online is up tomorrow, because I'd love to do some work on my beta levels. Maybe spruce them up with better materials.
>
> [(02)-2008-10-26-(11/14)-Quizter]
> Nice level Mike well done for a first attempt, will check it out when the servers are online. Cheers Quizter

The fact that other users picked up the theme and the problem posed by Mike in the first post shows the participatory attitude of the community. In fact, participants could have ignored the theme of the game level and discuss just features related to game design. If we further reflect on the function of the first post in the light of these follow-up comments, we can interpret the use of humor in this context as an *instrument of cohesion* between users that discursively build reciprocal support through sympathetic responses, which, in turn, helps to build a stronger community.

Sometimes humor is achieved through the use of "extreme case formulations" (ECF) (Edwards, 2000; Pomerantz, 1986), that is "extreme" terms such as *all*, *none*, or *absolutely*. For example, in a thread dedicated to a game level called "Spider Cave," the creator

(Softjets) of this game level and other participants (CPark, Gerva44, and Hara) discuss “arachnophobia”:

> [(04)-2008-10-27-(07/16)-CPark]
> (…) I hoped to at least make my way out of the cave, but it just ended randomly. Plus, the music didn’t exactly match the atmosphere you were going for. Also, where were the spiders?
>
> [(04)-2008-10-27-(09/16)- Gerva44]
> Sadly, I’m arachnaphobic so I’m sure the stage is awesome.
>
> [(04)-2008-10-27-(10/16)- Softjets]
> it has surprisingly little to do with spiders :(
> I may not scare you as much as I would like to...
> (…)
> The spiders, where simply stickers (i was suppose to change them to real spiders at some point, but i got lazy :o and started a newer grander project (to be unveiled at a later date)
>
> [(04)-2008-10-27-(11/16)- Hara]
> I’ll have a look when I get my hands on the PS3 in a bit. I’m arachnophobic too so there’s really not any real looking spiders is there?! I can handle seeing non-real ones! :p
>
> [(04)-2008-10-27-(12/16)- Softjets]
> [Quotes Hara’s post]

> Not really, just sticker ones... Unless flat sticker spiders invoke terror from the deepest pits of hell in you, you should be fine. :p

In the context of *LittleBigPlanet*, "stickers" are virtual decorations that can be applied on objects in a game level. The extreme case formulation "invoke terror from the deepest pits of hell in you" in this post (12/16) is used by the creator to reinforce the statement made in a previous post (10/16: "The spiders, where simply stickers") by using a different register of humor in response to Hara's humorous statement (11/16: "I can handle seeing non-real ones! :p"). This interaction reflects Edward's (2000) study on nonliteral and metaphoric uses of extreme case formulations that are used to achieve ironic, teasing, and humorous objectives. Edwards (2000, p. 372) argues:

> ECFs are clearly not the only ways of signaling exaggeration, irony, humor, and so forth, and are likely to occur with other features of talk including specific lexical selections, contrasts with known facts, mocking intonation, deadpan delivery, various facial expressions (raised eyebrows, forced smiles), and so on.

Interestingly, in the analyzed fragment (12/16) we can observe the features of talk described by Edwards seamlessly at work to accomplish a series of discursive actions and goals, such as restatement, sympathetic interaction, and social cohesion. In

particular, the features of talk cited by Edwards, and situated in the context of the post, are: specific lexical selection (“invoke,” “terror,” and “pits of hell”), contrast with known facts (“flat sticker spiders”), mocking intonation (marked by the conjunction “unless”), deadpan delivery (“Not really, just sticker ones...” and “you should be fine”), while the “facial expression” is rendered by an emoticon at the end of the sentence (“:p” which represents “sticking out a tongue”).

Humor is also tightly connected to specialist language. The findings of this study reflect my personal experience with humor and specialist languages (such as a foreign language). In fact, in a situation in which I understand *almost* everything of a speech in a foreign language, that “almost” is frequently caused by a statement that provokes laughter in native speakers (i.e., insiders) but, sadly, not in me. In other words, in many circumstances, it is impossible to grasp humor without specialist and context-specific knowledge. For example, a user called Thunda comments on a game level created by Mike (see above, [(02)-2008-10-26-(01/14)-Mike]):

> [(02)-2008-10-26-(02/14)-Thunda]
> ACED - which wins you
> Mike dozer lol
> =)
> good level short and sweet looked hard

The phrase “ACED - which wins you” is a direct quotation from *LittleBigPlanet* that appears at the end of a completed game level in order to inform the player about his/her success (“ACED”) and the prizes that the he/she will receive as a reward (“which wins you”). The prize elicited by this post is “Mike dozer,” which is a wordplay that refers to the “Skulldozer,” a mechanical creature that chases the protagonist of the game in a preset game level of *LittleBigPlanet*. Without the knowledge of this specific game level it would have been impossible to understand the hinted connection and grasp the humor conveyed by the post.

In another thread, a creator presents two game levels. One of them is called “Saved by the Light”:

> [(06)-2008-10-29-(01/16)-Mageda]
> (…)
> Saved by the Light
> You’re trapped in a dark cave Try to find a way out using the lights.
> (…)

A participant (Folla Ro) comments:

> [(06)-2008-10-29-(09/16)-Folla Ro]
> my character glows, so saved by the light shouldn’t be to bad. Both levels look incredible, i’ll play them tonight.

This comment is backed up by another user who says:

> [(06)-2008-10-29-(14/16)-Quizter]
> Saved by the light was good but was just a bit too dark though Folla Ro went okay cause he had on his Devil Skin with glowing eyes :)

From the analysis of these conversation emerges another way to interpret the humorous posts in the discussion, that is to look at them as *hooks* or *baits* for social interaction. In other words, they function as *invitations* to responses that keep the same convivial register and engender a sociable atmosphere in the community. In fact, it looks like it is almost irresistible not to follow up a humorous statement with some kind of comment that keeps the conversation going and contributes to creating a positive and "smiling" mood in the community. In this context, humor seems to have a bidirectional discursive function: on the one hand, the first humorous post seems to be put forth in order to *attract* comments; on the other hand, users seem to *look for* humor and they take advantage of humorous statements to get into the discourse. In fact, from this perspective, humor seems to works as a *discursive icebreaker*. Furthermore, replying to or continuing someone else's joke is a way of acknowledging that person and creating a supportive bond, which, in turn, strengthens the cohesion of the participatory space as a whole.

From these examples, we can infer that humor can be socially constructed and "humorously negotiated" by participants through

various functions of talk enacted to achieve different discursive objectives. Humor is tightly connected to another important gear of participatory spaces, that is specialist language, which I will discuss in the following section.

"A big experiment in timed magnetic switches": naturally occurring specialist talk. The analysis of the discussion forum revealed a wide use of specialist talk, making it almost impossible to understand the conversations without an insider's knowledge. In this context, the hybrid intertextual methodology proposed in this study helped me to define both the *context* and the *content* of the discussions. In fact, by playing the preset and user-generated game levels in *LittleBigPlanet* and *LittleBigPlanet 2*, I was able to "decipher" complex terms, concepts, and descriptions, which allowed me to identify important discursive functions and objectives.

The use of specialist language reflects the situatedness and goal-orientedness of participatory spaces (discussed in detail in Chapter 2) and acquiring a sophisticated vocabulary is just one of the components needed for *specialist participation*. In fact, *learning* and *using* a specialist language for social-constructive practices are activities that reciprocally reinforce each other. In other words, learning a specialist language enables participation, while participation helps to build and master the specialist language, which is never an abstract entity, but rather an active gear dynamically connected to the interest world that is explored and supported in the participatory space. Some of the insider's jargon used in the analyzed

discussion forum refers directly to the *LittleBigPlanet* universe and the preset levels of the game (e.g., "Sackboy" or "Skulldozer"), to other user-generated game levels (e.g., "Temple of Sun and Moon" or "Trouble in Sackville!"), to gaming and game design terminology (e.g., "platforming" or "puzzle"), or to terms that have context-specific meanings (e.g., "thermometer" or "trigger").

Another way in which participants apply specialist language is by using *acronyms* that relate to popular digital games, such as LBP (*LittleBigPlanet*), MGS (*Metal Gear Solid*), or LoZ MM (*The Legend of Zelda: Majora's Mask*). The analysis of the threads shows that users generally take for granted other users' knowledge of specialist language. In fact, it looks like the process of construction of specialist language takes place naturally as a spontaneous part of the participatory process. In this informal and interest-driven environment, participants do not learn terms because "they have been told to" (as happens in school), but because they need them to cultivate their skills and communicate with people who can help them in this task. Again, situatedness and goal-orientedness appear as crucial elements in the social construction of participation, as *specialist language*, *specialist skills*, and *specialist identities* are discursively constructed and negotiated in the community.

Terms like "pod," "darkmatter," "timed magnetic switches," "spiky glass," and "spinning fabric wheels" may sound like arcane and abstruse expressions to a general listener, but they make a lot of sense in the context of *LittleBigPlanet*. The participants of the

discussion forum are very comfortable in using them. In fact, they do not even ask explanations on the meaning of these situated terms. In this context, I argue that *not asking* for the meaning of specific terms is an expression of the *hidden rules* of the forum, and, in particular, of the "Level Showcase" section (analyzed in this study). Asking such questions would probably put a participant in an inconvenient position, that of being considered (and recognized) as an *outsider*. On the other side, by using specialist language users construct their identity as *insiders* and knowledgeable participants of the interest world. After looking at the functions of humor and specialist language, in the following section I turn my attention to important discursive actions and themes enacted in the opening posts of the analyzed threads.

"Keep in mind that I will be improving": the discursive functions of the opening posts. In the opening post creators present their game levels, invite users to play them, and ask for feedback in order to improve their present and future work. In this process, inspiration, creation, and refinement are not over once the artifact is "finished" and shared with the community. On the contrary, I argue that sharing an artifact *is* a creative act that involves disclosure, engagement, and imagination (for example, users can get very creative when they present their game levels to the community).

From this perspective, the analysis shows that the opening post embodies different discursive functions: (1) a *creative presentation of contents*, (2) a *self-reflective disclosure on practices*, and (3) a

passionate call for participation. These three dimension are respectively expressed by (1) *artifact-oriented*, (2) *creator-oriented*, and (3) *player-oriented* discursive actions, each structured into three discursive themes: (1) game features, gameplay, and comparison; (2) effort, self-appreciation, and experience; (3) invitation to play, invitation to comment, and request for absolution. This *meta-structure* of the discourse that appears in the opening posts is illustrated (with examples) in Table 1. After an attentive analysis of the threads, an *archetypal construction* (i.e., a typical or exemplary representation) of the opening post would sound like this:

> These are the characteristics of my game level (*game features*) and this is how you play it (*gameplay*). It is similar/different if compared to this other level/game (*comparison*). I spent a lot of time making it (*effort*) and I am somehow proud of it (*self-appreciation*), however, this is the first level that I have ever created (*experience*), so, please, go on and play it (*invitation to play*) as your feedback is very appreciated (*invitation to comment*) but do not be too harsh in your critiques (*request for absolution*).

In the following sections I will present the findings related to each of the aforementioned themes (game features, gameplay, comparison, effort, self-appreciation, experience, invitation to play, invitation to comment, and request for absolution) and their discursive functions in the analyzed threads.

Table 1. The opening post: dimensions, themes, and examples.

Dimension	**Theme**	**Example**
Artifact-Oriented *(creative presentation of contents)*	Game features	"It's very challenging"
	Gameplay	"Step into the lift and you will be lowered
	Comparison	"Higher quality then the first level i
Creator-Oriented *(self-reflective disclosure on practices)*	Effort	"That was a bit challenging to
	Self-appreciation	"I'm a little proud of it"
	Experience	"This was my first level"
Player-Oriented *(passionate call for participation)*	Invitation to play	"Check 'em out"
	Invitation to comment	"Let me know what you think!"
	Request for absolution	"Keep in mind that I will be improving"

***Game features*.** The description of the features of the game levels appears in most of the analyzed threads in which users present their creations. Usually these descriptions feature at least the title of the game level and a brief comment on it. The description is usually achieved through adjectives that describe the features ("detailed"), the atmosphere ("disturbingly cute but grim at the same time"), the length ("short") or the difficulty ("this level is designed to provide a very difficult challenge to expert players") of the game level.

Assigning a title to a game level is an activity far more complex that it may appear. In fact, it is not just a *naming* undertaking, but also a way to make the level *findable* and *appealing*. Given the growing number of game levels shared in the community, it may not be easy to find a level titled "Cars," as the search engine would come up with thousands of results. In fact, some users complain about titles that are too vague and, therefore, difficult to find. A user called Softjets presents his/her level titled "Spider Cave" (discussed in a previous section):

> [(04)-2008-10-27-(01/16)- Softjets]
> Spider Cave
> Softjets Master archive of current creative products
> -My first level (which i'm showing off on my first post, Hi everybody). I'm a little proud of it, although i do realize it has many flaws. If you guys have some free time to look it up that would be

> cool, it's short and sweet. You won't regret it. It's titled spider cave exactly

Other users ask for more information on the level:

> [(04)-2008-10-27-(02/16)-CPark]
> You might want to give us your PSN as well, as just "Spider Cave" is a little difficult to narrow down with searching. I'm sure there's plenty of "Spider Cave" levels.

> [(04)-2008-10-27-(03/16)- LonelliGun]
> A little bit more details on the level please.:)

As shown by these examples, the naming of game levels is part of the social-creative process in an online participatory space. In fact, the name of a user-generated game level has to reflect not only the taste and aesthetic choices of the creator, but also the technologic requirements dictated by the affordances of a search engine, in order to allow other players to find it, play it, and critique it.

Furthermore, another level of complexity to this apparently minor task (naming a game level) is added by issues of *appeal* and *visibility* in the discussion forum. In fact, a captivating title can attract readers (who, potentially, are also players) in a list of threads in which users present their newly published game levels. For example, a user

(Softjets) comments on a game level titled “Lights Out!” referencing the title:

> [(03)-2008-10-27-(12/20)-Softjets]
> I’ll play it! shoulds rad by title alone.

In this post the user says that he/she will play the game because the title is intriguing (“rad” is an abbreviation of “radical” which means “cool” or “awesome”), which shows the importance of the naming process of game levels in relation to potential new players that can provide valuable feedback.

If this was not enough, in their works and presentations creators need also to consider copyright issues. In fact, if a user-generated level is too explicitly inspired by or based on copyrighted materials such as popular comics, movies, or digital games, it can be removed from the servers and made inaccessible to other players. For example, a user is warned about the possibility that his/her level could be removed:

> [(13)-2008-11-04-(07/12)-greenair]
> Just a friendly reminder, but you do realize the level might get deleted off the servers, right? Or haven’t you noticed all the Mario levels disappearing? Heck, even granadas’ God of War level...
> Copyright reasons.
> Still, I’ll try it out if I can on the weekend. :)

"Mario" refers to the popular Nintendo platforming digital game *Super Mario Bros.* and *God of War* is another popular action-adventure digital game. This is the replay of the creator:

> [(13)-2008-11-04-(08/12)-Softjets]
> Only levels that have graphics from other games are being taken down ;P i'll be just fine.
> Also v.1.1 is now out i would love it if you guys could play it, maybe heart it/me.

Nevertheless, the creator (Softjets) ends up changing the title of his/her game level from "Metal Gear Solid: Tactical Espionage Action" to "MGS: Tactical Espionage Action" (*Metal Gear Solid* is a very popular series of action-adventure digital games). In fact, a user called xdread comments:

> [(13)-2008-11-04-(09/12)-xdread]
> This is the best metal gear solid themed level ive played so far, hands down.
> The title has changed though...smart move softjets haha. :)

The title and the description play an important role in the social construction of creativity and they can have an impact on learning as creators who receive more "plays" (i.e., more users who test the game level) tend to receive more comments, which, in turn, can translate

into more constructive feedback for improvement. In other words, a more effective title and description can attract more players, which means more peers who can support learning through their feedback and assistance. The elements presented in the descriptions and the titles of the game levels are related to how users describe and make sense of the gameplay, which I will discuss in the next section.

***Gameplay*.** The description of the game is strictly related to the presentation of the gameplay (i.e., the story and how the game should be played, with its environment, goals, and rules). A good example is provided in an opening post in which a user discusses the gameplay of the game level he/she is presenting:

> [(06)-2008-10-29-(01/16)-Mageda]
> (…) You're trapped in a dark cave Try to find a way out using the lights.
> [Link to YouTube Video]

In this brief sentence the creator of the level describes its plot, environment, and setup ("You're trapped in a dark cave") and what the player is supposed to do in order to beat the game level ("Try to find a way out using the lights"). In fact, most of the descriptions of gameplay in the discussion forum are rather brief, which reflects the nature of digital games (you learn to beat them by playing them, not by reading manuals), but some of the creators offer precise

instructions, step-by-step guides, and practical tips to succeed in their game levels:

> [(26)-2008-11-13-(01/15)-Blinko]
> Groovy wheel of color
> Title: Groovy wheel of color
> PSN: Blinko
> [Link to YouTube Video]
> Description:
> Fun colorful level where you travel the Grand Canyon in a groovy mobile.
> Some simple platforming and balancing gameplay.
> Tips:
> Dont go tooo fast or you will miss the designated stops.
> Dont jump out of the groovy mobile unless safe!
> Have fun :)

Through this accessory information ("Tips") creators try to make their game levels enjoyable and prevent players from giving up after their first attempt. Let's consider another example:

> [(36)-2008-11-20-(01/19)-Coldlit]
> Hey there... This is my first post (of oh, so many, probably and hopefully) so hey there, nice to meet you :).
> My Playstation Network is: Coldlit.
> Level Name: Frozen Murder

> (…) Tips: Do not trust ice. Be wary and ready at all times
> All constructive critism i appreciate dearly, either leave comments on the level, or post here, send me a message on ps3, either way, as long as i can learn and improve.

In this post, the function of the tips sounds more oriented to attracting players by instilling interest and curiosity through catchy hints ("Do not trust ice"). This, again, shows that presenting a game level to the community is part of the creative process and requires time, effort, and imagination.

Comparison. Another discursive technique used in the discussion forum to stimulate interest and curiosity on game levels is *comparison*. Let's consider a few examples:

> [(10)-2008-11-03-(01/19)- Maj1211]
> Clock Town Theme - LoZ MM
> I made a musical level based on the Clock Town theme in Legend of Zelda. It took me several hours to complete, so I hope you guys enjoy it, and I hope they don't force me to take it down. Grr
> For those that don't know what I'm talking about, here's the song:
> [Link to YouTube Video]

> [(05)-2008-10-29-(01/15)-Doo533]
> mini tutorial creation technique - The Elevator

> When I saw the other tutorial video by that guy who did the fake item's, I subscribed to his youtube feed. He's posted this great video of a working Elevator. Top quality in my opinion, [Link to YouTube Video] (…)
>
> [(01)-2008-10-25-(01/11)-Meadow1]
> Urban Pipe-Dream
> This isn't quite the Azure Palace, but this is my first level! It took about 8 hours to put together and takes up half the thermometer. Feel free to post comments.
> [Link to YouTube Video]

As we see from these examples, the participation in the discussion is enriched by intertextual references conveyed through multimodal practices such as creating, posting, and watching videos or following users on YouTube by subscribing to their feeds. Comparing a user-generated game level to other digital games or cultural references creates a visual and conceptual link that helps to situate it in a broader context ("I made a musical level based on the Clock Town theme in Legend of Zelda") or in the frame of the participatory space ("the other tutorial video by that guy") suggesting what kind of expectations the player should have about it ("This isn't quite the Azure Palace").

Comparison is also a *preventive* and *defensive* strategy. In fact, by comparing the features of a game to other references, creators

reveal their primary sources of inspiration, thus avoiding possible critiques of "plagiarism" or "copying." It is also a way to communicate their passion for specific titles, creating "tributes" that reinterpret popular titles through the affordances and style of *LittleBigPlanet*. This practice reflects some intertextual initiatives put forward by the developers of the game (Media Molecule/Sony) that "transfigure" into *LittleBigPlanet* the protagonists of popular digital games, comics, or movies (that are made available to the players as add-on "costumes") transforming them into "Sack-persons" through an imaginary process of "LBP-fication." In Figure 11 I present four examples of popular characters that have been "LBP-fied": Kratos (the protagonist of the digital game *God of War*), Snake (the protagonist of the digital game *Metal Gear Solid*), Captain America (a superhero who appears in comic books published by Marvel Comics), and Jack Sparrow (the protagonist of the *Pirates of the Caribbean* film series, interpreted by Johnny Depp).

These practices stimulate and encourage intertextual endeavors in which participants transfer the looks, gestures, and behaviors of shared cultural references that can be *external* (e.g., popular games, comics, and movies) or *internal* (e.g., game levels or videos created by other users). Furthermore, quoting the sources of inspiration has a pedagogic function as it reveals how creators build on previous work and stimulates new literacies practices such as "remixing."

To summarize, the discursive functions of comparison include awakening interest and curiosity, contextualizing the interactive

artifact, setting player expectations, illustrating sources of inspirations, avoiding critiques of plagiarism and replication, helping other users learn how to build on previous work, and stimulating new literacies practices such as remixing that engender a flexible and interdisciplinary mindset. After looking at artifact-oriented dimensions such as game features, gameplay, and comparison, in the following sections I will turn my attention to creator-oriented dimensions (i.e., effort, self-appreciation, and experience).



Figure 11. Popular characters (upper row) and their Sack-personifications in LittleBigPlanet (lower row).

Effort. Throughout the analyzed threads, participants often draw attention to their effort as *creators*, *players*, and *contributors*. For example, creators emphasize the amount of time it took them to complete their game levels ("60+ hours of work") or point at their uninterrupted ("which I have been working on practically none stop for the last two days") and continuing ("i have put about 40+ hours into it so far") work.

Participants use diverse discursive techniques to express their commitment and effort: they use capital letters to stress words denoting the amount of effort ("I've spent ALOT of time testing this"), reinforcing repetitions ("hours upon hours"), or superlatives ("to the greatest of my ability"). Interestingly, I found that some participants mention big numbers to highlight their effort (e.g., "Hope you all enjoy what took me 4 months to create"), while others minimize such numbers in order to underline that their skills allow them to create compelling game levels in a short amount of time, which positions them as experts within the participatory space:

> [(06)-2008-10-29-(15/16)-LonelliGun]
> :pHow long did it take for you to do them.:p
>
> [(06)-2008-10-29-(16/16)- Mageda]
> [Quotes LonelliGun's post]

> It took me eight hours to do ‘Mystic Forrest Adventures’ (also because this was my first creation), and I guess about five or six hours to do ‘Saved by the Light’.. :)

In this example, the creator (Mageda) of two game levels presented in the thread (“Mystic Forrest Adventures” and “Saved by the Light”) is answering to another user (LonelliGun) who asked about the time necessary to design the game levels. The creator answers minimizing the time and effort required to complete them. He/she does this in different and concurrent ways. First, he/she says about the first game level that it took eight hours because it was his/her first creation, justifying the amount of time with inexperience. Second, the creator uses “I guess” and “about,” which signal that he/she was not paying attention to the amount of time necessary to complete the game level (while other players provide specific numbers, which suggests that they are concerned about “quantifying effort”). Third, the creator ends his/her post with a “smiley” emoticon, which, in this case, demonstrates self-satisfaction for significant results achieved in a small amount of time.

Effort is widely *expressed* and *valued* in the analyzed participatory space:

> [(15)-2008-11-04-(09/17)-OK2]
> (…) There are certain levels where you know within the first 30 seconds that you are in for something special and this is one of those

> levels. It is the kind of level where you sense that the creator really cared about what they were making and put a lot of effort into it. (…)
>
> [(15)-2008-11-04-(17/17)-Ome8]
> Great level, well lit, awesome atmosphere and I enjoyed the various challenges, especially the final one. You've put a lot of time and effort into the level and it shows.

As illustrated by these examples, effort is a valued component of the practices enacted in the participatory space ("you sense that the creator really cared about what they were making and put a lot of effort into it" and "You've put a lot of time and effort into the level and it shows"). In fact, by discursively negotiating effort users construct a shared understanding of what is rewarded and appreciated in the community, thus influencing the way users present and critique their creations.

In conclusion, the analysis shows that by emphasizing or minimizing effort, creators pursue at least three important discursive goals through different discursive techniques. First, by emphasizing effort creators reinforce their invitation to play, inferring that the game level is worth playing, as a lot of effort has been put into it. Second, by declaring their effort, creators try to prevent harsh criticism (a technique that I will explore in greater detail in a later section titled "Request for absolution"). Third, by minimizing effort creators

construct an identity of mastery and position themselves as experts or "natural talents" within the participatory space. Furthermore, by valuing effort, participants socially construct and negotiate its understanding, thus making an impact on how game levels are presented, discussed, and critiqued in the community.

Self-appreciation. Participants express their appreciation for their own creations and effort in many ways. For example, they talk about a feeling of pride ("My first level … I'm a little proud of it"), they use extreme case formulations ("It may not be the most visually aesthetic map in the world, but everything works properly"), or they consider the work accomplished as a payoff for their effort ("I have to say, the part I'm most proud of is the part where I got the background layer spinning. That was a bit challenging to accomplish"). In fact, self-appreciation is, in many cases, discursively enacted as *the other side of effort*.

Interestingly, creators seem to draw a lot of pleasure from putting the effort *in players' hands*, by making their game levels difficult to beat ("it's very challenging" or "my stages aren't made to be a cakewalk"). In some cases creators *project* their self-appreciation to a later time, envisioning the grand results of their current efforts in present or future game levels ("It will be epic" or "I (…) started a newer grander project"). This *projected appreciation* functions as a goal-orienting and self-encouraging device that motivates learning and justifies effort by envisioning future results. Sometimes this discursive

action is used to inform potential players that the game level presented in the thread is a *work in progress* and needs to be appreciated as a part of a larger whole. For example, a creator, presenting one of his/her game levels, in order to counterbalance its shortness, argues:

> [(04)-2008-10-27-(01/16)-Softjets]
> (…) -My second Level (which I have been working on practically none stop for the last two days, so here hoping for good things), Is a potentially episodic tale of a sackboy who is having a horrible day. As this is my second trip into the level editor, it has a notably higher quality then the first level i created, although it still is on the short side (around 5 minutes in length, at a moderate pace, without prior knowledge of puzzles). The shortness of the level is remedied by the fact that the tale is episodic, meaning the second part to this story is already being crafted. It's titled "Life of a sackboy".

In this post, the creator affirms that the shortness of the game level should not be considered a problem, because it is just one of the components of a larger story ("The shortness of the level is remedied by the fact that the tale is episodic"). This reflects awareness on the limits and potential of one's creations and an orientation to planning in a social dimension.

Experience. Experience and inexperience are made evident in different ways in the analyzed threads in order to enact various discursive functions. For example, creators express their inexperience

by informing players about possible flaws and imperfections of their creations. The most common strategy is to state that the game level they share is their very first one. I would infer that, by doing this, creators *summon* comments that archetypically sound like "not bad for a first attempt."

By expressing inexperience players achieve a variety of discursive goals: they protect themselves from harsh criticism by exposing their "rookie" status and preparing players to anticipate possible flaws in their projects; they build sympathizing responses through self-deprecating statements ("Im no artist :)"); and they also express enthusiasm and sheer *urge for participation* (they are finally able to share their own game-level, even if it is not perfect). In fact, this tendency is confirmed by statements of inexperience followed by remarks of self-appreciation:

> [(04)-2008-10-27-(01/16)- Softjets]
> (…) -My first level (which i'm showing off on my first post, Hi everybody). I'm a little proud of it, although i do realize it has many flaws. (…)

On the other hand, situating oneself (or another user) as an expert brings into account issues of recognition, leadership, mastery, and power. For example, a creator writes about his/her own game level:

> [(22)-2008-11-11-(01/12)-Bartha]
> (…) this level is designed to provide a very difficult challenge to expert players. I wanted something that *I* would find challenging.... if I dont enjoy playing my own creation, what's the point? (…)

Through this construction the creator is not only informing the participants in the discussion forum that the game level is challenging even for experienced players ("this level is designed to provide a very difficult challenge to expert players"), but also that the his/her skills as a player allow him/her to set the bar even higher. The two asterisks surrounding the "I" ("that *I* would find challenging") further emphasize this statement.

In conclusion, the analysis shows that users negotiate experience and inexperience in different ways in order to build situated identities, positioning themselves sometimes as newbies and sometimes as experts.

***Invitation to play*.** One of the most evident objectives of the analyzed part of the discussion forum (titled "Level Showcase") is to present game levels and invite users to play them. What is not always evident is how creators discursively enact such invitations. Of course, the act of presenting a game level is *per se* an invitation to play it and there are numerous explicit calls to play (e.g., "so check 'em out" or "if anyone would give it a try"). However, in my opinion, the most interesting exhortations are those implicit, as they are achieved

through different "luring" discursive techniques. Two of the most common ones are *rewarding* players (e.g., "Just for playing the level you win a neat scrolling arrow sign with animated LED lights that I made"; "collect your prize"; or "the tank's 1st build in a prize bubble at the end of the stage") or *challenging* them (e.g., "see if you can beat my time" or "Defeat the boss, if you can (…) I'll be impressed"). In some cases, creators even use a combination of these two styles (e.g., "so go check out the map and see if you can beat my time!"). Not only do creators invite users to play their game levels, they also expect some kind of feedback about them, as I will illustrate in the following section.

Invitation to comment. Publishing a post in this section is in itself an undeclared request for feedback, but most participants ask for comments in a direct way (e.g., "Feel free to post comments" or "let me know what you think!"). Interestingly, some of the requests are very specific, which denotes engagement and care for current game levels (e.g., "if anyone finds any bugs or glitches or problems with it, definitely let me know; that'd be a big help" or "If you come across any more glitches, please let me know") and, more broadly, a desire to construct knowledge and skills in order to create better game levels in the future.

Request for absolution. In my opinion, one of the most interesting findings of this study is an important discursive function of the opening posts. I have defined it as a "request for absolution,"

which is also an "invocation to kindness," directed to commenters in the discussion forum. In fact, in the first posts, creators invite other users to play their game levels and give them feedback, but, at the same time, they ask them to be kind and avoid harsh criticism.

Sometimes this "request for absolution" is very subtle. For example, a creator can put a specification of "Ver. 1.0" in the title of the interactive artifact shared in the community, which means that it is the very first version of the game level, which implies that there may be "bugs" and other imperfections.

An interesting example is represented by a statement of a creator who presents his/her game level with these words:

> [(22)-2008-11-11-(01/12)-Bartha]
> (…) I give no apologies for the difficulty level of this one. (…)

This utterance can be considered as a mixture of the rhetorical figures of *antiphrasis* (a word or sentence used to mean the opposite of its sense) and *paralipsis* (stating something while pretending to pass it over). In other words, the creator by saying "I give no apologies," *is* actually giving apologies.

Furthermore, I conjecture that the "request for absolution" works like a *magnet*, attracting and re-contextualizing the function of the other themes presented in previous sections (*game features*, *gameplay*, *comparison*, *effort*, *self-appreciation*, *experience*, *invitation to play*, and *invitation to comment*). In fact, the "request for

absolution" can be achieved through different discursive techniques, each reflecting one of the aforementioned themes, as I illustrate in Table 2.

Table 2. The opening post as a request for absolution.

Dimension	**Theme**	**Example**
Artifact-Oriented *(creative presentation of contents)*	Game features	"it's kind of short and simple"
	Gameplay	"Known Bugs/Glitches"
	Comparison	"This isn't quite the Azure Palace"
Creator-Oriented *(self-reflective disclosure on practices)*	Effort	"Hope you all enjoy what took me 4
	Self-appreciation	"a level Im happy with"
	Experience	"but this is my first level!"
Player-Oriented *(passionate call for participation)*	Invitation to play	"If you guys have some free time to
	Invitation to comment	"let me know what you think! :D"
	Request for absolution	(all of the above)

Interactive Artifacts

In this part of the chapter I present the findings related to how participants construct and negotiate meanings on the interactive artifacts (i.e., the user-generated game levels) shared and discussed in the participatory space. I approach this part of the study using seven categories derived from studio critique (Santoro, 2013), looking at the game levels and at threads/posts on the discussion forum that discuss them, in order to see if and how these categories are "picked up" or made relevant by the participants. In the analysis I look at the discursive functions of these categories (*content*, *form*, *function*, *structure*, *usefulness*, *aesthetics*, and *distinction*), as well as at how they are constructed, interpreted, and negotiated in the participatory space.

Content. *Content* represents the elements that the creator decides to include in a game level. What stands out in the analysis of this category is the way in which participants present the content of their creations. In fact, in numerous instances, they support their written descriptions with pictures ("screenshots") or videos posted on YouTube (they provide links in their posts or "embed" the videos in the descriptions). These multimodal practices seem to gradually become a *must* for the creators that participate in the discussions. In fact, if users do not see a link to a picture or a video of the game level ("level" is sometimes shortened in the posts as "lvl"), they may request it. In the following example, users respond to a solicitation

posted by the creator (ThingG) of the game level, presented in the thread, which did not receive comments:

> [(03)-2008-10-27-(05/20)-ThingG]
> cmon guys it's awesome!
>
> [(03)-2008-10-27-(06/20)- CrySky]
> most people here would like a video of the lvl before they try it out, but once the server is back open, i'll try it out :p

In other posts participants ask the creators of the game levels to post videos and pictures:

> [(06)-2008-10-29-(02/16)-Stigex9]
> Any chance of posting a video? =D
>
> [(31)-2008-11-16-(07/16)-Honexed]
> Sound pretty sweet, I will probably check them out later, you should get some video's or pictures up.

These requests reflect a need for *efficiency*: users express a need to have a quick visual reference that can help them decide whether a game level is worth playing on not. In general, in the analyzed participatory space, users orient themselves to visual representations, preferring *showing* vs. *telling*, which is connected to

one of the basic characteristics of digital games, that is their visual component (in fact, digital games are also called *video* games).

In a participatory space dedicated to the creation of game levels, the category of content also represents the way users help each other to construct such content. Again, the use of visual aids (pictures and videos) plays an important role. *LittleBigPlanet* provides a series of preset video tutorials (embedded in the game) that help creators to develop their game design skills. Furthermore, participants create user-generated videos that explain game-design techniques and tips. This is a very popular way of constructing learning in the community and participants frequently share external references to demonstrative videos and tutorials. A user argues:

> [(07)-2008-10-30-(07/19)- Robsp]
> (…) The truth is that nobody can show you unless they make a video dedicated to explaining bosses and how to control their behavior. (…)

This post shows that in some cases videos appear as the only feasible solution to teach and learn specific skills in an online setting, unless experienced users decide to dedicate time in synchronous one-on-one sessions taking advantage of the multiplayer features of the *LittleBigPlanet*.

In the analyzed threads, the content of the game levels is expressed through an intense use of specialist language, with specific

and situated terms that reflect the richness and complexity of game design affordances and features (and, as a consequence, the need for visual aids). To give an example, these are some of the terms used by the participants of the discussion forum to describe the content of their creations: camera zooms, checkpoints, controls, decorations, emitters, grab switches, grabbable materials, jetpacks, mechanics, motors, pistons, sensors, stickers, stiff rods, switches, winches, wirings, and wobble bolts. Understanding these terms is crucial to make sense of the game levels presented online and to create new ones. In fact, each of the aforementioned objects/functions has a specific affordance, and by combining them in creative ways, users construct new interactive artifacts.

Here I present further examples that express the need for visual references and how the community considers and values them as important tools for learning:

> [(43)-2008-11-24-(01/15)- xdread]
> (…) This is a preview/tutorial just like I did for the first level. I highly recommend watching this and paying close attention to the text for anyone who's having trouble with this level.
> [Link to YouTube Video]

> [(43)-2008-11-24-(09/15)-Dingoy]
> First of all, the video tutorial helped me out immensely! Thank you so much for that.

> [(43)-2008-11-24-(11/15)-xdread]
> [Quotes Dingoy's post]
> Thanks I'm happy you really enjoyed this one as well. I'm glad you took advantage of the tutorial I made. :)

The analysis of the threads shows that the complexity of game design techniques and the visual nature of digital games require visual aids, preferably in the form of step-by-step video tutorials that can help both players and creators.

Form. In the context of this study, the *form* of a game level represents the concretization of the content expressed by gaming categories (or game genres) such as platformer, puzzle, or shoot-em-up. It also represents the *mechanics* (e.g., setup, victory conditions, progression of play, or player actions) and *dynamics* (e.g., territorial acquisition, spatial reasoning, survival, building, or chase/escape) of the game level, and, more generally, its rules and goals (not to be confused with the *function* of game levels, discussed later in this chapter). In the discussion forum the form of the game levels is also represented by their *versions* or *builds*, such as "Ver. 1.0" or "Beta." In this context, the analysis of the threads shows that participants feel free to share works in progress, which reflects an open, iterative, and progressive approach to creativity that relies on community feedback and a mindset directed to continuous improvement.

Function (project goals). *Function* represents the general goals of the project, as expressed by the creator and/or as picked up by other participants. For example, the function of a horror game level is to scare players. Most of the times, the function of the game level is declared by its creator, but sometimes it can also be conveyed by other users. For example, a participant comments on a game level:

> [(54)-2012-11-24-(06/18)-Chimpco17]
> Played it this morning. quality in every way. you should be very proud of this level. Like i said in-game, no one does complex contraptions as well as you.
> Regarding the short length of the level. It didn't bother me, in fact it only left me wanting more, and lets be honest, isn't that exactly the feeling you want to leave with a player? :)

This comment reflects one of the most sought-after (by both game designers and players) characteristics of digital games, that is their *replayability* or *replay value*, which is connected to their *longevity*, or how long a player will be engaged in a specific game before putting it on the shelf and turning his/her attention to other games and how likely he/she would be to play another episode of the game. In this context, "wanting more" does not exclusively mean wishing for a longer level or a *sequel* (e.g., a second part of the adventure), but also another round of play, in order to repeat an engaging and enjoyable experience. Through this comment the player

not only counterbalances a possible negative feature of the game level ("Regarding the short length of the level. It didn't bother me"), but he/she also expresses his/her knowledge about gaming and game design by pointing at a very desirable and sought-after function of digital games ("it only left me wanting more") from a designer's perspective ("isn't that exactly the feeling you want to leave with a player?"), thus situating his/herself as an expert in the interest world of gaming and game design. By doing so, the user tries to formulate consensus (Edwards, 1994) about his/her statement by using "you" as a third person pronoun that points at a "you-designer," thus *normalizing* the statement by referencing a generally accepted concept (Edwards, 1995) in the field of professional game design. In this example, a function of the game level is epitomized by a user to position him/herself as a knowledgeable participant. Furthermore, this becomes an occasion to encourage the creator by making up for a possible weakness of the game level (its short length) through an argumentation based on an implicit reference to the professional field of game design. In other words, by empowering the creator, the participant also empowers his/herself. In fact, this supportive remark is oriented to benefit both the sender and the receiver of the message, as well as the entire community that gains a new perspective on the matter.

The analysis of the threads reveals that some of the declared functions are *player-oriented* (e.g., amuse, surprise, scare), while others tend to be more *creator-oriented*, like in the following

conversation, in which a creator (bis123s) replies to a critique to his/her game level posted by another user (hellox99):

> [(54)-2012-11-24-(09/18)-hellox99]
> If you excuse me being brutally honest, here are my thoughts. I appreciate the effort that went into making this, but the end result was a very short level that, while good looking and well presented, had pretty mediocre gameplay that just wasn't fun. (…)
>
> [(54)-2012-11-24-(11/18)-bis123s]
> (…) I could'nt agree more that the gameplay was quite bland and unoriginal. Having said that, I wanted to show off my logic and design skillsr reflected from the mechanics as well as the design of my level.

"Showing off" seems to be part of the motivation behind the production and publication of game levels, but *admitting it* communicates disclosure, openness, and trust, which contributes to the construction of a safe and welcoming creative and learning environment.

Illustrating the functions of present or future projects can have another function, that is committing one's effort through an implicit *informal contract* with the community:

> [(54)-2012-11-24-(11/18)-bis123s]

> (…) I'm not trying to make excuses, but I promise this much, I'm gonna continue from this level and offer more original and challenging gameplay in my next installment. (…)

Publicly committing one's effort reinforces motivation and perseverance directed to the achievement of goals, which requires effort and dedication to learning.

Structure (hierarchy, order). The *structure* of a game level represents the planned order, organization, sequence, and hierarchy of objects, events, and challenges that a player will encounter during the gaming experience in a user-generated game level. For example, the most difficult enemy (i.e., "the boss") is usually placed by game designers at the end of a game level or a digital game, as a final challenge. In the context of digital games, structure needs to be considered as a multidimensional and dynamic category. In fact, players move, perform actions, and interact with objects, virtual characters, and other players. In other words, movement, action, and interactivity call for an approach to structure from a dynamic perspective.

Users make relevant some important features of game levels that influence their structure, such as branching paths (which offer alternatives and choices), episodic structures (which is achieved by linking game levels to form a larger game), and pace (the rhythm of the game). They also tend to value *structural economy* ("you might want to trim some unneeded things"), which connects the categories

of content, form, and aesthetics. This approach reminds me of the quote attributed to Albert Einstein that says "everything should be made as simple as possible, but not simpler." Participants also point out the *randomness* of some game levels, which can be interpreted as a lack of structure ("A bit random at some parts").

The game level editor of *LittleBigPlanet* limits the complexity of the creations and a virtual "thermometer" shows how much can be added to a level. Users discuss this feature throughout the discussion forum ("it seems like the thermometer fills up quite fast") and look for ways to optimize their creations, for example by simplifying the geometry of the objects or by consistently using a limited array of virtual materials. This reflects a social approach to problem solving and a situated approach to learning. In fact, creators need to deal with concrete problems ("the geometry of his objects were way too complex") and constraints ("having unglued objects also fills it up faster"), trying to solve them through a collective effort by participating in the participatory space.

Usefulness (audience pragmatics). In the context of this study, the usefulness of a game level represents its "generativity," or its potential to help and inspire other users, as expressed by the creator of a game level or by other users of the participatory space (the "participatory audience").

The users of the discussion forum share links, pictures, videos, and tutorials to advance the knowledge of the community. They also recognize the contributions of other users by pointing out the

usefulness of their creations. For example they explicitly say that they will apply a particular technique or include a user-generated virtual object ("I'd definitely use it for one of my levels"). They also remark that the contributions of other users inspire them ("I like these types of things, good for inspiration") and help them think of new ways to apply their creativity ("it definitely helped me think of more creative ways to use things"). More broadly, from the analysis emerges a diffuse desire to assist other users and help the community to advance as a whole.

Aesthetics (form enhancement). The category of *aesthetics* represents the looks of a game level and what makes it appealing or "cool," as remarked by creators and players in their posts. One of the most valued aesthetic categories in the discussion forum is *complexity*, which is connected to the category of function. A creator argues:

> [(54)-2012-11-24-(08/18)-Chimpco17]
> Time to get the old note book out and start planning even more complex ways to wow the community. :)

The stated intention of the creator is "to wow the community" (*function*, i.e., the planned goal of the project) in "even more complex ways." In this example, the category of complexity is also connected to the effort (expressed by utterances such as "time," "note book," "start," "planning," and "even more") and skills/experience ("old," "even more complex," and "wow") required to achieve it.

Furthermore, this category points at the *expectations* of the community, acknowledging its competence and selectiveness. This post also shows how the creative process is socially influenced by the feedback and expectations of the users in the participatory space, which reflects a social-constructive approach to learning. In fact, the creator is not only pleased by the positive comments of the participant, but also positively challenged to do better. The fragment of the discourse reported above is also a great example of the design step of *acceptance*, in which the creator shows self-motivation, dedication, purposiveness, enthusiasm, and self-investment ("Time to get the old note book out and start planning"), which is rooted in a fertile social ground (the participatory space).

Besides complexity, users seem also to appreciate game levels that are logical ("this level represents the perfection of logic in a pure state") and visually enticing ("What a visually captivating environment you've created").

Distinction (uniqueness). *Distinction* represents the uniqueness of a game level, as expressed by creators and players. In the discussion forum this category is at times experienced and interpreted as *character* ("This level has character") and *originality* ("original well executed and much enjoyed").

It is interesting to note that participants connect the uniqueness of game levels to the supposed effort and care of their creators ("It is the kind of level where you sense that the creator really cared about what they were making and put a lot of effort into it"). Furthermore,

creators tend to connect their originality to effort, even if a game level was influenced by a preset game level, like in the following example in which a creator (Mike) replies to a humorous comment (that I discussed in a previous section of this chapter):

> [(02)-2008-10-26-(02/14)-Thunda]
> ACED - which wins you
> Mike dozer lol
> =)
> good level short and sweet looked hard
>
> [(02)-2008-10-26-(03/14)-Mike]
> Oh, quick note. This DOES look like Skulldozer from the story mode cause that's what it's based off of, but I made this level entirely from scratch :P

Mike's reply shows the importance of being original (even if the creation was inspired by a preset level in *LittleBigPlanet*) which is expressed through effort ("but I made this level entirely from scratch").

The analysis of the threads also shows that what users consider as *original* is not necessarily *new* in terms of gameplay, characters, or setting. In fact, users value intertextual forms of creativity that "mesh-up," "remix," or "port" in the *LittleBigPlanet* world external sources of inspiration. I call it *intertextual originality*, as it values the creative

effort of citing or integrating external references in original ways. However, remixing and rearranging content from popular digital games and movies gives rise to issues of copyright. Such issues are vividly discussed between participants, mainly because moderators can remove their levels from the online space if they infer copyright infringements. Interestingly, participants also discuss *internal* issues related to intellectual property (IP), or what it is right to "give and take" in terms of creative artifacts in the community. A user argues:

> [(07)-2008-10-30-(05/19)-DixyPixie]
> This exchange brings up a pretty good point and actually mirrors alot of whats going on in the IP law realm right now. Do content creators have authorative rights to their creations or does public consumption require that the IP be laid bare? Do they have the right to share somethings and not others? What does this mean for user created content? A very interesting concept.

In fact, some users care dearly about their creations and about their authorship. They are not happy if other users copy their work ("People are re-publishing my level and I didn't like that") without referencing the source and even taking credit for it ("I'm not going to sit and watch my works just show up in a bunch of other levels and others taking the credit"). Again, the category of effort comes into play ("We all want to protect our creations in one way or another and how hard is it to take the time out to study and tinker with stuff?"). In

fact, users demand recognition not only for the uniqueness of their creations, but also for the time and effort necessary to produce them.

After looking at categories related to discursive texts and interactive artifacts, in the following part of the chapter I will turn my attention to the analysis of the constructive practices enacted in the investigated participatory space.

Constructive Practices

In this section I discuss the findings related to the constructive practices enacted in the participatory space. I examine these practices through seven creative problem-solving steps/categories (*acceptance*, *analysis*, *definition*, *ideation*, *idea selection*, *implementation*, and *evaluation*) that represent an iterative approach to the design process (Koberg & Bagnall, 1991), looking at how they are made relevant, constructed, and negotiated in the participatory space.

Acceptance. The creative step of *acceptance* involves self-motivation, dedication, accountability, purposiveness, and enthusiasm. In the analyzed threads this category is enlightened by the enthusiastic presentations of game levels in the opening posts, in particular in those describing in detail the game level and the process to produce it, from ideation to sharing. For example, a creator presents his/her game with these words:

> [(52)-2012-11-24-(01/19)-ShadyLights]
> Astro Lander by ShadyLights

> Hello LBPCentral!
> My name's ShadyLights, Its been a long time since i published a level, so long in fact that it was a LBP1 level. But since then i've been working on my new project, and im thrilled to say that it's finally published, and i'd love to give you all a little tour of it!
> Welcome to Astro Lander!

The enthusiasm of this participant is reflected by utterances such as "thrilled," "finally published," "i'd love to," "Welcome," as well as by the use of exclamation marks ("!"). The meticulous description that follows this introduction reflects the dedication of the creator, which is picked up by another user in a later comment:

> [(52)-2012-11-24-(05/19)-Jigsaw1]
> Great job on this!! I was really intrigued by all the detail and thought you put into this level!!! (…)

This comment is interesting because it shows once more that participants not only appreciate the *results* of creators' effort (i.e., the game levels shared online), but also the *effort* itself ("the detail and thought you put into this level"). Furthermore, I argue that the enthusiasm and dedication of creators are *contagious* and have an impact on how players perceive and approach the game levels presented in the participatory spaces, which is similar to the *Pygmalion effect* or *self-fulfilling prophecies*. In fact, in this example,

the player was "intrigued" not by specific features of the game level such as sound effects or gameplay, but rather by the creative step of acceptance disclosed by the creator in the opening post of the thread, expressed through enthusiasm and detailed descriptions and implemented in the game level.

Analysis. The creative step of *analysis* entails an open-minded approach, curiosity, fact-finding, data-gathering, questioning, and comparing. This step has a significant presence throughout the discussion forum. In fact, users express it in the presentations of their levels, in their feedback, and in "explorative" posts that point to external (multimodal and intertextual) sources, such as YouTube videos, screenshots, and other digital games. For example, some users post in the "Level Showcase" subcategory (analyzed in this study) lists of "cool" levels:

> [(28)-2008-11-14-(01/18)- AttmNED]
> Best (forum) levels
> I would like to make a list of all the levels that are worth our time. everyone can make suggestions and I will add them to the list. It is not like making a top 10 list or something but just all good levels. In the end we might end up with 50 or so REALLY good levels!
> So start suggesting levels!

It is interesting to note that the author of this post, not only shares a list with his/her favorite 16 game levels, but he/she also

invites (and spurs) other users to get engaged in the creative step of analysis by playing, evaluating, and gathering game levels that are worth of consideration. In his/her post, the user conveys a sense of affiliation, participation, and togetherness by using utterances and constructions such as "community," "everyone," "we," and "our time." By applying the analytical technique of substitution, I noticed that the user could have used another construction, such as "levels that are worth *your* time" or just "levels that are worth playing." Talking about "*our* time" instead, the user expresses and invigorates a social-constructive attitude that is reflected throughout the discussion forum. The participant continues his/her comment with these words:

> [(28)-2008-11-14-(01/18)-AttmNED]
> (…) I also decided I will just add all of the sugestions. I will probably still be playing them but I think I should fully trust you guys:) (…)

The user emphasizes the openness and informal scope of the participatory space by using the utterance "just," which was made evident through the analytical technique of elimination. He/she also expresses the participatory spirit of the community by writing that he/she will add "all of the sugestions" (not just the ones that he/she considers as fitting and adequate for the list). Word choice is also important in this fragment. For example, the words "fully" and "trust" express absolute confidence in the ability of the community to select

good game levels, but also the user's acceptance of potential divergent opinions (all levels suggested will be included). Utterances such as "I (…) decided," "I will probably still be playing them," "I think," and "I should" denote a reflective and goal-oriented stance. Finally, the "smiley" emoticon at the end of the sentence accentuates the welcoming tone of the post.

In a creative discussion forum such contributions are very important sources of inspiration for all the creators. These "top-grade" game levels are *shared experiences of play* that become *shared sources of inspiration*. In fact, users socially construct ("everyone can make suggestions and I will add them to the list") the *canon* of the best game levels in the participatory space that become *shared reference points* for players and creators. In this context, from an intertextual analysis of different threads, it becomes apparent that some of these user-generated levels have entered the specialist language of the participatory space:

> [(01)-2008-10-25-(01/11)-Meadow1]
> Urban Pipe-Dream
> This isn't quite the Azure Palace, but this is my first level! It took about 8 hours to put together and takes up half the thermometer. Feel free to post comments.
> [Link to YouTube Video]

In this example (that I have also discussed in a previous section), the creator starts the thread by writing the title of the game level ("Urban Pipe-Dream") he/she is presenting and, right after that, "jumping in" with a reference to another game level. The "Azure Palace" is one the "top game levels" included in the list presented by AttmNED (precisely, the first one) and it is discussed by other commenters in different posts and threads. Creating common references that become a natural part of the specialist language of the participatory space reinforces its bonds as a community and defines the identities of its participants as insiders, implying that every participant in the community knows, or should know, the "Azure Palace."

Definition. The creative step of *definition* requires focus, pattern-finding, conceptualization, and essence-finding. In the analyzed threads *definition* emerges as a social-constructive process that is tightly connected to the categories of *acceptance*, *idea selection*, and *evaluation* (convergent thinking steps), as well as *implementation*, *analysis*, and *ideation* (divergent thinking steps) in the iterative process of game design.

For example, in the first stage of the process, a user presents his/her game level conveying self-motivation, dedication, and enthusiasm (*acceptance*). In the second stage he/she receives feedback on his/her creation (*evaluation*) and focuses on the most relevant parts of the comments, looking for the "essence" of the critiques (*definition*). In the third stage the creator, after looking at different

options from a non-judgmental approach, takes a strategic and assertive stance (*ideation*), selects the most fitting ideas proposed by other users (*idea selection*) and integrates them with new ideas developed on the basis of the feedback received, keeping an open-minded stance (*analysis*). Finally, in the fourth stage, the creator gives form to such ideas (*implementation*).

In this context, from the analysis of the threads/posts in the discussion forum, two important factors emerge. First, the iterative process of design in a participatory space does not necessarily follow an imaginary circle, moving sequentially from one step to another. In fact, in many instances, it follows an open-ended path that moves from one step to another guided by users' reflections and external feedback. Second, I argue that the creative process is *augmented* by the social dimension of the participatory space, as users learn from each other (and from their creations) reinforcing or challenging ideas, choices, and techniques.

Focusing on the creative step of definition, discussed in this section, an example can clarify its role in the social construction of learning and creativity. A creator (ShadyLights) presents an ambitious game level (created by connecting sub-levels) that offers single player and multiplayer challenges ("2 games in 1"):

> [(52)-2012-11-24-(01/19)-ShadyLights]
> (…) Astro Lander is essentially 2 games in 1. The single player mode is a Lunar Lander style game while the Multiplayer mode is a

> more free-flowing versus mode game in the shape of 2 events, Race and Dog Fight.
> Single Player (…)

The creator receives the following comment from a user called Jigsaw1:

> [(52)-2012-11-24-(05/19)-Jigsaw1]
> Great job on this!! I was really intrigued by all the detail and thought you put into this level!!!
> However, I was never able to enter in a single player session, but then again I didn't complete the last two flight schools. Was that what was keeping me from it?
> I agree with josluy that the ship design might have been a bit cooler, but hey... I loved it regardless.
> Awesome work! Had to give it a heart!

The creator replies with these words:

> [(52)-2012-11-24-(07/19)-ShadyLights]
> (…) the reason you couldn't get into the single player is just because of a network problem and the sub levels sometimes don't load properly. It's such an annoying problem because I can't fix it. And I only realised the problem after I finished everything and linked all the levels together. It basically rendered my multiplayer segment as useless because no one can even get into the sub levels. So I recently

> made the multiplayer levels all full levels now so you can just enter straight into them. (…) You don't need to complete flight school to start the single player. Just a very annoying level link bug (…)

From this response it looks like the creator had noticed the problem right after he/she had finished the level. The feedback received by the other user helps the creator to reflect again on the issue, focus on the pattern that led to it, and conceptualize on the essence of the problem from the point of view of the player (*definition*). This contribution offers a different angle to the problem, as the user speculates on possible causes of the problem ("I didn't complete the last two flight schools. Was that what was keeping me from it?"). This helps the creator define the problem in more specific terms that could be transferred to other situations. In fact, in the first part of the post the creator talks about the problem in a somehow confused way ("the reason you couldn't get into the single player is just because of a network problem and the sub levels sometimes don't load properly"), while at the end of the post he/she is able to coherently and precisely define it as a "level link bug." I would infer that this *discursive process* helped the creator to better define the problem by answering to a comment of another user. In this sense, the discussion forum can be considered a social tool that supports learning and reflectivity. This impression is confirmed by the subsequent post of the creator (ShadyLights):

> [(52)-2012-11-24-(08/19)-ShadyLights]
> I was thinking of the level link problem I'm having and I realised that Craftworld Aleste has to go through the same routine as my menu, whereby you're in a main menu first and then enter a sub level to play the game. But Aleste's sublevel has always worked for me every time whereas mine seems to work half the time. And I think what the issue might be is that I put the the physical level link entrances way off screen completely out of view whereas KirsStar had his on screen. Maybe that's why his work all the time. After all players can't enter a level if the checkpoint isn't on screen. Hmm, I might try to bring them on screen and see if that works. (…)

After considering the feedback received (*evaluation*), in this post the creator further dedicates his/her attention to the problem (*acceptance*: "I was thinking of the level link problem I'm having") by focusing on the causes that prevent his/her game level from working properly by comparing it to another game level (*analysis*: "I realised that Craftworld Aleste has to go through the same routine as my menu, whereby you're in a main menu first and then enter a sub level to play the game"). He/she also concentrates on similarities and differences that make the other game level work (*definition*: "I think what the issue might be is that I put the the physical level link entrances way off screen completely out of view whereas KirsStar had his on screen"), speculates about the problem and hints at possible solutions (*ideation*: "Maybe that's why his work all the time"), strategically selects the part of the level to be reworked (*idea*

selection: “players can’t enter a level if the checkpoint isn’t on screen”) and commits to modifying that part of the game level (*implementation*: “Hmm, I might try to bring them on screen and see if that works”).

In this case we can see that the creative process follows the flow conceptualized by Koberg and Bagnall (1991), starting from the last step of the process (*evaluation*) and moving through the steps of *acceptance*, *analysis*, *definition*, *ideation*, *idea selection*, and *implementation*. The utterances “I was thinking,” “I realised,” “I think,” “Maybe that’s why,” and “Hmm” all signify the reflective process stimulated by the comment of the other participant. Interestingly, to corroborate this interpretation, the creator concludes the post by saying:

> [(52)-2012-11-24-(08/19)-ShadyLights]
> ....this comment quickly turned from a response into me just thinking to myself out loud....

The analysis of the threads suggests that participatory spaces not only help user to focus on specific issues, but they also stimulate deep reflectivity fostered by and shared with other users.

Ideation. *Ideation* is a creative step that implies a speculative, non-judgmental, inventive, option-finding, and loose approach. The informal nature of participatory spaces makes them an ideal arena for this divergent-thinking step in the creative process. Koberg and

Bagnall (1991, p. 78) argue that “Ideas are ways; ways to go places and do things. They are the alternatives or options for resolving problems or reaching goals.” In the discussion forum users explore these alternatives and options in an extensive way (e.g., “it definitely helped me think of more creative ways to use things like magnetic keys”). For example, similar game mechanics can have different engineering approaches and interpretations.

In a thread that examines a game level that features some innovative game mechanics, users try to understand how it was made (“I’ve no idea how he’s managed to create it, and I’d love for someone to explain how this can be done in the game”). Users put forth different hypotheses and interpretations, supporting their ideas by providing links to external videos or describing the supposed elements and steps of the process. One of the participants (grondy111) writes:

> [(09)-2008-11-02-(08/13)- grondy111]
> Im pretty amazed by this level. As for the system, ive come up with my own method that could work, using 2 grab switches and a winch. I think this person has done it differently though.

This post is interesting because it reveals a “designer’s mindset” able to look into a game with the eyes of a player and of a game designer, focusing on functions and mechanics that may pass unnoticed by players who do not have experience with game design. We can see how this user is deconstructing the game into discrete

functioning parts and speculating (the creator says that his/her method *could* work) about alternative solutions ("using 2 grab switches and a winch") that could be implemented to achieve the same goal. In other words, this user is running an "engineering simulation" in his/her head, which is made possible by his/her experience with the design of game levels in *LittleBigPlanet*.

By engaging in these activities, creators learn new sophisticated methods to analyze and make sense of reality (i.e., how things work) through an inventive and option-finding approach (i.e., how things *could* work, and how they could work *better*) that helps them deconstruct problems into manageable blocks that can be speculatively recombined in order to solve complex problems and generate innovative solutions. I argue that these skills are an essential component of learning, creative thinking, and innovation, and they can be reinforced and "leveled-up" through social interactions that allow exploring alternatives in an open and non-judgmental social environment.

Idea selection. *Idea selection* is a creative step that calls for an assertive, judgmental, discerning, logical, and strategic stance. From the analysis emerges that this decision-making step, in which users declare their intentions after considering different alternatives, is a social-constructive process that relies on the experience and feedback of the participatory space as an expression of collective intelligence.

For example, a creator (Lin7fy) thanks another user (ironD) for the feedback, which facilitated the decision-making process, helping him/her to decide on strategic issues related to his/her project:

> [(47)-2012-10-29-(12/12)-ironD]
> (…) I larrrved the colour scheme, the purple plasma was cool to see, as it was sorta outta-place, yet it worked, as if it were some kind of....magical force(?) Like, purple glowing stuff ain't natural in the mountains of Japan, or wherever this is set.
> The level was always clear as to where to go next, I never got confused as to what to do next, and all the platforming elements felt solid- every time I died, I knew it was because I had done something wrong, not the game. That's cool, it makes the level enjoyable to play. Music was groovy too :) (…)
>
> [(47)-2012-10-29-(12/12)-Lin7fy]
> Thank you ironD, that puts me at ease regarding a *lot* of my decisions! In the past, I've had people complaining of a few unfair difficulty moments, so I'm very glad to hear that balance is working for you. I also appreciate you mentioning the colour scheme, as that was something I fought with for awhile. Maybe one day I'll even get the nerve to be as bold with colour as you! (…)

This thread demonstrates that creators sometimes need to be reassured about their decisions, while other times these decisions are

socially negotiated by comparing and evaluating options (as discussed in the previous section in relation to the creative step of *ideation*).

Implementation. *Implementation* is a creative step that demands a passage from abstract to concrete, giving form to ideas, and translating dreams into realities. Of course, the game levels shared in the analyzed participatory space are evidence that ideas have been concretized into interactive artifacts that can be played and critiqued by other users, but participants make this category relevant also through their interactions.

One interesting thing to note is that creators, as game designers, need to approach the step of implementation keeping in mind the potential player. I consider the creative process as a path that continues on the discussion forum and does not end when the game level is "finished" and ready to be shared. From this perspective, the *implementation* stage can be interpreted and better understood in terms of *social implementation*. In other words, implementation is not fully complete until the game level is shared. I would say that, by sharing a game level with other players in the community, creators bring it to life. In fact, if the main *affordance* of a digital game is interactivity, its *raison d'être* is to be played.

In the analyzed threads the step of implementation is tightly connected to the *enthusiasm of implementation*, as epitomized by this comment:

[(22)-2008-11-11-(01/12)-Bartha]

> (…) Ok, so, after a good week or so of yelling at the editor every time something fell apart, I've finally produced a level Im happy with. (…)

By "yelling at the editor" the creator, in a humorous way, conveys passion, engagement, and effort, which is compensated by a satisfying game level ("a level Im happy with"). Also, this creator says "produced," not just "made," which emphasizes the effort, the process, and the result. Furthermore, I argue that the adverb "finally" draws the attention to the *urge of implementation* connecting an *individual dimension* of this step (the satisfaction of having in hand a finished product) to its *social dimension* (the satisfaction of *socially implementing* the game level in the participatory space). These findings support a conceptualization of participatory spaces as informal environments in which learning and creativity are intertwined endeavors that are socially constructed and negotiated.

Evaluation. The creative step of evaluation involves a critical stance directed to self-improvement, artifact-improvement, and process-improvement, by testing, comparing results with intentions, and considering external feedback. Of the seven creative design steps, this one reflects the very nature of the practices enacted in the discussion forum, in which users give and receive feedback on their creations. Furthermore, testing is a very important element in the iterative process of game design, as illustrated by the following posts:

> [(22)-2008-11-11-(01/12)-Bartha]
> (…) I've spent ALOT of time testing this, and re-testing, and then testing some more. I wanted to get out as many screwball bugs as possible (…)

> [(07)-2008-10-30-(12/19)-Gerva44]
> (…) Don't assume everything will work in every environment. Who says it's supposed to work all the time? In LittleBigPhantasy, it took two days of testing to modify it specifically for that stage outside of the initial build. (…)

These examples illustrate that testing is not only desirable, but also necessary, as there are many variables that need to be considered and what works in a context does not necessarily work in another. Interestingly, in the second of the two posts, Gerva44 points out the amount of effort undertaken in the process. Yet, another creator, in another thread, writes about his/her game level:

> [(43)-2008-11-24-(03/15)-xdread]
> (…) If you have any problems at all, let me know and i will fix it ASAP. I don't have any testers, but i am thorough. I played through this level at least 30 times before i published it. However, what i noticed about a lot of creators is that they find out a lot of small bugs after their level has been published. So...just let me know :)

This post reflects the care ("i will fix it ASAP" and "i am thorough") and persistence ("at least 30 times") this participant put in his/her creation. Furthermore, the creator states that he/she played the level *through*, not just "played it." This post also introduces a social dimension of testing, which I will discuss later in this section.

In the following post a participant presents his/her creation, focusing on a virtual object (a tank) that can be used by other players:

> [(18)-2008-11-07-(01/11)-Hsky]
> My Tank - 1st Build
> I just finished the first build of my tank along with a kind of "demo" level to test it on, which includes the tank's 1st build in a prize bubble at the end of the stage. (…)

As illustrated by this post, some users are more focused on the production of virtual objects (such as cars, machines, or decorations) that can be used by others creators in their game levels. Creators can share these virtual objects as rewards in "prize bubbles." In this case, the category of testing refers to experiments in "dummy" levels created just to test (and let other users test) their creations.

The author of the previous comment continues the post with these words:

> [(18)-2008-11-07-(01/11)-Hsky]

> (…) Keep in mind that I will be improving upon the tank to make it easier to use, more reliable, etc. But for now, I'd like to show you guys how it works right now. (…) If you come across any more glitches, please let me know and I'll look into fixing them as best as I can. (…) Be sure to let me know what you think and what you think needs improvement.

In fact, it is not uncommon to share works in progress, as an established practice of the design process, in order to receive feedback on preliminary versions of digital artifacts, thus avoiding time-consuming refinements to objects that have major structural flows that need to be adjusted before final cosmetic enhancements are implemented. Another participant goes even further by advising creators to have other players test their game levels while they observe them in this activity, which, in my opinion, is an advanced and almost scientific approach to testing digital games:

> [(45)-2012-10-25-(15/19)-Hsky]
> (…) I would recommend watching many other people test it. In testing my own levels, I'll know which way to go and what's supposed to work, so I never find any bugs when I play. But, watching someone else quickly reveals all those trouble areas. (…)

I think that this consideration is important because it poses "learning by testing" and "learning by observing others testing" (should we call it *vicarious testing*?) as a social approach to learning

and creativity. In this context, these creators do not learn *directly* from their mistakes, but rather *vicariously*. However, they do not learn by observing other creators "doing it right" (Bandura, 1977, 1986, 2001), but rather from the mistakes that are made relevant by other users when they test a game level. This also reflects the nature of digital games, in which failure is a normal, and even fun, part of the experience.

In conclusion, the analysis suggests that testing is not only a necessary step, but it also gives the best results in a social dimension, in which other players test game levels, observe other players while they test them, or test them with other participants in multiplayer mode, as described by this participant:

> [(52)-2012-11-24-(15/19)-ShadyLights]
> That's the hardest thing about this problem. It's just so difficult to test it. Because I've never really had the problem myself either, it's only when others mentioned it I noticed, or when I've been in a party of 2-4.

In the context of testing and producing game levels, one of the most interesting findings was discovering a "family-dimension" of game design in *LittleBigPlanet*. One of the users discusses his/her creations and the team behind them:

> [(24)-2008-11-12-(09/20)-Honexed]

> I do most of it myself under the name Square Productions. I have several brother's and they have helped me test and polish the levels. My sisters have also helped a bit (…)

This excerpt demonstrates that game design can be a social process that can take place synchronously and asynchronously in both physical (e.g., with family and friends) an virtual spaces (in online participatory spaces), with interesting intersections of these two settings.

Conclusions

In this chapter I presented the findings of the study related to how the participants of the investigated participatory space discursively construct learning and creativity through discursive texts, interactive artifacts, and constructive practices. I examined the use of language, humor, specialist talk, and the discursive functions and themes of the opening posts in the threads (game features, gameplay, comparison, effort, self-appreciation, experience, invitation to play, invitation to comment, and request for absolution). I then reported the findings on how participants socially construct and negotiate categories related to interactive artifacts (content, form, function, structure, usefulness, aesthetics, and distinction) and constructive practices (acceptance, analysis, definition, ideation, idea selection, implementation, and evaluation).

In the next and final chapter I will discuss the findings of the study drawing conclusions and presenting implications and recommendations for researchers and practitioners.

Chapter 5

Discussion, Conclusions, Implications, and Recommendations

In this study I inquired into an online participatory space in order to advance our understanding on how its participants, driven by their interest in gaming and game design, discursively construct learning and creativity through texts, artifacts, and practices.

In the first chapter I introduced the study by discussing its context through the framework of new literacies considering issues related to the "missing link" between generations, the distance between formal and informal learning environments, and the overlooking of interests and interest worlds. I then illustrated the purpose and the guiding research questions of the study, presented my positionality statement, outlined the theoretical and conceptual framework, and discussed previous research related to the study in the context of affinity spaces. Successively, I delineated the methodology and methods, significance, limitations, delimitations, and organization of the study. In the last section of the chapter I defined relevant terms and concepts.

In the second chapter I presented the review of the literature. I started the chapter by introducing my interdisciplinary approach and the search criteria used in the study. After that, I defined learning as a social-constructive and situated phenomenon by analyzing learning theories that inform such perspective. In subsequent sections I discussed informal and social learning environments looking at communities of practice, virtual communities, and affinity spaces.

After that, I introduced the definition of "participatory space," which complements the constructs of "interest world" and "participatory platform," also introduced in this study. In following sections I turned my attention to social and technology-supported creativity, in relation to categories of creative problem solving that embody the design process. I then continued the review of the literature by considering definitions and perspectives on play, games, and digital games. Successively, I narrowed my field of investigation by focusing on digital games as participatory platforms for interest-driven learning and creativity in the dimensions of play, design, and participation.

In the third chapter I presented the methodology and methods of the study. I started the chapter by discussing qualitative approaches to educational research. I then introduced the methodology through the frameworks of Discourse, multimodality, and intertextuality. In the following parts of the chapter I illustrated the research methods of the study (a hybrid intertextual approach based on discourse analysis, studio critique, and design process analysis), the sources of data, as well as the research design and procedures. In the last part of the chapter I discussed issues of warranting in qualitative research and, more specifically, in discourse analysis.

In the fourth chapter I presented the findings of the study. In the first part of the chapter I illustrated the findings related to discursive texts, and, in particular, the use of humor and specialist talk, as well as the discursive functions of the opening posts. In the second part of the chapter I presented findings related to interactive

artifacts and in the third and final part I focused on findings related to constructive practices.

In this chapter I will discuss the findings and present the conclusions, implications, and recommendations for researchers and practitioners. To conclude the chapter and the study, I will introduce a visual model that represents and conceptualizes interest-driven learning and creativity.

Discussion and Conclusions

This study is focused on a limited number of threads and post retrieved from one of many sections of a discussion forum, therefore the claims put forward in this part of the work need to be considered by the reader as tentative and situated. The examples and direct quotations provided in Chapter 4 are intended to allow the reader to formulate personal hypotheses and interpretations that may be in line or in disagreement with those put forth by the researcher.

In the previous chapter I distinctively presented the findings of discursive texts, interactive artifacts, and constructive practices. In this chapter, I will weave these dimensions together, in order to show how their rich discursive work socially constructs a dynamic and multifaceted environment for interest-driven learning and creativity. I will do so by discussing the findings in thematic sections that problematize the relationship between formal and informal learning environments.

I will start by discussing the findings related to the use of humor ("Humor and its functions"), the use of insider's jargon ("Specialist language"), and the importance of the first post of each thread ("The discursive functions of the opening posts"). I will then consider the social construction of participatory literacy ("A social-iterative approach to learning and creativity"), the negotiation of effort for learning and creativity ("The discursive construction of effort"), and the role of self-appreciation in a public space ("Fostering assertiveness through self-appreciation").

After that, I will discuss the social implementation of artifacts and skills in a community of attentive participants ("Listener's competence and learning"), the joint construction of a supportive and collegial space ("Togetherness and reciprocal trust"), and a collaborative approach to creativity that blends together different sources of inspiration ("Shared references and intertextuality"). I will conclude the discussion by considering findings that represent the community as a social space for disclosure and goal-setting ("Planning and reflectivity"), the different modes of participation through artifacts ("Multimodality") and practices ("Social implementation").

In the next section, I will start the discussion by looking at the discursive functions of humor.

Humor and its functions. The findings of this study show that humor is a socially constructed and negotiated practice that is extensively used in the analyzed participatory space and performs

important discursive functions achieved through different actions and techniques (e.g., lexical selections or extreme case formulations). Humor is used as a discursive *instrument of cohesion* between participants and helps in building a stronger learning community through sympathetic responses that engender a positive climate and encourage reciprocal support and collaboration.

The findings also show that humorous posts work as a *participatory nexus* between users. In fact, on the one hand, humorous statements seem to be posted to *attract* comments. On the other hand, users *look for* such humorous statements as occasions to join the discussion. In this sense, we can consider the use of humor as a *discursive icebreaker*. Again, these practices contribute to spreading a positive mood in the community, thus engendering a sociable atmosphere that promotes openness, collegiality, and trust between participants.

The social construction of humor is strictly connected to the use of *specialist language*, which contributes to the development of a *discourse between insiders* that strengthens the relationships between participants in a continuous social-constructive process of meaning-making and community-building. In fact, throughout the analysis, in many circumstances, it would have been impossible to trace humor without a specialist knowledge of the interest worlds of gaming and game design, and, more specifically, of *LittleBigPlanet* and its creative and social tools. In this context, S. J. Tracy (2010) argues:

> Learning a culture's basic vocabulary and grammar skills is one thing, and understanding its tacit jokes and idioms is an entirely more difficult feat. Hidden assumptions and meanings guide individuals' actions whether or not participants explicitly say so. (p. 843)

To understand such "tacit jokes" and "hidden assumptions and meanings" the researcher needs to become an insider, which echoes a need for a new methodological stance that should be enlightened by insightful ethnographic overtones, which is an approach put forward by scholars such as Lammers et al. (2012).

In conclusion, the findings of the study show that humor is a socially constructed endeavor that is enacted to perform strategic discursive actions. It contributes to creating a positive atmosphere, it engenders supportive bonds and strengthens the cohesion of the participatory space as a whole, which, in turn, fosters an open and collegial approach to learning and creativity. This is often achieved through a knowledgeable use of specialist language, which I will discuss in the following section.

Specialist language. The complexity of the artifacts and techniques necessary to create the interactive artifacts shared in the community is reflected by a massive and natural use of specialist language (Halliday & Matthiessen, 2004; Hayes & Lee, 2012) influenced by jargon derived from gaming and game design (e.g., mechanics, builds, versions) and, more specifically, from

LittleBigPlanet. The endeavors enacted through the use of specialist language lead to the construction of *specialist participation*, which requires the understanding and use of a "design grammar" (Gee, 2007b) that goes beyond the acquisition of a sophisticated vocabulary. In fact, in order to become *specialist participants* (i.e., *insiders*) users need to develop a deep understanding of artifacts, tools, and affordances (e.g., the possibilities and limits of the game level editor in *LittleBigPlanet*), internal and external cultural references (e.g., user-generated game levels, commercial digital games, or movies), and social practices carried out through written and unwritten rules of participation. This reflects a constructivist and social-constructivist approach to learning, as participants actively *construct* their knowledge, rather than just acquiring it (Bredo, 1997; Bruning et al., 2004; Geary, 1995; Greeno, 1989) in a social environment that stimulates interactions between experts and novices (Jonassen & Land, 2000; Lave & Wenger, 1991; Vygotsky, 1978).

The findings show that users learn the specialist language of the participatory space not because "they have been told to," as frequently happens in formal educational settings, but rather because they want to achieve situated goals (e.g., improving a feature of a game level), which reflects the framework of situated cognition theory (Anderson et al., 1996; Cobb & Bowers, 1999; Kirshner & Whitson, 1997; Seely Brown et al., 1989; Suchman, 1987). Through specialist language users learn from each other as apprentices (Lave, 1996; Rogoff, 1995), negotiate their identities, and position themselves as

newbies, knowledgeable participants, or experts in specific areas or occasions (Lave & Wenger, 1991; Lemke, 1997). This approach contrasts with traditional learning environments in which there is only one expert (i.e., the teacher/instructor) and leadership cannot be negotiated. In this context, the findings of this study confirm previous research and theoretical assumptions on communities of practice (Lave & Wenger, 1991) and affinities spaces (Duncan, 2012; Gee, 2004). In fact, on the one hand, participants move toward expertise through legitimate peripheral participation and, on the other hand, such expertise is constantly shared and negotiated in the community as participants interact and build on each other's work.

In order to be recognized as insiders, users strive to construct a *specialist identity* by using specialist language and specialist skills, which contributes to building the identity of the community as a whole. However, talking and behaving like an insider is a hard and delicate work that takes time and an attentive participation in the discourse of the community (Jonassen & Land, 2000). In fact, users seem to "walk on eggshells" when they present their game levels to the community, as shown by the findings on the opening post as a "request for absolution," which is enacted by users to gain acceptance and recognition not exclusively on the basis of their skills as game designers, but also for their effort, passion, and engagement as active participants of the community. In this context, the opening post emerged as a very important part of the social construction of learning and creativity, as I will discuss in the following section.

The discursive functions of the opening posts. Online discussion forums are intended to be platforms for social interactions and the first bits of the asynchronous conversations in which users present their work play an important role, as they set the stage for the discussion. In this context, one of the most interesting findings of this study unfolded from the analysis of the first posts of the threads in which users presented their creations. In fact, in the investigated participatory space, the opening post performs specific discursive functions: it is a creative presentation of contents, a self-reflective disclosure on practices, and a passionate call for participation. These three dimensions are respectively expressed by artifact-oriented, creator-oriented, and player-oriented discursive actions that reflect specific discursive themes: game features, gameplay, comparison, effort, self-appreciation, experience, invitation to play, invitation to comment, and request for absolution. In the following sections I will integrate and contextualize these themes in sections that discuss the findings in relation to learning and creativity in formal and informal learning environments.

In the next section I will show how the discourse on game features and gameplay helps the participants to create personalized opportunities for learning as they develop participatory literacy skills.

A social-iterative approach to learning and creativity. The findings of this study show that presenting a user-generated game level through its title and features is a complex endeavor that requires insider's knowledge of specialist language, technical affordances of

the game (*LittleBigPlanet*, and in particular the game level editor and the integrated search engine), the online platform (the *PlayStation Network*), and the discussion forum (*LittleBigPlanet Central*, with its structure, search engine, and rules), as well as attention to aesthetic choices, copyright issues, and promotional techniques. In fact, given the amount of game levels published with *LittleBigPlanet* (as of June 2013, more than eight million interactive artifacts), it is important for creators to emerge from the crowd in order to receive more plays, which brings more feedback and, consequently, more personalized opportunities for learning and improvement.

These skills and knowledge entail a *literacy of participation* that is required to successfully participate, learn, and create in an interest-driven social space, and users develop it and apply it through their interactions. In other words, *participating* and *learning to participate* go hand in hand, which reminds of important affordances of digital games in which failure is an opportunity for discovery and a natural part of the learning process, as players learn to beat the game by playing it, not by reading manuals. In fact, learning a design grammar (Gee, 2007b) entails an active immersion in a Discourse in order to get the most of it, as an engaged participant, rather than a distant observer.

In participatory spaces, declarative knowledge ("knowing that") and procedural knowledge ("knowing how"), knowing and doing, are merged (Driscoll, 2005; Lave, 1990; Seely Brown et al., 1989). For example, users create tutorials to help other players in their

creative efforts and through this activity they socially shape the community as a learning environment in which people develop and learn through different routes to participation (Duncan, 2012; Gee, 2004, 2007b), constructing practical skills (e.g., game design techniques), communicational skills (e.g., asking for and giving feedback), and relational skills (e.g., following the written and unwritten rules of the discussion forum).

In this context, through their interactions, the participants of the investigated community extensively display acts of social construction through activities that reflect features of peer collaboration (Cohen 1994; Edelson et al., 1996; Webb, 1995), peer tutoring (Strain et al., 1981), reciprocal teaching (Palincsar & A. L. Brown, 1984), and cooperative learning (Slavin, 1995).

In the opening post, creators generally present their game levels with a brief description of their features and their gameplay (what players should do in order to beat them), which is consistent with the way people learn to beat digital games (i.e., by playing them, rather than by reading instruction manuals). When participants provide specific descriptions and indications, they do so to attract players and set the stage for the gaming experience they try to convey. In this context, publishing a user-generated game level, naming it, and posting a description on the discussion forum are all creative endeavors. In fact, I do not consider the presentation of a "completed" game level as a step that comes *after* the creative process, but rather as a critical step *of* this process, which reflects the iterative nature of new

literacies practices (see also the section titled "New literacies, Discourses, and interest worlds" in Chapter 1 and the section titled "Social Creativity in the Digital Age" in Chapter 2). In fact, in most new literacies practices creations are never done "once for good" (as opposed to, for example, "traditional" books and movies) and the moment in which they are presented to an audience represents an important stage in the creative process.

The findings demonstrate that the users in the participatory space show a confident and natural approach to such vision of creativity, for example by presenting different versions of their creations. On the other hand, formal educational settings do not seem to value (let alone formally evaluate) *uncompleted* or *continuously improvable* works. Modern technologies allow for tracking different versions of an artifact or a text (e.g., Wikipedia), but the educational system and the scholarly world seem to adhere to a *paper model* (and *mode*) that relies and values finished products. In fact, I feel very bad that I will not be able to correct, modify, or update this dissertation once it is published online. What should we do to change this *paper mindset* in education, academia, and research?

The discursive construction of effort. The practices considered in this study, such as playing, creating, and critiquing game levels, require hard work and engagement. In this context, the participants discursively construct and negotiate the meaning and the value of effort by expressing it, recognizing it, and valuing it.

By emphasizing effort, participants enact specific discursive functions, such as inviting other users to play their creations (a lot of work has been put into them) or positioning themselves as novices or experts (it was hard or easy to create a "cool" game level).

On the other hand, recognizing effort means acknowledging the work of creators and sustaining a positive attitude toward learning as a means to achieving progressive results that are valued and encouraged by a knowledgeable and supportive community. In fact, from the findings emerges that effort is a critical component of learning and creativity. By expressing it, recognizing it, and valuing it participants create a space in which hard work is rewarded and appreciated. This entices experienced and inexperienced creators to put a lot of effort in their work, advancing their knowledge and skills, in order to create well-designed game levels.

The ways in which participants make evident and recognize effort in an interest-driven informal space engender a reflection on the evaluation (and valuing) of effort in formal learning environments (such as schools), or, rather, the lack of it. In fact, formal educational systems usually rely on assessments directed to the evaluation of alleged *results* of effort, rather than effort itself. On the other hand, in the analyzed participatory space effort is widely expressed and appreciated as a valuable component of learning, creativity, and participation.

Fostering assertiveness through self-appreciation. Effort is counterbalanced by statements of self-appreciation that are

discursively constructed to acknowledge the results of hard work and to set milestones for future achievements. Self-appreciation (not to be confused with "bragging") stands as a heartfelt expression of motivation and commitment in a public space.

This brings forth questions about the space for self-appreciation that students have in formal educational environments and the function it may have in increasing students' engagement and participation. Furthermore, if we consider *complacence* and *satisfaction* as self-directed, reflexive, and inner categories, *self-appreciation* is a situated discursive category constructed through interaction in a social environment. In this context, participatory spaces are non-judgmental environments that foster self-expression and self-appreciation, which can lead to the development of *assertiveness*, which is the ability to express thoughts and emotions openly with a sympathetic stance toward others, being open to criticism without compromising self-esteem.

An environment that values and promotes assertiveness, on the one side can lessen stress and anxiety, and on the other can prevent anger and aggressiveness. These themes are beyond my present scholarly knowledge and field of inquiry. Nevertheless, I hope that the findings of this study related to the use of self-appreciation in participatory spaces will foster a reflection on these important matters that are critical for the well-being and development of individuals and society.

As a counterpart of a learner who expresses effort, self-appreciation, and assertiveness, I envision an attentive and competent listener, able to catch, value, and develop such qualities, as I will discuss in the following section.

Listener's competence and learning. Creators use the opening posts as tools for inviting other users to play their game levels and to comment on them. These posts communicate a genuine *urge for participation*, enacted by users to enter into the discourse of the community by sharing their creations. This also reflects an *enthusiasm of implementation* (i.e., seeing the result of one's effort) and *social implementation* (i.e., sharing the artifact with the community) that are discursively built in a competent environment that values effort and appreciates its results.

In this context, I think that *listener's competence* is a crucial factor for learning, because knowing learners' interests and interest worlds means having the cultural and interpretive tools to appreciate what they do and value, which can foster the foundation of common ground on which students and teachers can build reciprocal understanding. In fact, listener's competence can boost learners' enthusiasm of implementation, which reflects enthusiasm for learning and creativity.

If we assume that in a participatory space interests are the primary drive for learning and creativity, their social dimension can level up personal and social expectations by stimulating participants to push forward their knowledge and skills. To do so, creators need to

advance not only their *instrumental knowledge* (i.e., game design skills) but also their *participatory literacy* (i.e., knowing the interest world, the expectations of the community, and the rules to put in circulation their creations and find a competent and interested audience), which reflects the complexity and richness of the social practices carried out in participatory spaces.

An important part of this participatory literacy is learning to construct a sociable and supportive stance that entails a participatory ethos of togetherness and reciprocal trust, as I will discuss in the following section.

Togetherness and reciprocal trust. The findings of this study demonstrate that learning, creating, and interacting in a participatory space are intertwined activities (Orr, 1996; Seely Brown & Duguid, 2000; Wenger, 1998) that build on each other and contribute to the development of each participant and of the community as a whole. In fact, findings show that participants convey a deep sense of *community* and *togetherness*, a social-constructive attitude that embodies "new literacies" and "Web 2.0" practices, such as participatory democracy, crowdsourcing, and wisdom of crowds. These participatory practices are community-directed and potentially benefit all the users, which reflects principles of collective intelligence (Lévy, 1997), distributed knowledge (Hoadley & Pea, 2002; Pea, 1994; L. B. Resnick, 1987), participatory cultures (Jenkins, 2006; Jenkins et al., 2009), and social creativity (Fischer, 2004, 2005; John-Steiner, 2000). These practices also reflect a social-constructivist

framework of learning (Bruner, 1984; Jonassen & Land, 2000; Ratner et al., 2002; Rohrbeck et al., 2003; Vygotsky, 1978) and a *new ethos* of participation (Lankshear & Knobel, 2007). This important element of new literacies practices is expressed in the community through *openness*, *generosity*, and *reciprocal trust*. In fact, participants learn and create together in a social dimension supported by technologies (Connery et al., 2010; Hutchins, 1995; Fischer, 2004, 2005; Fischer et al., 2005; John-Steiner, 2000; Sawyer & DeZutter, 2009; Seitz, 2003) and driven by their passion for gaming and game design with *LittleBigPlanet*.

This sense of togetherness is not an abstract embellishment of the community, but rather the engine of constructive practices in which participants link and build on each other's work drawing on common references, as I will discuss in the next section.

Shared references and intertextuality. Intertextual references (Barthes, 1977; Kress, 2011; Kristeva 1986; Lankshear & Knobel, 2007; Marsh & Millard, 2000) are an important component of the practices enacted in the investigated participatory space. Not only users compare their game levels to those of other creators, but they also *build on each other's work* and on external cultural references such as popular digital games, comics, and movies. Through these practices users communicate their passions, reveal their sources of inspiration, and build a common ground for interaction.

Some of the user-generated game levels shared in the participatory space end up forming a *canon* of exemplary interactive

artifacts and enter the specialist language of the community. As shared reference points, everyone in the community knows, or should know these game levels, in order to be considered an insider.

By connecting their work to other creations, participants express and value *intertextual originality* through creative efforts that combine different sources of inspiration into a single artifact. Practices such as remixing (Lankshear & Knobel, 2007), in which parts of different works are combined together in order to produce new creations, are encouraged and valued in the community. For example, some users build discrete virtual components that can be used in different game levels, rather than producing complete game levels, which reflects a social and cooperative approach to creativity. By learning the grammar, language, and rules of these practices (Gee, 2007b, 2010) participants develop an open and flexible mindset that allows them to connect, rearrange, and elaborate a multitude of sources, which facilitates a multimodal, intertextual, and interdisciplinary approach to learning and creativity and, more broadly, to the world. In fact, participatory spaces also function as organizational devices that foster the development of planning skills and reflectivity, as I will illustrate in the following section.

Planning and reflectivity. The findings of this study reveal that participants use the social space as an instrument for *planning* and *reflectivity*, sharing their thoughts on the creative process, on their experience/inexperience, and on their future goals. In this context, *community feedback* fosters *reflectivity* and *reflexivity*, which, in a

social environment, become *disclosure* and *reciprocality*. This reflects the qualities of affinity spaces as open and non-judgmental environments. In fact, reflectivity in a participatory space is *fostered by* and *shared with* other users that have the experience and knowledge (the specialist language and design grammar) to understand and value the artifacts as well as the practices enacted to construct them.

By stating their intentions for future game levels, users publically commit their effort through implicit *informal contracts*. In this sense, participatory spaces are both *goal-setting* and *motivational* environments in which users socially construct and negotiate their learning and creative objectives relying on the feedback and expertise of the community for present and future projects. This reflects the situatedness, planning, and goal-orientedness of practices directed to the production of concrete artifacts that are shared in a competent, responsive, and supportive social space. In fact, users abundantly show self-motivation, dedication, purposiveness, enthusiasm, and self-investment in practices that entail different skills and modes, as I will discuss in the next section.

Multimodality. The analysis of participants' orientations to game levels through categories derived from studio critique (Santoro, 2013) generated some interesting findings. First of all, *multimodality* emerges as one of the leading modes to socially construct knowledge and share information in the participatory space. In fact, participants use combinations of words, pictures, external links, videos, and game

tutorials. The use of these multimodal tools carries different functions. For example, it helps users to make informed decisions on playing or skipping a game level. It also reflects participants' orientation to prefer visual forms of representation.

This engenders questions related to the opportunities students have in formal educational environments to learn from visual and interactive aids and, more importantly, to create them for other students. In fact, the educational system seems to prefer spoken and written forms of leaning, expression, and evaluation, while the world outside of school heavily relies on visual and multimodal forms of interaction and communication, that are broadly used and valued in the investigated participatory space. These multimodal practices reflect the creative step of implementation, in which ideas are transformed into concrete artifacts that are shared in a social space, which I will discuss in the following section.

Social implementation. The findings of the study demonstrate that the creative steps of design and problem solving (acceptance, analysis, definition, ideation, idea selection, implementation, and evaluation) are constantly in motion and socially constructed by participants in a non-linear and iterative way. This indicates, once again, the peculiarity of new literacies practices that involve creating, sharing, critiquing, improving, and remixing artifacts that are never "done for good" (like classic books or movies), but rather evolve together with their creators' skills and with the demands of an attentive audience of specialists. In this sense, the creative step of

implementation (giving form to ideas and translating dreams into realities) can be better understood as *social implementation*. In fact, by sharing their user-generated game levels with other players, participants bring these creations to life.

The analysis of the posts also revealed an interesting *internetworked dimension* of learning and creativity. In fact, some users work on their creations with siblings (in the same room) as well as with other people online (on the *PlayStation Network* and the discussion forum). These "internetworked settings" can connect the physical and the virtual, the local and the global (Hunter, 2002), bringing together known and unknown contributors through synchronous and asynchronous forms of interaction that expand the opportunities and modes for social learning and creativity.

After discussing the findings of the study, in the next section I will present some final thoughts. After that, I will discuss the implications and recommendation for researchers and practitioners.

Final Thoughts

The findings of this study contribute to the development of what I define as a *literacy of participation* that looks at discourses, artifacts, and practices constructed, shared, and negotiated in a situated informal social environment (Lave, 1988; McLellan, 1993; L. B. Resnick, 1987; Seely Brown et al., 1989). In this framework, the discursive features and functions enacted in the investigated participatory space, through discursive texts, interactive artifacts, and

constructive practices, can be interpreted as building blocks of interest-driven learning and creativity. Through these building blocks users actively explore and make sense of their interests and passions in a social environment made up of competent users (Bruning et al., 2004; Geary, 1995; Gee, 2007b; Jenkins et al., 2009).

This study situates participatory spaces as social platforms for problem solving (Bruner, 1986; Hannafin et al., 1997) and discovery learning (Bruner, 1961; Collins & Stevens, 1983; Hmelo-Silver, 2004; Kirschner et al., 2006) in which users search, manipulate, and explore texts, tools, and media in order to construct specialist knowledge, language, and skills. Important discursive themes, features, and functions discussed in previous sections demonstrate the complexity, situatedness, and goal-orientedness of the investigated texts, artifacts, and practices.

The findings of this study also show that the endeavors socially constructed and negotiated in the participatory space carry a great deal of value for the participants, which connects to the assumptions and research problems of this study, in particular the overlooking of interests and interest worlds. In fact, interests such as digital games are frequently considered by parents and teachers as a "waste of time" rather than a "platform for learning and creativity." Some even fear them, considering them dangerously absorbing technologies that disconnect people from "reality," rather than considering their potential as engaging platforms for learning and creativity. In this context, as a reflection to what I consider as a misrepresentation, I

would like to quote a brief passage from a speech given by Will Wright (2009), the creator of popular video games such as *The Sims*, *SimCity*, and *Spore*:

> I read a passage a while back and it was really interesting. There was a guy walking into a room. And there was somebody sitting in the far corner immersed in this device. And he was so into this thing, you know. He couldn't imagine – he didn't even notice him walk in the room, but somehow his entire attention was just placed into this thing. And he felt really threatened by it, of course. What kind of demonic technology has got someone so absorbed in this thing? In fact, it was a passage written in the 15th century. And it was the first time he had seen somebody reading a book. And it was a monk in the corner. And so even back then, the idea that something, some format of media can absorb somebody's attention and suck them in to that level, can be seen as threatening. But it also is in some sense an indication of the power of that.

By investigating informal learning environments that entail people's interests such as gaming and game design we can move forward our knowledge on tools, practices, and experiences that are not only meaningful for their participants, but that also carry a great potential for the development and advancement of individuals and societies. In the following part of the chapter I will present implications and recommendations for researchers and practitioners, as *discursive tools* based on *discursive findings*.

Implications and Recommendations

Implications and recommendations for researchers. In this study I proposed a *hybrid intertextual methodology* to investigate multimodal texts (that also include artifacts and practices) in their complexity and relationships. Such multimodal texts are the result of a semiotic work (Kress, 2011) that takes place in a situated Discourse (Gee, 2010) through the use of specialist language (Hayes & Lee, 2012) and design grammar (Gee, 2007b). In particular, in the investigated participatory space users design, share, and critique interactive artifacts (user-generated game levels created in *LittleBigPlanet*). An artifact represents a situated "selection, transformation, and encapsulation" of knowledge (Kress, 2011, p. 211), or, in other words, it is a *sign of learning* (Kress et al., 2001). It is therefore important to analyze and make sense of artifacts in relation to the written texts about them that also consider the practices enacted to create them, which reflects the methodology of this study. If we think of the "representational affordances of specific modes" (Kress, 2011, p. 211), in the framework of this study we need to consider such affordances in the context of game design. How can learners and creators select, transform, and encapsulate knowledge by creating game levels as signs of learning? For example, if we ask a student to *speak* ("tell me!") about the planets in the Solar System, the student will use the affordances of *speech*, while if we ask the student to *draw* it on the blackboard ("show me!"), he/she will use another *mode* with another set of affordances (*drawing*). What if we ask a

student or a group of students to create a game level about the planets in the Solar System ("let me interact with it!")? In this case, we should consider the affordances of *gaming* and *game design*, as I have illustrated in the last sections of Chapter 2, looking at digital games as participatory platforms in the interconnected dimensions of *play*, *design*, and *participation*. The act of *shaping* a specific *sign* (such as a game level) is an act of augmenting and creating *new knowledge* in *a new way* (Kress, 2011). In other words, it is an act of learning. In this context, the findings of this study can inform researchers and empower practitioners with important *tools of recognition and interpretation* of the semiotic work enacted by the participants of the investigated social space. This semiotic work is based on principles of interest, selection, decision, transformation, and representation (Kress, 2011) enacted through specific *affordances* (those of the level editor in *LittleBigPlanet*), in a specific *mode* (*game design*), in a social-constructive environment enabled by a participatory platform (*LittleBigPlanet* and the *PlayStation Network*) and performed in a situated participatory space (the *LittleBigPlanet Central* online community).

The acquisition of tools of *recognition* and *interpretation* (of texts, artifacts, and practices that embody learners' semiotic work in a social-constructive context) allows researchers and practitioners "to use the learner's principles to lead her or him to the meanings of the culture: not via imposed power but via the road of the learner's principles" (Kress, 2011, p. 216). From this perspective, in this study I

approached the object of the research from a participant-centered methodology, in order to understand how people learn and create "in the wild" (Hutchins, 1995), focusing on what participants do and how they orient themselves to what they do. This approach is different to that of researcher-centered studies that look for "signs of learning" by applying categories derived from research in formal educational settings (Duncan, 2012; Friesen & Hug, 2011; Lamerichs & te Molder, 2003; Lester & Paulus, 2011).

The findings of this study confirm that the practices enacted in an informal learning environment are often different from those carried out in formal settings, which reflects the literature on learning in affinity spaces and supports the selection of a participant-centered approach. In this context Duncan (2012) argues:

> It may be beneficial to address the many ways player [*sic.*] wish to, say, become game designers not necessarily as a career goal, not for the proximal goal of developing a "skill," but perhaps because of their desire to be involved with *games for games' sake*. If affinity space research is to continue to blossom, I suggest that the goals of the educational researcher must be further reconciled with the goals of participants within affinity spaces, taking into account practices that participants undertake within them, the constraints that guide how participants shape and reshape them, and, ultimately, the goals that drive participants to devote themselves to such engagements. (pp. 81-82)

In other words, if we investigate informal social environments looking for supposed (and expected) "educational footprints," we may be missing the learning and creativity that spur from the informal interactions that animate these spaces. To put it metaphorically, if we want to learn more about the life of panthers in their natural environment, we need to set aside what we have learned about them by observing their behavior in a zoo. Consequently, the questions "what can we learn from a participatory space for education?" or "what are the educational implications of the study?" sound like ill-posed questions. Maybe, they could be rephrased as "what can we learn from participatory spaces to *rethink* what we know of learning?" or, more broadly, "how do participatory spaces *challenge* our assumptions about learning and education?"

To answer these questions and advance our understanding of learning and creativity in informal learning environments, the hybrid intertextual methodology proposed in this study helped me to look into the semiotic work enacted by the users of the participatory space from a systemic perspective, considering their discourses, artifacts, and practices. In fact, without a practical and applied knowledge of the preset and user-generated game levels discussed online, it would have been impossible to understand and interpret the specialist language and the endeavors of the community.

Specialist language can be considered a *meaning-making* and c*ontext-structuring* tool (Hayes & Lee, 2012) that is socially constructed by participants through multimodal and intertextual

practices. In this context, the findings support my definition of affinity spaces as *multimodal hubs* and *intertextual gateways* to participation, learning, and creativity.

By cross-referencing texts, artifacts, and practices, I was able to construct an insider's knowledge and a design grammar that helped me to approach the object of inquiry from an informed, multimodal, and intertextual stance. As remarked above, texts, artifacts, and practices are dynamically intertwined and socially constructed building blocks of learning and creativity. In fact, the actions that take place in the participatory space are simultaneously directed to artifacts (e.g., improving game levels), practices (e.g., learning new techniques), and participation (e.g., sharing comments and reflections), which confirms the need for a methodology that considers these multimodal and intertextual endeavors from a systemic and holistic perspective.

The hybrid intertextual methodology proposed in this study (and described in detail in Chapter 3), by looking at artifact-oriented and practice-oriented categories derived from studio critique (Santoro, 2013) and design process analysis (Koberg & Bagnall, 1991), supported the discourse analysis of socially constructed themes, features, and functions that embody learning and creativity in an informal environment. By reflecting on the idiosyncrasies and similarities between these findings and formal educational practices researchers can draw inspiration for new studies on learning and creativity that arise in interest-driven spaces. Furthermore, the

methodology, research procedures, and findings of this study confirm the need for a new approach to social endeavors that engender a massive use of multimodal and intertextual practices, as urged by scholars in the field of affinity space research (Duncan, 2012; Lammers et al., 2012).

The complexity of the investigated community suggests that more research is needed in other interest worlds and participatory spaces, in order to see how text, artifacts, and practices are socially constructed and negotiated in different contexts. It would be particularly interesting to look into communities that hold "explicit" educational goals. Knowing important variables such as age and country of origin would also benefit future research in this field.

The findings of this study lead to conclusions that may be very important for practitioners, as the users of the investigated participatory space met important learning goals "in the wild." In the next section I will propose recommendations for practitioners, based on the findings of this study, trying to bridge formal and informal approaches to learning that can benefit both students and teachers.

Of course, not all of my recommendations are new, as many teachers use some of the proposed approaches. The findings of this study support these practices as important components of a safe, open, and engaging learning environment. In this context, one of the most interesting findings of this study relates to how participants enact social-constructive practices without teacher's authority, accepting responsibility for determining when a project is ready to be shared

with others, encouraging peers to give them feedback, and critically reviewing comments in order to improve artifacts, practices, and the community as a whole. In other words, users learn without the need for school-testing of fact-based knowledge and without a teacher in charge, which reflects the openness, situatedness, and goal-orientedness of the investigated participatory space.

Implications and recommendations for practitioners. In this part of the chapter I propose my recommendations for practitioners (e.g., teachers, educators, professors). I do so by presenting a series of reflections "to think with," trying to bring together the findings on the informal practices investigated in this study and established educational practices enacted in formal settings. In this sense, the recommendations put forward in this section are not *prescriptive*, but rather *constructive*, as they are intended to build upon both the findings of this study and the experience, creativity, and sensitivity of practitioners. Hopefully, such reflections will be used as building blocks to construct bridges between formal and informal learning environments, and, more broadly, between generations of teachers, learners, and creators that value and help to develop each other's interests and passions.

First of all, I would recommend that practitioners look for opportunities to *use humor* and *let the students use humor* as an instrument of cohesion to engender a sociable climate and build a strong and safe learning community. To apply the findings of this study, practitioners, on the one hand, may create humorous "baits" to

invite students into discussion and, on the other hand, they may look for students' humorous statements to build on them and create a positive atmosphere that prompts dialogue and participation. In other words, practitioners may *structure* and *capture* opportunities for humor as a *participatory nexus* and a *discursive icebreaker* with students and among students. Furthermore, practitioners could use humor as an "entrance door" to students' specialist languages (this study shows that humor and specialist language are tightly connected) and, consequently, to their interest worlds. In order to do so, practitioners need a stance of openness, curiosity, and respect that can allow them to create discursive links with their students by approaching their *insiders' knowledge*, which fosters the social (and sociable) construction of common ground for an open educational discourse. I want to stress the point that practitioners' interest toward students' interests needs to be *sincere*, not just instrumental. In other words, practitioners should be willing to learn *about* and *from* their students, starting from their interests and passions.

In this context, I would encourage practitioners to look for more information about their students' interests in their free time (outside of school, for example, on the Internet) and, most importantly, in the classroom, through their students' guidance (which may involve the entire class) letting them be the *experts*. The ability to share with students an authority assigned by a social role (e.g., being a teacher) could foster a goal-oriented learning environment in which roles and goals are defined by *situated interests* and *situated*

competence (to be negotiated with and among students) rather than by one-way teacher-imposed learning objectives. In this context, I would encourage practitioners to provide more space for peer feedback (which appears to be as important as teacher feedback) and less teacher authority over learning and assessment of learning.

This study also suggests that students use specialist language with confidence to achieve their goals and construct a *literacy of participation*. Specialist language is a key element of academic learning and encouraging students to use it when they work on situated goals can enhance their ability to construct and use domain-specific terminology and grammar as a natural part of the learning process, rather than a list of difficult terms disconnected from the real world. In this context, designing and sharing in the classroom user-generated digital games (for example, with software such as *LittleBigPlanet* or *Scratch*) can lead to engaging activities in which students build *microworlds* or *simulations* related to any disciplinary field. These endeavors can help students develop specialist language and content knowledge applied to situated and "hands-on" projects, while they also learn to collaborate and create digital artifacts, thus linking together declarative and procedural knowledge, knowing and doing, as well as curricular activities and new literacies practices.

Practitioners can also expand the breadth of such activities by connecting them to *virtual environments*, such as online discussion forums, creating constructive connections between their students and external participants on the Internet, thus merging the local and global

as well as the physical and the virtual, which reflects a number of real-life situations in which people solve problems, pursue shared interests, or achieve common goals in an "augmented space."

The analysis of the opening posts of the threads revealed its articulated discursive functions in which multimodality and intertextuality emerged as important components of social interactions, learning, and creativity. I would then recommend that practitioners find opportunities for students to present their works in creative ways, looking not only at the content of the presented works, but also at their *modes* (e.g., texts, graphics, pictures, videos, interactive artifacts) and at their *intertextual references*, which can help students to construct an interdisciplinary stance and link inside-of-school and outside-of-school practices and learning.

Given the extensive use of visual forms of communication (such as videos and pictures) in the analyzed participatory space, I would encourage practitioners to include them in their regular teaching and assessing practices, as complements or alternatives to traditional methods, which may allow students to orient themselves to forms of learning and expression that reflect their personal attitudes. In addition, by sharing different modes, students can learn from each other new ways of creating, presenting, and representing ideas and content.

The nature of digital games and the findings of this study on how people learn and create in a participatory space suggest that failure should be a natural part of the learning process, rather than

something “bad” that happens and needs to be graded and eventually “repaired.” In other words, I would encourage practitioners to rethink failure and construct learning activities around a safe “failure space” that fosters exploration and discovery.

Another recommendation for practitioners is related to how they consider and value creativity. The findings of this study show that creativity is embedded in the analyzed texts, artifacts, and practices on different levels. For example, participants find creative ways to name and present their game levels in order to attract players and get feedback from them.

By encouraging and valuing creativity across disciplines and practices, practitioners can spur creative thinking and the ability to approach problems from different angles. Furthermore, new literacies practices entail different forms of creativity, such as mash-ups and remixing (combining different texts and references into new creations), that need to be considered in their *intertextual originality* as dynamic artifacts that can always be improved (through an iterative creative process) and combined with other cultural references and forms of expression.

In this context, I would suggest practitioners to find new ways to value and evaluate “works in progress” (and different versions of these works), rather than just looking at finished and “unchangeable” products, encouraging students to build on each other’s work in social and technology-enhanced settings (that allow for multimodal collaboration and tracking of different versions or “builds”), rather

than demonizing "copying" and developing curricula bound to individual forms of assessment.

The findings of this study show that participants gain acceptance and recognition not only because they are skilled game designers, but also because they demonstrate and value effort, passion, and active participation. In fact, one of the most interesting findings relates to the discursive construction of effort enacted by the users in the participatory space. In this context, I would recommend that practitioners look for new ways to recognize, value, and evaluate the effort of their students (not only the "results" of effort). Through this approach, practitioners could go beneath and beyond the surface of products, thus unveiling processes and *modi operandi* that could benefit the entire learning community (students and teachers). Furthermore, by recognizing students' effort, and by encouraging students to recognize each other's effort, practitioners may foster the construction of a learning space in which merit is based not only on results, but also on the effort necessary to achieve them. This can also be achieved by allowing students to express *self-appreciation*, letting them publicly acknowledge commitment and effort, which may help them to set future goals through affirmative statements, thus increasing their engagement, participation, and assertiveness. From this perspective, I would encourage practitioners to foster non-judgmental and open learning environments in which it is safe to express and value effort through self-appreciation.

The texts, artifacts, and practices analyzed in this study would have been emptied of most of their meaning if they had been enacted and shared in an unknowledgeable or inattentive space. This study shows that one of the strongest drives for learning and creativity is the possibility to share one's work in a competent environment in order to receive specialist feedback and appreciation. From this standpoint, I would encourage practitioners to be genuinely curious and respectful about their students' interests and interest worlds in order to discursively build with them a fertile ground for cultural, educational, and creative endeavors.

In fact, practitioners who know, understand, and value the interests and interest worlds of their students can empower them just by being an attentive and knowledgeable audience that can help them to express and develop their passions in a critical and reflective way. Furthermore, as a way of negotiating leadership and authority, I would encourage practitioners to share *their own interests* with students, to nurture an authentic sense of community and togetherness, discursively building a learning environment based on reciprocal trust, openness, and generosity.

To conclude this study, in the next section I will introduce a visual model that graphically represents and conceptualizes interest-driven learning and creativity.

Interest-Driven Learning and Creativity: A Visual Model

In the investigated participatory space, interest-driven learning and creativity emerge as tightly intertwined phenomena that need to be considered from a holistic perspective. In fact, I argue that it is impracticable, if even possible, to distill one from another. I also conjecture that this consideration can be extended to other interest-driven environments in which people create, share, and critique artifacts.

In a social space, learning and creativity become the core of a multidimensional experience that is discursively constructed by participants on different yet interconnected dimensions and levels. I tried to represent this idea through a comprehensive visual model. This model is based on the review of the literature and the findings presented in this study. I shaped this model through literally hundreds of different "builds" and versions. Therefore, in the spirit of this study, it should not be considered as the "ultimate" and "unchangeable" version, but rather as the most recent and refined one.

I would like to conclude this study by briefly discussing this model by re-constructing it for the reader through a series of progressive steps (called "builds"), in order to illustrate its main components and their symmetrical interplay. I hope that this explanation will help the reader to better understand the dynamic tensions between important components that structure interest-driven learning and creativity. From a social-constructivist and interpretivist perspective, I leave it to the reader to draw personal interpretations

and understandings, connecting the model to personal knowledge and experience. I also encourage the reader to think of its potential applications in different settings.

The construction of this model was inspired by the belief that learning and creativity are intertwined and mutually supporting endeavors. The model is informed by theories of learning such as situated cognition, constructivism, and social constructivism, as well as studies related to informal learning environments (L. B. Resnick, 1987), communities of practice (Lave & Wenger, 1991), and social creativity (John-Steiner, 2000). The model also draws inspiration from studies on digital games in education (Squire, 2011) and research on affinity spaces (Gee, 2004; Gee & Hayes, 2010; Hayes & Duncan, 2012) dedicated to *shared interests* (e.g., digital games) and *shared practices* (e.g., designing digital games) that can be interpreted in the frameworks of *knowledge cultures* (Lévy, 1997) and *participatory cultures* (Jenkins, 2006; Jenkins et al., 2009) that value and stimulate the social and distributed construction of artifacts and meanings. The model visually represents the generative power and comprehensive reach of interests as powerful and multidimensional drives for learning and creativity.

Interest-driven learning and interest-driven creativity are considered as a single construct that is placed in the middle (*core*) of the model (Figure 12, build 1 of 7). The model spurs from the core on two axes that represent its different *dimensions*: personal/social and conceptual/concrete.

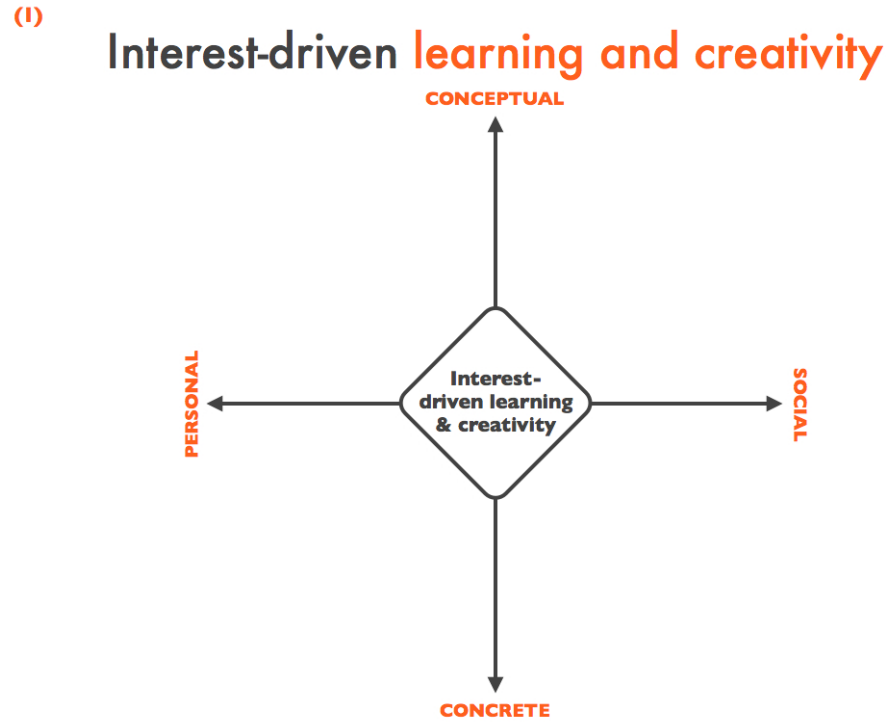


Figure 12. Interest-driven learning and creativity. The core and its four dimensions: personal, social, conceptual, and concrete (build 1 of 7).

The principal components of the model (Fig. 13, build 2 of 7) are (1) the individual (*be*), (2) the artifact (*make*), (3) the group (*interact*), and (4) the environment (*implement*). In order to better understand the interplay between these components, I provide a situated example in the broad interest world of music. An individual who writes a song (i.e., *makes* an artifact) *is* a musician who creates for others inspired by others (*interacts* with a group) and shares the

song (i.e., *implements* the artifact) in a social/cultural environment. In other words, the song (artifact) is *made* by an individual (he/she *is* a musician) who *interacts*, directly or indirectly, with others (group), and is *implemented* (conceived, released, and reproduced) in a situated environment. A group of people can be an association, a consortium, a gathering, or, more generally, a cluster of individuals that share or have in common one or more elements that represent their "situated togetherness."

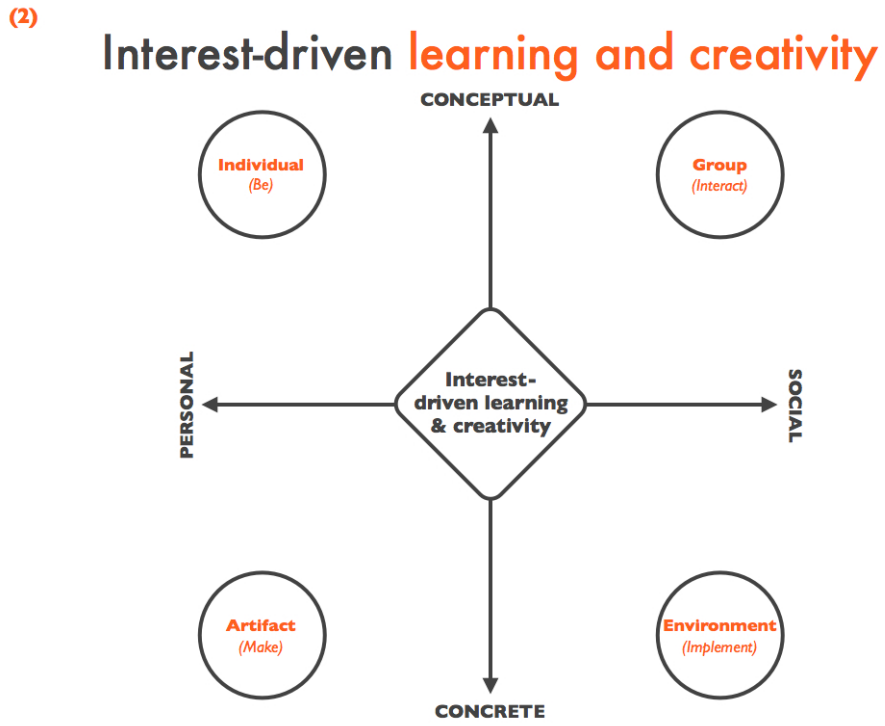


Figure 13. Interest-driven learning and creativity. The four principal components: individual, group, artifact, and environment (build 2 of 7).

An environment can be a classroom, a discussion forum, a bar, or, more broadly, the society, intended as a culturally receptive and productive domain. In this context, communities of practice, affinity spaces, and participatory spaces can be considered as both groups and environments, or as combinations of the two.

Interests are important for both the development and the expression of the self (Fig. 14, build 3 of 7). They are enacted through experience (on a personal level) and discourse (on a social level).

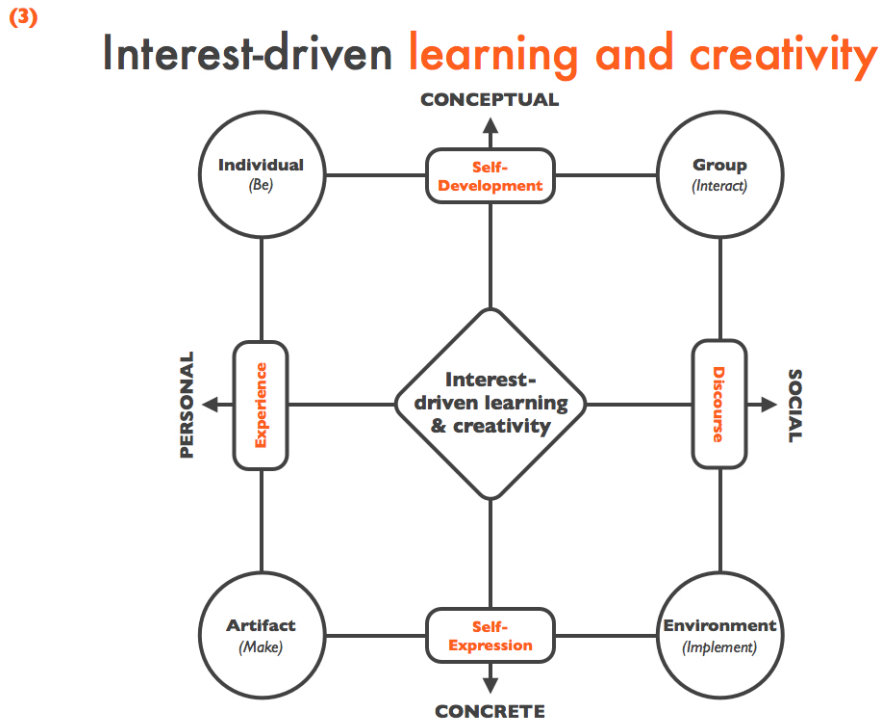


Figure 14. Interest-driven learning and creativity. Experience, discourse, self-development, and self-expression (build 3 of 7).

For example, a musician, by composing songs (experience), by listening to other songs and by sharing ideas with others (discourse), by learning, creating, and interacting, expresses him/herself and develops as a person and as a musician.

Self-development is achieved on a personal level (*becoming*) and on a social level (*belonging*), while self-expression is achieved by *constructing* and *sharing* artifacts, such as texts, objects, and media (Fig. 15, build 4 of 7).

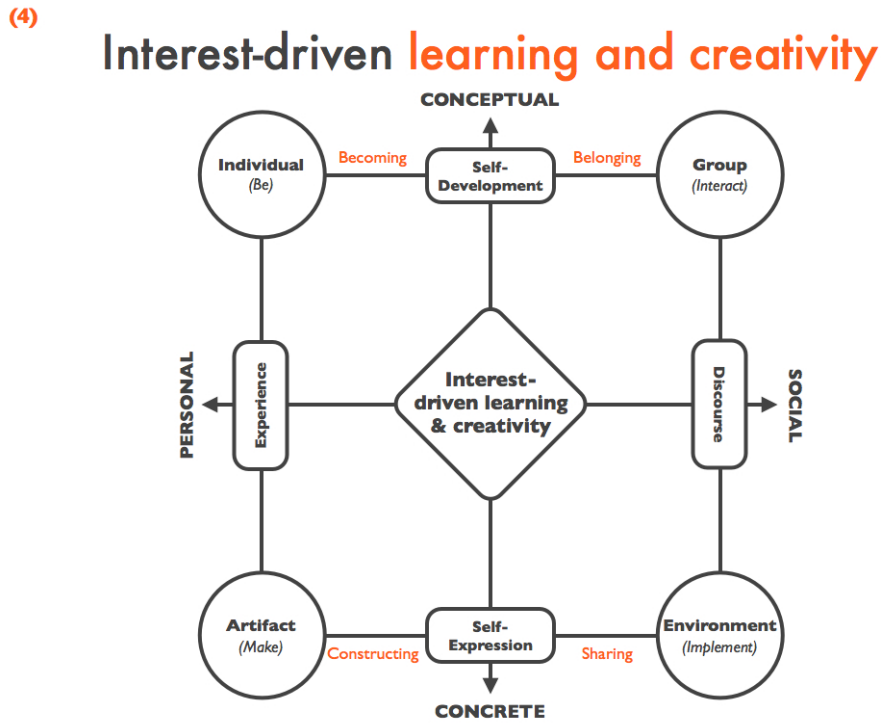


Figure 15. Interest-driven learning and creativity. Becoming, belonging, constructing, and sharing (build 4 of 7).

By looking at the model we can see how these components are mirrored: *becoming* (personal/conceptual) and *constructing* (personal/concrete); as well as *belonging* (social/conceptual) and *sharing* (social/concrete).

Reflexivity (on a conceptual level) and competence (on a concrete level) are important dimensions of experience that support each other. In other words, the development of competence for practical tasks can inform reflexive practices, which, in turn, can help to achieve a higher level of competence. On a social level, reflexivity becomes reciprocality, as multiple "selves" interact with each another in a reciprocal discourse, and competence becomes influence (Fig. 16, build 5 of 7). In fact, when we bring our competence into a social discourse, we influence others through our artifacts, ideas, and practices. At the same time, we are influenced by others' experiences and contributions.

When we start thinking of our interests as building blocks of ourselves and of the world we live in, personal *awareness* is reflected by social *responsibility*. Furthermore, our *initiative* to construct artifacts becomes *involvement* as we share them in a social environment.

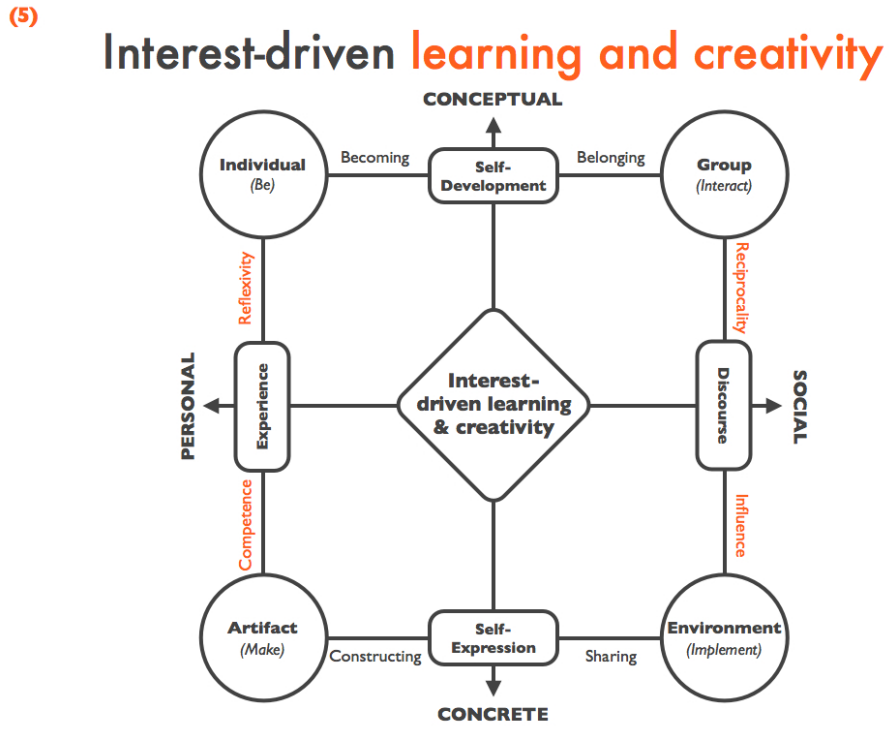


Figure 16. Interest-driven learning and creativity. Reflexivity, reciprocality, competence, and influence (build 5 of 7).

These components are visually placed near the core of the model (Fig. 17, build 6 of 7), as they denote a deep, aware, and proactive understanding of our interests and the drive to share them with others by participating in a social discourse (for example, in a participatory space).

From this model emerge four main dimensions of interest-driven learning and creativity: identity (*evolve*), relationship (*socialize*), ownership (*personalize*), and participation (*contribute*).

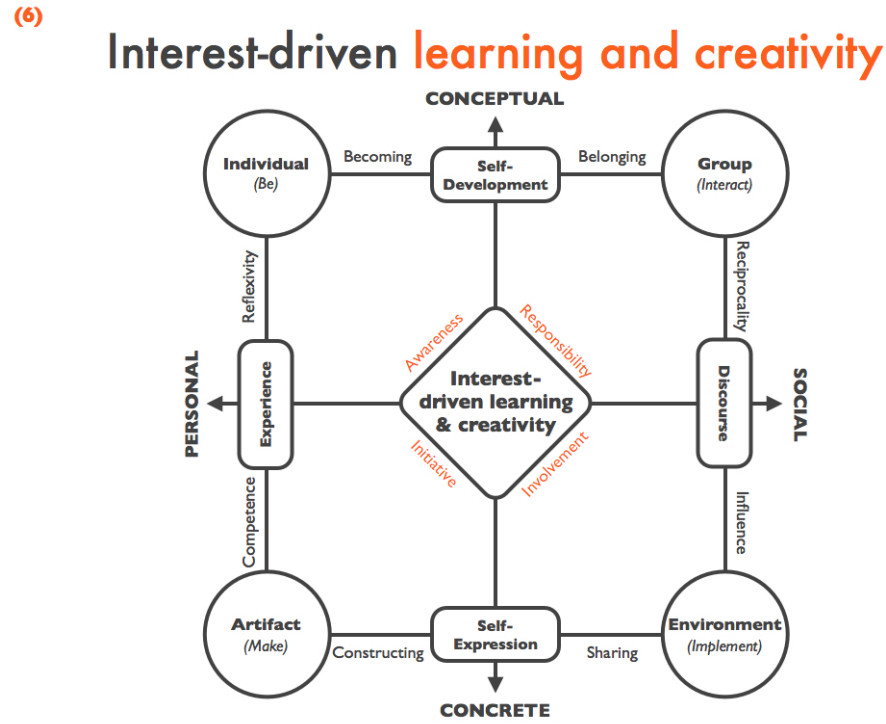


Figure 17. Interest-driven learning and creativity. Awareness, responsibility, initiative, and involvement (build 6 of 7).

These situated dimensions are interrelated and inform each other (Fig. 18, build 7 of 7). In conclusion, they represent the richness, worthiness, and complexity of interests as powerful drives for learning and creativity.

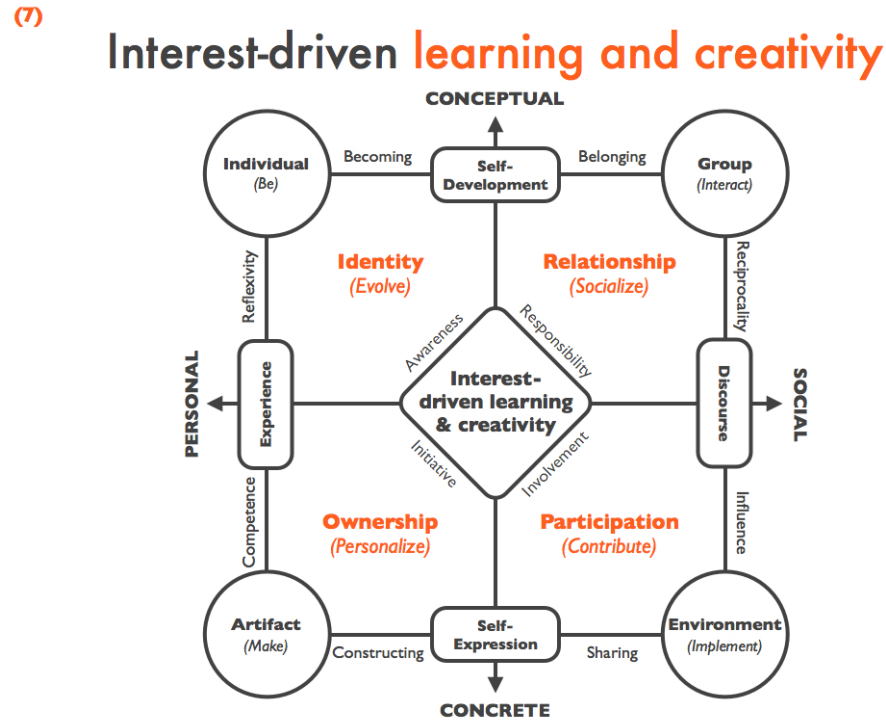


Figure 18. Interest-driven learning and creativity. Identity, relationship, ownership, and participation (build 7 of 7).

List of References

Abt, C. C. (1970). *Serious games*. New York, NY: Viking Press.

Ackermann, E. (2001). *Piaget's Constructivism, Papert's Constructionism: What's the difference?* Retrieved from http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf

Amabile, T. M. (1983). Social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45*(2), 357-376.

American Psychological Association (1997). *Learner-centered psychological principles: A framework for school reform & redesign*. Retrieved from http://www.apa.org/ed/governance/bea/learner-centered.pdf

Anderson, J. R., Reder, L. M., & Simon, H. A. (1996). Situated learning and education. *Educational Researcher, 25*(4), 5-11.

Androutsopoulos, J. (2008). Potentials and limitations of discourse-centered online ethnography. *Language@Internet, 5*, Retrieved from http://www.languageatinternet.org/articles/2008/1610

Angen, M. J. (2000). Evaluating interpretive inquiry: Reviewing the validity debate and opening the dialogue. *Qualitative Health Research, 10*(3), 378-395.

Antaki, C., Billig, M. G., Edwards, D., & Potter, J. A. (2003). Discourse analysis means doing analysis: A critique of six analytic shortcomings. *Discourse Analysis Online, 1*. Retrieved from

http://www.shu.ac.uk/daol/articles/v1/n1/a1/antaki2002002-paper.html

Armstrong, D. (2002). *A new history of identity: A sociology of medical knowledge*. Basingstoke, UK: Palgrave.

Atkinson, P. A., & Coffey, A. (1997). Analyzing documentary realities. In D. Silverman (Ed.), *Qualitative research: Theory, method, and practice* (pp. 45-62). London, UK: Sage.

Attoe, W. (1978). *Architecture and Critical Imagination*. New York, NY: John Wiley & Sons.

Augé, M. (1995). *Non-places: Introduction to an anthropology of supermodernity*. London, UK: Verso.

Bakhtin, M. M. (1981). *The dialogic imagination: Four essays*. Austin, TX: University of Texas Press.

Bandura, A. (1969). *Principles of behavior modification*. New York, NY: Holt, Rinehart, & Winston.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). *Social foundation of thought and action: A social cognitive theory*. New York, NY: Lieber-Atherton.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.

Barab, S. A., Dodge, T., Ingram-Goble, A., Pettyjohn, P., Peppler, K., Volk, C., & Solomou, M. (2010). Pedagogical dramas and transformational play: Narratively rich games for learning. *Mind, Culture, and Activity, 17*(3), 235-264.

Barthes, R. (1977). *Image, Music, Text*. London, UK: Fontana Press.

Baym, N. K. (2007). The new shape of online community: The example of Swedish independent music fandom. *First Monday, 12*(8). Retrieved from http://people.ku.edu/~nbaym/2007BaymFirstMonday.pdf

Bazerman, C. (1997). Discursively structured activities. *Mind, Culture, and Activity, 4*(4), 296-308.

Bender, T., & Kruger, S. M. (1982). *Community and social change in America*. Baltimore, MD: Johns Hopkins University Press.

Bennahum, D. (1998). *Extra life: Coming of age in cyberspace*. New York, NY: Basic Books.

Bennett, S. J., Maton, K. A., & Kervin, L. K. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology, 39*(5), 775-786.

Black, R. W. (2007). Fanfiction writing and the construction of space. *E-Learning and Digital Media, 4*(4), 384-397.

Black, R. W. (2008). *Adolescents and online fan fiction*. New York, NY: Peter Lang.

Bochner, A. (2000). Criteria against ourselves. *Qualitative Inquiry, 6*(2),266-272.

Bonk, C. J., & Dennen, V. P. (2005). Massive multiplayer online gaming: A research framework for military training and education. *Advanced Distributed Learning*. Retrieved from http://www.dtic.mil/cgi-

bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA431271

Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher, 35*(6), 3-15.

Bredo, E. (1997). The social construction of learning. In G. Phye (Ed.), *Handbook of academic learning: The construction of knowledge* (pp. 3-45). New York, NY: Academic Press.

Bredo, E. (2006). Conceptual confusion and educational psychology. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (2nd ed., pp. 43-57). Mahwah, NJ: Lawrence Erlbaum Associates.

Broudy, H. S., Smith, B. O., & Burnett, J. R. (1964). *Democracy and excellence in American secondary education*. Chicago, IL: Rand McNally.

Brown, A. L., Ash, D., Rutherford, M., Nakagawa, K., Gordon, A., & Campione, J. C. (1993). Distributed expertise in the classroom. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (pp. 188-288). New York, NY: Cambridge University Press.

Brown, A. L., & Campione, J. C. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 229-270). Cambridge, MA: MIT Press.

Brown, R., & Renshaw, P. (2006). Positioning students as actors and authors: A chronotopic analysis of collaborative learning activities. *Mind, Culture, and Activity, 13*(3), 247-259.

Bruner, J. S. (1961). The act of discovery. *Harvard Educational Review, 31*(1), 21-32.

Bruner, J. S. (1973). *The relevance of education*. New York, NY: Norton.

Bruner, J. S. (1984). Vygotsky's zone of proximal development: The hidden agenda. In B. Rogoff & J. V. Wertsch (Eds.), *Children's learning in the "zone of proximal development"* (pp. 93-97). San Francisco, CA: Jossey-Bass.

Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Bruning, R. H., Schraw, G. J., Norby, M. M., & Ronning, R. R. (2004). *Cognitive psychology and instruction* (4th ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.

Bullock, A., Stallybrass, O., & Trombley, S. (Eds.). (1988). *The Fontana dictionary of modern thought* (2nd ed.). London, UK: Fontana.

Bullough, R. V. (2006). Developing interdisciplinary researchers: What ever happened to the humanities in education? *Educational Researcher, 30*(3), 13-21.

Burck, C. (2005). Comparing qualitative research methodologies for systemic research: The use of grounded theory, discourse

analysis and narrative analysis. *Journal of Family Therapy, 27*(3), 237-262.

Buster, K., & Crawford, P. (2007). *The Critique Handbook*. Upper Saddle River, NJ: Pearson Prentice Hall.

Caillois, R. (1961). *Man, play and games*. New York, NY: The Free Press.

Carbonaro, M., Cutumisu, M., Gillis, S., Onuczko, C., Schaeffer, J., Schumacher, A., Siegel, J., Szafron, D., & Waugh, K. (2006). Adapting a commercial role-playing game for educational computer game production, *Conference Proceedings, GameOn North America, Monterey, CA*, 54-61.

Cazden, C. (1981). Performance before competence: Assistance to child discourse in the zone of proximal development. *Quarterly Newsletter of the Laboratory of Comparative Human Cognition 3*(1), 5-8.

Clancey, W. J. (1997). *Situated cognition: On human knowledge and computer representations*. New York, NY: Cambridge University Press.

Cobb, P. (1994). Where is the mind? Constructivist and socio-constructivist perspectives on mathematical development. *Educational Researcher, 23*(7), 13-20.

Cobb, P., & Bowers, J. (1999). Cognitive and situated learning perspectives in theory and practice. *Educational Researcher, 28*(2), 4-15.

Cohen, E. G. (1994) Restructuring the classroom: Conditions for productive small groups. *Review of Educational Research, 64*(1), 1-35.

Coiro, J., Knobel, M., Lankshear, C., & Leu, D. J. (Eds.). (2008). *Handbook of research on new literacies*. Mahwah, NJ: Lawrence Erlbaum.

Cole, P. (1992). Constructivism revisited: A search for common ground. *Educational Technology, 33*(2), 27-34.

Collins, A., & Stevens, A. L. (1983). A cognitive theory in inquiry teaching. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: An overview of their current status* (pp. 247-278). Hillsdale, NJ: Lawrence Erlbaum Associates.

Connery, M. C., John-Steiner, V. P., & Marjanovic-Shane, A. (Eds.). (2010). *Vygotsky and creativity: A cultural-historical approach to play, meaning making, and the arts*. New York, NY: Peter Lang.

Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology, 88*(4), 715- 730.

Crawford, C. (1984). *The art of computer game design. Reflections of a master game designer*. New York, NY: McGraw-Hill.

Crawford, C. (2005). *Chris Crawford on interactive storytelling*. Berkeley, CA: New Riders Games.

Crecente, B. (2009) *Maria Montessori: The 138-year-old inspiration behind spore*. Interview with Will Wright on Kotàku.com. Retrieved from http://kotaku.com/maria-montessori

Cropley, A. J. (2011). Definitions of creativity. In M. A. Runco & S. R. Pritzker (Eds.), *The encyclopedia of creativity* (2nd ed., pp. 358-368). Oxford, UK: Elsevier.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.

Dadds, M. (2008). Empathetic validity in practitioner research. *Educational Action Research, 16*(2), 279-290.

Daer, A. J. (2010). This is how we do it: A glimpse at GameLab's design process. *E-learning and Digital Media, 7*(1), 108-119.

Darracott, J. (1991). *Art criticism: A user's guide*. London, UK: Bellew Pub.

Davidson, A. L., & Schofield, J. W. (2002). Female voices in virtual reality: Drawing young girls into an online world. In K. A. Renninger & W. Shumar (Eds.), *Building virtual communities: Learning and change in cyberspace* (pp. 34-59). New York, NY: Cambridge University Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.

de Freitas, S. (2006). *Learning in immersive worlds*. Bristol, UK: Bristol Joint Information Systems Committee. Retrieved from

http://www.jisc.ac.uk/media/documents/programmes/elearninginnovation/gamingreport_v3.pdf

Dempsey, J. V., Haynes. L. L., Lucassen, B. A., & Casey, M. S. (2002). Forty simple computer games and what they could mean to educators. *Simulation and Gaming, 33*(2), 157-168.

Denzin, N. K. (2008). The new paradigm dialogs and qualitative inquiry. *International Journal of Qualitative Studies in Education, 21*(4), 315-325.

Derry, S. J. (1996). Cognitive schema theory in the constructivist debate. *Educational Psychologist, 31*(3-4), 163-174.

Dewey, J. (1897). My pedagogic creed. *The School Journal, 54*(3), 77-80.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillan.

Dewey, J. (1980). *Art as Experience* (23rd ed.). New York, NY: The Berkley Publishing Group. (Original work published 1934).

Dierking, L. D., & Falk, J. H. (2003). Optimizing out-of-school time: The role of free-choice learning. *New Directions for Youth Development, 2003*(97), 75-88.

diSessa, A. A. (2000). *Changing minds: Computers, learning, and literacy*. Cambridge, MA: MIT Press.

Driscoll, M. (2005). *Psychology of learning for instruction* (3rd ed.). Boston, MA: Pearson.

Druckman, D. (1995). The educational effectiveness of interactive games. In D. Crookall & K. Arai (Eds.), *Simulation and*

gaming across disciplines and cultures: ISAGA at a watershed (pp. 178-187). Thousand Oaks, CA: Sage.

Duffy, T. M., & Cunningham, D. J. (1996). Constructivism: Implications for the design and delivery of instruction. In D. H. Jonassen (Eds.), *Handbook of research for educational communications and technology* (pp. 170-198). New York, NY: Simon & Shuster Macmillan.

Duncan, S. C. (2010). Gamers as designers: A framework for investigating design in gaming affinity spaces. *E-Learning and Digital Media, 7*(1), 21-34.

Duncan, S. C. (2012). Kongregating online: Developing design literacies in a play-based affinity space. In E. R. Hayes & S. C. Duncan (Eds.), *Learning in video game affinity spaces* (pp. 51-83). New York, NY: Peter Lang.

Duncan, S. C., & Hayes, E. R. (2012). Expanding the affinity space: An introduction. In E. R. Hayes & S. C. Duncan (Eds.), *Learning in video game affinity spaces* (pp. 1-22). New York, NY: Peter Lang.

Durga, S. (2012) Learning to mod in an affinity-based modding community. In E. R., Hayes & S. C Duncan (Eds.), *Learning in video game affinity spaces* (pp. 84-102). New York, NY: Peter Lang.

Edelson, D. C., Pea, R. D., & Gomez, L. (1996). Constructivism in the collaboratory. In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 151-

164). Englewood Cliffs, NJ: Educational Technology Publications.

Edwards, D. (1994). Script formulations: A study of event descriptions in conversation. *Journal of Language and Social Psychology, 13*(3), 211-247.

Edwards, D. (1995). Two to tango: Script formulations, dispositions, and rhetorical symmetry in relationship troubles talk. *Research on Language and Social Interaction, 28*(4), 319-350.

Edwards, D. (1997). *Discourse and cognition*. London, UK: Sage.

Edwards, D. (2000). Extreme case formulations: Softeners, investment, and doing nonliteral. *Research on Language and Social Interaction, 33*(4), 347-373.

Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York, NY: Macmillan.

Ellcessor, E., & Duncan, S. C. (2011). Forming The Guild: Star power and rethinking projective identity in affinity spaces. *International Journal of Game-Based Learning (IJGBL)*, *1*(2), 82-95.

Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal. *Journal of Science Education and Technology, 16*(2), 171-190.

Fairclough, N. (1992). *Discourse and social change*. Cambridge, UK: Polity Press.

Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research*. London, UK: Routledge.

Feldman, D. H., & Goldsmith, L. T. (1986). Transgenerational influences on the development of early prodigious behavior: A case study approach. In W. Fowler (Ed.), *Early experience and the development of competence: New directions for child development* (pp. 67-85). San Francisco, CA: Jossey-Bass.

Ferri, P. (2011). *Nativi digitali*. Milan, Italy: Bruno Mondadori.

Fischer, G. (2004). Social creativity: Turning barriers into opportunities for collaborative design. In F. De Cindio, & D. Schuler (Eds.), *Proceedings of the Participatory Design Conference (PDC'04), University of Toronto, Canada, July 27-31* (pp. 152-161). Retrieved from http://l3d.cs.colorado.edu/~gerhard/papers/pd04-final-submit.pdf

Fischer, G. (2005). Social creativity: Making all voices heard. In *Proceedings of the HCI International Conference (HCII), Las Vegas, July 2005*. Retrieved from http://l3d.cs.colorado.edu/~gerhard/papers/social-creativity-hcii-2005.pdf

Fischer, G., Giaccardi, E., Eden, H., Sugimoto, M., & Ye, Y. (2005). Beyond binary choices: Integrating individual and social creativity. *International Journal of Human-Computer Studies, 63*(4-5), 482-512.

Flyvbjerg, B. (2001). *Making social science matter: Why social inquiry fails and how it can succeed again*. New York, NY: Cambridge University Press.

Frederick, C. M., & Ryan, R. M. (1995). Self-determination in sport: A review using cognitive evaluation theory. *International Journal of Sport Psychology, 26*(1), 5-23.

Freire, P. (2005). *Pedagogy of the oppressed*. New York, NY: Continuum International Publishing Group.

Friesen, N., & Hug, T. (2011). Investigating web 2.0 in education: A discursive paradigm for research. Kognition und Technologie im kooperativen Lernen: Vom Wissenstransfer zur Knowledge Creation (Hanna Risku & Markus F. Peschl, Eds.). Vienna: Vienna University Press. Retrieved online: http://learningspaces.org/ papers/Learning_with_web2.0.pdf

Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1997). Peer-assisted learning strategies: Making classrooms more responsive to diversity. *American Educational Research Journal, 34*(1), 174.

Gadamer, H. -G. (1989). *Truth and method* (D. G. Marshall, Trans.) (2nd ed.). London, UK: Sheed & Ward.

Gaggioli A., Riva G., Milani L., & Mazzoni, E. (2013). *Networked flow: Towards an understanding of creative networks*. New York, NY: Springer.

Galegher, J., & Kraut, R. E. (1990). Technology for intellectual teamwork: Perspectives on research and design. In J. Galegher, R. E. Kraut, & C. Egido (Eds.), *Intellectual Teamwork* (pp. 1-20). Hillsdale, NJ: Lawrence Erlbaum Associates.

Games, I. A. (2010): Gamestar Mechanic: Learning a designer mindset through communicational competence with the language of games. *Learning, Media and Technology, 35*(1), 31-52.

Gao, F., Wang, C. X., & Sun, Y. (2009). A new model of productive online discussion and its implication for research and discussion. *The Journal of Educational Technology Development and Exchange, 2*(1), 65-78.

Gao, F., Zhang, T., & Franklin, T. (2013). Designing asynchronous online discussion environments: Recent progress and possible future directions. *British Journal of Educational Technology, 44*(3), 469-483.

Gardner, H. (1993). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi.* New York, NY: Basic Books.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *Internet and Higher Education, 2*(2-3), 87-105.

Geary, D. C. (1995). Reflections of evolution and culture in children's cognition: Implications for mathematical development and instruction. *American Psychologist, 50*(1), 24-37.

Gee, J. P. (2004). *Situated language and learning: A critique of traditional schooling*. New York, NY: Routledge.

Gee J. P. (2005). Semiotic social spaces and affinity spaces: From *The Age of Mythology* to today's schools. In D. Barton and K.

Tusting (Eds.) *Beyond communities of practice: Language power and social context*. Cambridge, UK: Cambridge University Press.

Gee, J. P. (2007a). *Good video games + good learning: Collected essays on video games, learning, and literacy*. New York, NY: Peter Lang.

Gee, J. P. (2007b). *What video games have to teach us about learning and literacy* (2nd ed.). New York, NY: Palgrave Macmillan.

Gee, J. P. (2010). *An introduction to discourse analysis: Theory and method* (3rd ed.). New York, NY: Routledge.

Gee, J. P. (2012). Afterword. In E. R. Hayes & S. C. Duncan (Eds.), *Learning in video game affinity spaces* (pp. 235-41). New York, NY: Peter Lang.

Gee, J. P., & Hayes, E. R. (2010). *Women and gaming: The Sims and 21st century learning*. New York, NY: Palgrave Macmillan.

Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (pp. 67-82). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston, MA: Houghton-Mifflin.

Ginsburg-Block, M. D., Rohrbeck, C. A., & Fantuzzo, J. W. (2006). A meta-analytic review of social, self-concept, and behavioral outcomes of peer-assisted learning. *Journal of Educational Psychology, 98*, 732-749.

Goodman, S. (2008). The generalizability of discursive research. *Qualitative Research in Psychology, 5*(4), 265-275.

Graham, E. M. (2003). *Studio design critique: Student and faculty expectations and reality.* Unpublished Master's thesis. Retrieved from http://etd.lsu.edu

Gredler, M. E. (1996). Educational games and simulations: A technology in search of a research paradigm. In D. H. Jonassen (Ed.), *Handbook of research on educational communications and technology* (pp. 521-540). New York, NY: Simon & Schuster Macmillan.

Greeno, J. G. (1989). A perspective on thinking. *American Psychologist, 44*(2), 131-141.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 191-216). Thousand Oaks, CA: Sage.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5*(9), 444-454.

Gunawardena, C., Lowe, C. A., & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 397-431.

Hall, S. (1993). Encoding, decoding. In S. During (Ed.), *The cultural studies reader* (pp. 90-103). London, UK: Routledge.

Halliday, M. A. K., & Matthiessen, C. M. I. M. (2004). *An introduction to functional grammar* (3rd ed.). London, UK: Hodder Arnold.

Hannafin, M. J., Hannafin, K. M., Land, S. M., & Oliver, K. (1997). Grounded practice and the design of constructivist learning environments. *Educational Technology Research and Development, 45*(3), 101-117.

Harel, I., & Papert, S. (Eds.). (1991). *Constructionism*. Norwood, NJ: Ablex Publishing Corporation.

Haslam, S. A., & McGarty, C. (2003). *Research methods and statistics in psychology*. Thousand Oaks, CA: Sage.

Hayes, E. R., & Duncan, S. C. (Eds.). (2012). *Learning in video game affinity spaces*. New York, NY: Peter Lang.

Hayes, E., & Games, I. A. (2008). Making computer games and design thinking: A review of current software and strategies. *Games and Culture, 3*(1), 309-332.

Hayes, E. R., & Lee, Y. N (2012). Specialist language acquisition and trajectories of IT learning in a *Sims* fan site. In E. R., Hayes & S. C Duncan (Eds.), *Learning in video game affinity spaces* (pp. 186-211). New York, NY: Peter Lang.

Haythornthwaite, C. (2002). Building social networks via computer networks: Creating and sustaining distributed learning communities. In K. A. Renninger & W. Shumar (Eds.), *Building virtual communities: Learning and change in*

cyberspace (pp. 159-209). Cambridge, UK: Cambridge University Press.

Henri, F. (1992). Computer conferencing and content analysis. In A. R. Kaye (Ed.), *Collaborative learning through computer conferencing: The Najaden Papers* (pp. 115-136). New York, NY: Springer.

Hirst, E. W. (2004). Diverse social contexts of a second-language classroom and the construction of identity. In K. M. Leander & M. Sheehy (Eds.), *Spatializing literacy research and practice* (pp. 39-65). New York, NY: Peter Lang.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review, 16*(3), 235-266.

Hoadley, C., & Pea, R. (2002). Finding the ties that bind: Tools in support of a knowledge-building community. In K. A. Renninger & W. Shumar (Eds.), *Building virtual communities: Learning and change in cyberspace* (pp. 321-354). New York, NY: Cambridge University Press.

Holt, J. (1981). *Teach your own: A hopeful path for education*. New York, NY: Delacorte.

Howe, N., & Strauss, W. (2000). *Millennials rising: The next great generation*. New York, NY: Vintage.

Huizinga, J. (1949). *Homo ludens: A study of the play element in culture*. London, UK: Routledge & Kegan Paul. (First published in 1938).

Hunter, B. (2002). Learning in the virtual community depends upon changes in local communities. In K. A. Renninger & W. Shumar (Eds.), *Building virtual communities: Learning and change in cyberspace* (pp. 96-126). Cambridge, UK: Cambridge University Press.

Hutchins, E. (1995). *Cognition in the wild*. Cambridge, MA: The MIT Press.

Illich, I. (1971). *Deschooling society*. New York, NY: Harper & Row.

Ito, M., Baumer, S., Bittanti, M., boyd, d., Cody, R., Herr-Stephenson, B., Horst, H. A., Lange, P. G., Mahendran, D., Martínez, K. Z., Pascoe, C. J., Perkel, D., Robinson, L., Sims, C., & Tripp, L. (2010). *Hanging out, messing around and geeking out: Kids living and learning with new media*. Cambridge, MA: MIT Press.

Jackson, P. W. (1968). *Life in classrooms*. New York, NY: Holt, Rinehart, & Winston.

Jenkins, H. (2006). *Convergence culture*. New York, NY: New York University Press.

Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century*. Cambridge, MA: MIT Press.

John-Steiner, V. (2000). *Creative collaboration*. Oxford, UK: Oxford University Press.

Jonassen, D. H., & Land S. M. (2000). *Theoretical foundations of learning environments*. Mahwah, NJ: Lawrence Erlbaum Associates.

Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning to solve problems with technology: A constructivist perspective* (2nd ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Juul, J. (2003). *The game, the player, the world: Looking for a heart of gameness*. Keynote presented at the Level Up conference, Utrecht, November 4-6, 2003. Retrieved from http://www.jesperjuul.net/text/gameplayerworld

Kafai, Y. B. (1995). *Minds in play: Computer game design as a context for children's learning*. Mahwah, NJ: Lawrence Erlbaum Associates.

Kafai, Y. B. (2006). Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and Culture, 1*(1), 36-40.

Kafai, Y. B., & Resnick, M. (Eds.). (1996). *Constructionism in practice*, New York, NY: Laurence Erlbaum Associates.

Karpov, Y. V., & Haywood, H. C. (1998). Two ways to elaborate Vygotsky's concept of mediation: Implications for instruction. *American Psychologist, 53*(1), 27-36.

Kirschner, F., Paas, F., & Kirschner, P. A. (2009). A cognitive load approach to collaborative learning: United brains for complex tasks. *Educational Psychology Review, 21*(1), 31-42.

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*(2), 75-86.

Kirshner, D., & Whitson, J. A., (Eds.). (1997). *Situated cognition: Social, semiotic, and psychological perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.

Klahr, D., & Simon, H. A. (1999). Studies of scientific discovery: Complementary approaches and convergent findings. *Psychological Bulletin, 125*(5), 524-543.

Klawe, M. M. (1994). The educational potential of electronic games and the E-GEMS Project. In T. Ottman & I. Tomek (Eds.), *Proceedings of the ED-MEDIA '94 World Conference on Educational Multimedia and Hypermedia*. Panel titled "Can electronic games make a positive contribution to the learning of mathematics and science in the intermediate classroom?", AACE (Association for the Advancement of Computing in Education), Vancouver, Canada, 25-30 June 1994.

Koberg, D., & Bagnall, J. (1991). *The universal traveler: A soft-systems guide to creativity, problem-solving, & the process of reaching goals*. Menlo Park, CA: Crisp Publications.

Koschmann, T. (1996). Paradigm shifts and instructional technology: An introduction. In T. Koschmann (Ed.), *CSCL: Theory and*

practice of an emerging paradigm (pp. 1-23). Mahwah, NJ: Lawrence Erlbaum Associates.

Kress, G. (2011). Discourse analysis and education: A multimodal social semiotic approach. In R. Rogers (Ed.), *An introduction to critical discourse analysis in education* (2nd ed., pp. 205-226). New York, NY: Routledge.

Kress, G., Jewitt, C., Ogborn, J., & Tsatsarelis, C. (2001). *Multimodal teaching and learning: The rhetorics of the science classroom*. London, UK: Continuum.

Kristeva, J. (1986). *The Kristeva Reader*. Oxford, UK: Blackwell.

Lamerichs, J., & te Molder, H. F. M. (2003). Computer-mediated communication: From a cognitive to a discursive model. *New Media & Society 5*(4), 451-473.

Lammers, J. C. (2012). "Is the Hangout…The Hangout?" Exploring tensions in an online gaming-related fan site. In E. R. Hayes & S. C. Duncan (Eds.), *Learning in video game affinity spaces* (pp. 23-50). New York, NY: Peter Lang.

Lammers, J. C., Curwood, J. S., & Magnifico, A. M. (2012). Toward an affinity space methodology: Considerations for literacy research. *English Teaching: Practice and Critique*, *11*(2), 44-58.

Lankshear, C., & Knobel, M. (2007). *A new literacies sampler*. New York, NY: Peter Lang.

Lankshear, C., & Knobel, M. (2008). *Digital literacies: Concepts, policies and practices*. New York, NY: Peter Lang.

Lankshear, C., & Knobel, M. (2011). *New literacies: Everyday practices and social learning* (3rd ed.). New York, NY: Open University Press.

Lather, P. (1986). Issues of validity in openly ideological research: Between a rock and a soft place. *Interchange, 17*(4), 63-84.

Lather, P. (1993). Fertile obsession: Validity after poststructuralism. *Sociological Quarterly, 34*(4), 673-693.

Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge, UK: Cambridge University Press.

Lave J. (1990) The culture of acquisition and the practice of understanding. In J. W. Stigler, R. A. Shweder., & G. Herdt (Eds.), *Cultural psychology* (pp. 259-86). Cambridge, UK: Cambridge University Press.

Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture, and Activity, 3*(3), 149-164.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.

Leadbeater, C., & Miller, P. (2004). *The Pro-Am revolution: How enthusiasts are changing our economy and society*. London, UK: Demos.

Lemke, J. L. (1997). Cognition, context, and learning: A social semiotic perspective. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological*

perspectives (pp. 37-55). Mahwah, NJ: Lawrence Erlbaum Associates.

Lester, J. N., & Paulus, T. M. (2011). Accountability and public displays of knowing in an undergraduate computer-mediated communication context. *Discourse Studies, 13*(6), 671-686.

Lévy, P. (1997). *Collective intelligence*. New York, NY: Basic Books.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Locke, L. F., Spirduso, W. W., & Silverman, S. J. (2007). *Proposals that work: A guide for planning dissertations and grant proposals* (5th ed.). Thousand Oaks, CA: Sage.

Malaby, T. (2009). *Making virtual worlds:* Linden Lab *and* Second Life. Ithaca, NY: Cornell University Press.

Malone, T. W. (1980). *What makes things fun to learn? A study of intrinsically motivating computer games*. Palo Alto, CA: Xerox.

Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science, 5*(4), 333-369.

Marone, V. (2011). I play, therefore I create: Constructionist video games for empowered communities of learners. In D. Gouscos & M. Meimaris (Eds.), *Proceedings of the 5th European Conference on Games Based Learning. The National and Kapodistrian University of Athens, Greece 20-21 October 2011* (pp. 710-716). Reading, UK: Academic Conferences International Limited.

Marsh, J., & Millard, E. (2000). *Literacy and popular culture: Using children's culture in the classroom*. London, UK: Paul Chapman.

Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. *New Directions for Adult and Continuing Education, 2001*(89), 25-34.

Mayer, R. E. (1992). Cognition and instruction: Their historic meeting within educational psychology. *Journal of Educational Psychology, 84*(4), 405-412.

Mazur, J. (2004). Conversation analysis for educational technologists: Theoretical and methodological issues for researching the structures, processes and meaning of on-line talk. In D. H. Jonassen (Ed.), *Handbook for research in educational communications and technology* (2nd ed., pp. 1073-1098). Mahwah, NJ: Lawrence Erlbaum Associates.

McLellan, H. (1993). Situated learning in focus: Introduction to special issue. *Educational Technology, 3*(3), 5-9.

McLuhan, M. (1962). *The Gutenberg galaxy: The making of typographic man*. Toronto, Canada: University of Toronto Press.

McLuhan, M. (1964). *Understanding media: The extensions of man*. New York, NY: Mentor Books.

McLuhan, M., & Nevitt, B. (1972). *Take today: The executive as dropout*. New York, NY: Harcourt Brace Jovanovich.

Meece, J. L. (2002). *Child and adolescent development for educators* (2nd ed.). New York, NY: McGraw-Hill.

Mercer, N. (2000) *Words and minds: How we use language to think together*. London, UK: Routledge.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Thousand Oaks, CA: Sage.

Minsky, M., & Papert, S. (1971). *Progress report on artificial intelligence*. Retrieved from http://web.media.mit.edu/~minsky/papers/PR1971.html

Moll, L. C. (2001). Through the mediation of others: Vygotskian research on teaching. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed., pp. 11-129). Washington, DC: American Educational Research Association.

Murray, J. (1997). *Hamlet on the Holodeck: The future of narrative in cyberspace*. New York, NY: The Free Press.

Newell, A., Shaw, J., & Simon, H. (1962). The processes of creative thinking. In H. Gruber, G. Terrell, & M. Wertheimer (Eds.), *Contemporary approaches to creative thinking* (pp. 63-119). New York: Atherton Press.

Newman, D. R., Johnson, C., Webb, B., & Cochrane, C. (1997). Evaluating the quality of learning in computer supported co-operative learning. *Journal of the American Society for Information Science, 48*(6), 484-495.

Oblinger, D. G., & Oblinger, J. L. (Eds.). (2005). *Educating the net generation*. Boulder, CO: EDUCAUSE. Retrieved from

http://www.educause.edu/library/resources/educating-net-generation-0

Orr, J. (1996). *Talking about machines: An ethnography of a modern job*. Ithaca, NY: IRL Press.

Osborn, A. F. (1963). *Applied imagination: Principles and procedures of creative problem-solving*. New York, NY Scribner.

Owens, T. (2010). Modding the history of science: Values at play in modder discussions of Sid Meier's Civilization. *Simulation & Gaming, 42*, 481-495.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1*(2), 117-175.

Papert, S. (1981) *Mindstorms: Children, computers, and powerful ideas*. New York, NY: Basic Books.

Papert, S. (1991). Situating constructionism. In I. Harel & S. Papert (Eds.), *Constructionism* (pp. 1-11). Norwood, NJ: Ablex Publishing Corporation.

Papert, S. (1996). *The connected family: Bridging the digital generation gap*. Atlanta, GA: Longstreet Press.

Pea, R. (1992). Augmenting the discourse of learning with computer-based learning environments. In E. De Corte, M. Linn, H. Mandl, & L. Verschaffel (Eds.), *Computer-based learning environments and problem solving* (pp. 313-43). New York, NY: Springer-Verlag.

Pea, R. (1994). Seeing what we build together: Distributed multimedia learning environments for transformative communications. *Journal of the Learning Sciences, 3*(3), 285-299.

Peräkylä, A. (2005). Analyzing talk and text. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 695-727). Thousand Oaks, CA: Sage.

Perkins, D. N. (1991a). Technology meets constructivism: Do they make a marriage? *Educational Technology, 31*(5), 19-23.

Perkins, D. N. (1991b). What constructivism demands of the learner. *Educational Technology, 31*(9), 19-21.

Piantanida, M., & Garman, N. B. (2009). *The qualitative dissertation: A guide for students and faculty* (2nd ed.). Thousand Oaks, CA: Corwin.

Plucker, J., Waitman, G. R., & Hartley, K. A. (2011). Education and creativity. In M. A. Runco & S. R. Pritzker (Eds.), *The encyclopedia of creativity* (2nd ed., pp. 435-440). Oxford, UK: Elsevier.

Polkinghorne, D. E. (1997). Reporting qualitative research as practice. In W. G. Tierney & Y. Lincoln (Eds.), *Representation and the text: Reframing the narrative voice* (pp. 3-21). Albany, NY: SUNY Press.

Pomerantz, A. (1986). Extreme case formulations: A way of legitimizing claims. *Human Studies, 9*(2/3), 219-229.

Poole, S. (2000). *Trigger happy: Videogames and the entertainment revolution*. London, UK: 4th Estate.

Potter, J. (1997). Discourse analysis as a way of analyzing naturally occurring talk. In D. Silverman (Ed.), *Qualitative research: Theory, method and practice* (pp. 144-160). London, UK: Sage.

Potter, J., Edwards, D., & Wetherell, M. (1993). A model of discourse in action. *American Behavioral Scientist, 36*(3), 383-401.

Potter, J., & Wetherell, M. (1987). *Discourse and social psychology: Beyond attitudes and behaviour*. London, UK: Sage.

Prensky, M. (2001). *Digital game-based learning*. New York, NY: McGraw-Hill.

Prensky, M. (2006). *Don't bother me mom, I'm learning!* St. Paul, MN: Continuum.

Prior, L. (2008). Doing things with documents. In D. Silverman (Ed.), *Qualitative research: Theory method and practice* (pp. 76-94). Thousand Oaks, CA: Sage.

Psathias, G. (1995). *Conversation analysis: The study of talk-in-interaction*. Thousand Oaks, CA: Sage.

Puentedura, R. R. (2006). *Transformation, technology, and education*. Retrieved from http://hippasus.com/resources/tte

Puntambekar, S., & Hübscher, R. (2005). Tools for scaffolding students in a complex learning environment: What have we gained and what have we missed? *Educational Psychologist, 40*(1), 1-12.

Rancière, J. (1991). *The ignorant schoolmaster: Five lessons in intellectual emancipation* (K. Ross, Trans.). Stanford, CA: Stanford University Press.

Ratner, H. H., Foley, M. A., & Gimpert, N. (2002). The role of collaborative planning in children's source-monitoring errors and learning. *Journal of Experimental Child Psychology, 81*(1), 44-73.

Renninger, K. A., & Shumar, W. (Eds.). (2002). *Building virtual communities: Learning and change in cyberspace*. Cambridge, UK: Cambridge University Press.

Resnick, L. B. (1987). Learning in school and out. *Educational Researcher, 16*(9), 13-20.

Resnick, M. (1994). *Turtles, termites, and traffic jams: Explorations in massively parallel microworlds*. Cambridge, MA: MIT Press.

Resnick, M. (2003). Playful learning and creative societies. *Education Update, 8*(6). Retrieved from http://web.media.mit.edu/~mres/papers/education-update.pdf

Resnick, M. (2004). Edutainment? No thanks. I prefer playful learning. *Parent's Choice. Children's Media and Toy Reviews*. Retrieved from http://www.parentschoice.org/full_abstract.cfm?art_id=172&the_page=consider_this

Resnick, M. (2008). *StarLogo TNG*. Cambridge, MA: Media Laboratory and Teacher Education Program, MIT. Retrieved from http://education.mit.edu/starlogo

Rheingold, H. (1993). *The virtual community: Homesteading on the electronic frontier*. Reading, MA: Addison-Wesley. Retrieved from http://www.rheingold.com/vc/book/intro.html

Rieber, L. P. (1991). Animation, incidental learning and continuing motivation. *Journal of Educational Psychology, 83*(3), 318-328.

Richardson, L. (2000). Writing: A method of inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 923-948). Thousand Oaks, CA: Sage.

Ritzer, G., & Jurgenson, N. (2010). Production, consumption, prosumption. *Journal of Consumer Culture, 10*(1), 13-36.

Robinson, L. (2009). A taste for the necessary: A Bourdieuian approach to digital inequality. *Information, Communication & Society, 12*(4), 488-507.

Rogoff, B. (1984). Introduction: Thinking and learning in social content. In B. Rogoff & J. Lave (Eds.), *Everyday cognition: Its development in social context* (pp. 1-8). Cambridge, MA: Harvard University Press.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in the social context*. New York, NY: Oxford University Press.

Rogoff, B. (1994). Developing understanding of the idea of communities of learners. *Mind, Culture, and Activity, 1*(4), 209-229.

Rogoff, B. (1995). Observing Sociocultural activity on three planes: Participatory appropriation, guided participation, and

apprenticeship. In J. V. Wertsch, P. Del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). New York, NY: Cambridge University Press.

Rohrbeck, C. A., Ginsburg-Block, M. D., Fantuzzo, J. W., & Miller, T. R. (2003). Peer assisted learning interventions with elementary school students: A meta-analytic review. *Journal of Educational Psychology, 95*(2), 240-257.

Sack, H. (1984). Notes on methodology. In J. M. Atkinson & J. Heritage (Eds.), *Structures of social action: Studies in conversation analysis* (pp. 21-27). Cambridge, UK: Cambridge University Press.

Salen, K., Torres, R., Wolozin, L., Rufo-Tepper, R., & Shapiro, A. (2011). *Quest to learn: Developing the school for digital kids*. Cambridge, MA: MIT Press. Retrieved from http://dmlcentral.net/sites/dmlcentral/files/resource_files/Quest_to_LearnMacfoundReport.pdf

Salen, K., & Zimmerman, E. (2003). *Rules of play. Game design fundamentals*. Cambridge, MA: MIT Press.

Sandford, R., & Williamson, B. (2005). *Games and learning: A handbook from Futurelab*. Bristol, UK: Futurelab. Retrieved from http://archive.futurelab.org.uk/resources/documents/handbooks/games_and_learning2.pdf

Santoro, S. W. (2013). Guide to graphic design. Upper Saddle River, NJ: Pearson.

Savery, J., & Duffy, T. (1995). Problem based learning: an instructional model and its constructivist framework. *Educational Technology, 35*(5), 31-38.

Sawyer, R. K., & DeZutter, S. (2009). Distributed creativity: How collective creations emerge from collaboration. *Psychology of Aesthetics, Creativity, and the Arts, 3*(2), 81-92.

Scardamalia, M., & Bereiter, C. (1994). Computer support for knowledge-building communities. *Journal of the Learning Sciences, 3*(3), 265-283.

Schegloff, E. A. (1996). Confirming allusions: Towards an empirical account of action. *American Journal of Sociology, 104*(1), 161-217.

Schoenfeld, A. (1988). When good teaching leads to bad results: the disasters of "well taught" mathematics courses. *Educational Psychologist, 23*(2), 145-166.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Schön, D. A. (1988). Designing: Rules, types and worlds. *Design Studies, 9*(3), 181-190.

Schradie J. (2011). The digital production gap: The digital divide and Web 2.0 collide. *Poetics, 39*(2), 145-168.

Schunk, D. H. (1999). Social-self interaction and achievement behavior. *Educational Psychologist, 34*(4), 219-227.

Schunk, D. H. (2012). *Learning theories: An educational perspective* (6th ed.). Boston, MA: Pearson.

Schunk, D. H., & Rice, J. M. (1991). Learning goals and progress feedback during reading comprehension instruction. *Journal of Reading Behavior, 23*(3), 351-364.

Schwandt, T. A. (1996). Farewell to criteriology. *Qualitative Inquiry, 2*(1), 58-72.

Schwarz, B. B., & Hershkowitz, R. (2001). Production and transformation of computer artifacts toward construction of meaning in mathematics. *Mind, Culture, and Activity, 8*(3), 250-267.

Scribner, S. (1986). Thinking in action: Some characteristics of practical thought. In R. J. Sternberg & R. K. Wagner (Eds.), *Practical intelligence: Nature and origins of competence in the everyday world* (pp. 13-30). Cambridge, UK: Cambridge University Press.

Seely Brown, J., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.

Seely Brown, J., & Duguid, P. (2000). *The social life of information*. Harvard, MA: Harvard Business School Press.

Seitz, J. A. (2003) The political economy of creativity. *Creativity Research Journal, 15*(4), 385-392.

Shaffer, D. W. (2006). *How computer games help children learn*. New York, NY: Palgrave Macmillan.

Shumar, W., & Renninger, K. A. (2002). On conceptualizing community. In K. A. Renninger & W. Shumar (Eds.), *Building*

virtual communities: Learning and change in cyberspace (pp. 1-17). New York, NY: Cambridge University Press.

Sills, C., & Jensen, G. H. (Eds.) (1992). *The philosophy of discourse: The rhetorical turn in twentieth-century thought*. Portsmouth, NH: Boynton/Cook Publishers.

Simpson, T. L. (2002). Dare I oppose constructivist theory? *The Educational Forum, 66*(4), 347-354.

Slavin, R. E. (1995). *Cooperative learning* (2nd ed.). Boston, MA: Allyn & Bacon.

Solomon, J. (1994). The rise and fall of constructivism. *Studies in Science Education, 23*(1), 1-19.

Sotamaa, O. (2010). Play, create, share? Console gaming, player production and agency. *The Fibreculture Journal, 16*. Retrieved from http://sixteen.fibreculturejournal.org/play-create-share-console-gaming-player-production-and-agency

Squire, K. (2006). From content to context: Video games as designed experiences. *Educational Researcher, 35*(8), 19-29.

Squire, K. (2011). *Video games and learning. Teaching and participatory culture in the digital age*. New York, NY: Teachers College Print.

Stake, R. E., & Trumbull, D. J. (1982). Naturalistic generalizations. *Review Journal of Philosophy and Social Science, 7*(1-2), 1-12.

Staples, C., Riechert, S., Marone, V., & Greenberg, K. (2012). Exploring a studio critique model for STEM evaluation. In C. Martin, A. Ochsner, & K. Squire (Eds.), *Proceedings of the*

GLS 8.0 Games + Learning + Society Conference, Madison, Wisconsin, June 13-15, 2012 (pp. 509-510). Pittsburgh, PA: ETC Press.

Starks, H., & Trinidad, S. B. (2007). Choose your method: A comparison of phenomenology, discourse analysis and grounded theory. *Qualitative Health Research, 17*(10),1372-1380.

Steinkuehler, C. A. (2006). Massively multiplayer online video gaming as participation in a Discourse. *Mind, Culture, and Activity, 13*(1), 38-52.

Steinkuehler, C. A. (2007). Massively multiplayer online gaming as a constellation of literacy practices. In B. E. Shelton & D. Wiley (Eds.), *The design and use of simulation computer games in education* (pp. 187-212). Rotterdam, The Netherlands: Sense Publishers.

Steinkuehler, C. A., Compton-Lilly, C., & King, E. (2010). Reading in the context of online games. In K. Gomez, L. Lyons, & J. Radinsky (Eds.), *Learning in the disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) Volume 1* (pp. 222- 230). Chicago, IL: International Society of the Learning Sciences.

Steinkuehler, C. A., & Duncan, S. C. (2008). Scientific habits of mind in virtual worlds. *Journal of Science Education and Technology*, *17*(6), 530-543.

Steinkuehler, C. A., & Johnson, B. Z. (2009). Computational literacy in online games: The social life of a mod. *The International Journal of Gaming and Computer Mediated Simulations, 1*(1), 53-65.

Sternberg, R. J., & Lubart, T. I. (1991). Creating creative minds. *Phi Delta Kappan, 72*(8), 608-614.

Strain, P. S., Kerr, M. M., & Ragland, E. U. (1981). The use of peer social initiations in the treatment of social withdrawal. In P. S. Strain (Ed.), *The utilization of classroom peers as behavior change agents* (pp. 101-128). New York, NY: Plenum.

Suchman, L. (1987). *Plans and situated actions: The problem of human-machine communication*. New York, NY: Cambridge University Press.

Suits, B. (1978). *The grasshopper*. Toronto, Canada: University of Toronto Press.

Sylvan, E. A. (2007). *The sharing of wonderful ideas: Influence and interaction in online communities of creators*. Unpublished doctoral dissertation, MIT (Massachusetts Institute of Technology). Retrieved from http://web.media.mit.edu/~sylvan/SylvanDissertation2007.pdf

Tapscott D. (1995). *The digital economy: Promise and peril in the age of networked intelligence*. New York, NY: McGraw-Hill.

Tapscott, D. (1998). *Growing up digital: The rise of the net generation*. New York, NY: McGraw-Hill.

ten Have, P. (2007). *Doing conversation analysis: A practical guide.* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Thomas, A. (2007). Blurring and breaking through the boundaries of narrative, literacy, and identity in adolescent fan fiction. In C. Lankshear & M. Knobel (Eds.), *A new literacies sampler* (pp. 137-165). New York, NY: Peter Lang.

Thorne, S. L. (2012). Massively semiotic ecologies and L2 development: Gaming cases and issues. In S. De Wannemacker, S. Vandercruysse, and G. Clarebout (Eds.), *Serious games: The challenge, Vol. CCIS 280* (pp. 18-31). Berlin Heidelberg, Germany: Springer-Verlag.

Toffler, A. (1980). *The third wave*. New York, NY: Morrow.

Tracy, K. (1995). Action-implicative discourse analysis. *Journal of Language and Social Psychology, 14*(1-2), 195-215.

Tracy, S. J. (2010). Qualitative quality: Eight "'big-tent"' criteria for excellent qualitative research, *Qualitative Inquiry, 16*(10), 837-851.

Tudge, J. R. H., & Scrimsher, S. (2003). Lev S. Vygotsky on education: A cultural-historical, interpersonal, and individual approach to development. In B. J. Zimmerman & D. H. Schunk (Eds.), *Educational psychology: A century of contributions* (pp. 207-228). Mahwah, NJ: Lawrence Erlbaum Associates.

Tuovinen, J. E., & Sweller, J. (1999). A comparison of cognitive load associated with discovery learning and worked examples. *Journal of Educational Psychology, 91*(2), 334-341.

Varisco, B. M. (2002). *Costruttivismo socio-culturale. Genesi filosofiche, sviluppi psico-pedagogici, applicazioni didattiche*. Rome, Italy: Carocci Editore.

Von Hippel, E. (2005). *Democratizing innovation*. Cambridge, MA: MIT Press.

Vygotsky, L. S. (1978). *Mind in society: Development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Cambridge, MA: MIT Press.

Watson, N. (1997). Why we argue about virtual community: A case study of the Phis.Net fan community. In S. G. Jones (Ed.), *Virtual culture: Identity and communication in cybersociety* (pp. 102-132). London, UK: Sage.

Webb, N. (1995). Constructive activity and learning in collaborative small groups. *Journal of Educational Psychology, 87*(3), 406-423.

Wellman, B. (1999). The network community: An introduction to networks in the global village. In Wellman, B. (Ed.), *Networks in the Global Village* (pp. 1-48). Boulder, CO: Westview Press.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, UK: Cambridge University Press.

Wenger, E. (2003). Communities of practice and social learning systems. In D. Nicolini, S. Gherardi, & D. Yanow (Eds.), *Knowing in organizations: A practice-based approach* (pp. 76-99). Armonk, NY: M.E. Sharpe.

Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business School Press.

Wertheimer, M. (1945). *Productive thinking*. New York, NY: Harper & Row.

Whittaker, S., Issacs, E., & O'Day, V. (1997). Widening the net. Workshop report on the theory and practice of physical and network communities. *SIGCHI Bulletin, 29*(3), 27-30. Retrieved from http://bulletin.sigchi.org/1997/july/reports-1/whittaker

Wilensky, U. 1999. *NetLogo*. Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. Retrieved from http://ccl.northwestern.edu/netlogo

Wood, L. A., & Kroger. R. O. (2000). *Doing discourse analysis: Methods for studying action in talk and text*. Thousand Oaks, CA: Sage.

Wright, W. (Speaker). (2009, June 6). *The gaming paradigm* [Video podcast]. Retrieved from http://itun.es/i6xY4Cz

Vita

Vittorio Marone was born in Wroclaw (Poland). He attended Ca' Foscari University of Venice (Italy), earning his Bachelor's and Master's degree in Foreign Languages and Literatures, his Master's degree in Continuing Education and E-Learning, and his Doctorate in the field of Cultural Studies ("Studi Iberici, Anglo-Americani e dell'Europa Orientale"). He was accepted in the Doctoral School in Pedagogical, Educational, and Instructional Sciences at the University of Padua (Italy) and in the Learning Environments and Educational Studies Doctoral Program (LEEDS) at The University of Tennessee (Knoxville, TN) as the first student of an international dual-degree program between the two universities. He is the author of the book *La Quotidianità dell'Assurdo* (*The Everyday Absurd*, Archetipolibri, Bologna, 2010), on the role of comedy in post-totalitarian countries.