Author/s:
Bacalja, A;Nichols, TP;Robinson, B;Bhatt, I;Kucharczyk, S;Zomer, C;Nash, B;Dupont, B;De Cock, R;Zaman, B;Bonenfant, M;Grosemans, E;Abrams, SS;Vallis, C;Koutsogiannis, D;Dishon, G;Reed, J;Byers, T;Fawzy, RM;Hsu, H-P;Lowien, N;Barton, G;Callow, J;Liu, Z;Serafini, F;Vermeire, Z;deHaan, J;Croasdale, A;Torres-Toukoumidis, A;Xu, X;Schnaider, K

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ORIGINAL ARTICLES

Postdigital Videogames Literacies: Thinking With, Through, and Beyond James Gee's Learning Principles

Alexander Bacalja[1] · T. Phillip Nichols[2] · Bradley Robinson[3] · Ibrar Bhatt[4] · Stefan Kucharczyk[5] · Chris Zomer[6] · Brady Nash[7] · Bruno Dupont[8] · Rozane De Cock[8] · Bieke Zaman[8] · Maude Bonenfant[9] · Eva Grosemans[8] · Sandra Schamroth Abrams[10] · Carmen Vallis[11] · Dimitrios Koutsogiannis[12] · Gideon Dishon[13] · Jack Reed[14] · Thomas Byers[1] · Rania Magdi Fawzy[15] · Hsiao-Ping Hsu[16] · Nathan Lowien[17] · Georgina Barton[17] · Jon Callow[11] · Zirui Liu[17] · Frank Serafini[18] · Zowi Vermeire[19] · Jonathan deHaan[20] · Alison Croasdale[21] · Angel Torres-Toukoumidis[22] · Xiao Xu[23] · Karoline Schnaider[24]

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Abstract

This article is a collective response to the 2003 iteration of James Paul Gee's *What Video Games Have to Teach Us About Learning and Literacy*. Gee's book, a foundational text for those working in game studies, literacy studies, and education, identified 36 principles of 'good learning' which he argued were built into the design of good games, and which have since been used to unsettle the landscape of formal education. This article brings together 21 short theoretical and empirical contributions which centre postdigital perspectives to re-engage with, and extend, the arguments first raised by Gee regarding the relationship between videogames and learning. Organised into five groups, these contributions suggest that concepts and attitudes associated with the postdigital offer new thinking tools for challenging grand narrative claims about the educative potential of technologies while also providing rich analytical frames for revisiting Gee's claims in terms of postdigital videogame literacies.

Keywords Videogames · Postdigital · Literacies · James Gee · Schooling · Technology · Collective writing

Extended author information available on the last page of the article

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Introduction (Alexander Bacalja)

In his seminal work, *What Video Games Have to Teach Us About Learning and Literacy*, James Paul Gee (2003) challenged traditional notions of schooling and learning by positing videogames as powerful, albeit unconventional, pedagogical tools. Released at the height of public panic about violent videogames of that era, Gee positioned the book as interested in the relationship between learning and videogames. Through highlighting principles that underpin this relationship, Gee suggested that schooling should be redesigned to more closely align with such approaches.

Gee's identification of 36 principles of learning which he argued characterise 'good digital games' (2003: 7) legitimised videogames as learning technologies. Through close attention to videogames as objects, and the analysis of select games, Gee devised a framework for transforming classrooms into dynamic environments that mirror the immersive and participatory nature of videogames. He argued that effective games employ a constellation of design principles that foster active engagement, problem-solving, and the development of complex literacies. This approach, Gee (2004) contended, had the potential to cultivate not only content knowledge but also a repertoire of cognitive and social skills necessary for thriving in a rapidly evolving knowledge-based society.

While Gee's many references to baby boomer logics (such as scepticism about games and rigid thinking about learning in the workplace) make clear his intended audience, the ideas in his book, as well as those that appear in dozens of his subsequent publications, have become foundational across multiple disciplines including game studies, computer science, literacy studies, digital humanities, and education. Over the two decades since the publication of *What Video Games Have to Teach Us About Learning and Literacy*, the arguments made by Gee, as well as those of other scholars interested in the relationship between videogames and learning (see Bogost 2007; Burn 2021; Kafai and Burke 2016; Salen 2008; Squire 2011; Steinkuehler et al. 2012), have contributed to the popularization of these technologies across a wide range of educational and work contexts.

Key ideas from Gee's (2003) book can be found in the many game-related terms that have evolved since his original work. The evolution of concepts, such as digital-game based learning (McGonigal 2011; Prensky 2007), gamification (Marczewski 2013), videogame literacies (Bacalja 2023; Beavis et al. 2009; Buckingham and Burn 2007), and serious games (Breuer and Bente 2010), contain traces of Gee's thinking. This suggests that what began as an attempt to convince baby-boomers that popular digital culture was not as vacuous as discourses of the day suggested, continues to be a catalyst for understanding videogames across many fields. One would be hard-pressed to find an argument or concept related to learning and videogames that does not intersect in some way with Gee's oeuvre.

New Thinking Tools

While Gee's work has been lauded for advancing scholarship about videogames and learning, the development of new conceptual tools for thinking about digital technologies and education more broadly has led to scholarship questioning many of his

claims. Informed by the 'postdigital turn', and representing a 'critique of digital reason' (Peters and Besley 2019: 30), three of these concepts are briefly reviewed here.

First, the postdigital interest in pointing out the 'many continuities, histories, and endurances through which we can understand technology' (Knox 2019: 358) challenges the idea that better schools can be built on the kinds of 'better' learning principles outlined by Gee without addressing other structural factors. The well-known case of Quest2Learn, a New York school which was entirely reorganised around videogames and videogame principles of gamification, was driven by a belief that the potential of videogames could be leveraged to produce a more responsive, immersive, and fun learning experience (Kafai and Burke 2016).

However, as subsequent analysis revealed (see Sims 2017), despite initial success encouraging thinking and practice informed by the kinds of principles found in Gee's work, the idealistic tech-inspired reforms struggled to anticipate and negotiate local political-economic relations. As my own research has similarly concluded (see Bacalja 2019, 2024; Bacalja et al. 2024), the introduction of videogames into school contexts is interdependent with a multitude of factors, such as educational policy, curriculum, pedagogy, and student/teacher/parent beliefs, all of which are important in drawing conclusions about learning outcomes.

Second, if education is always the combination of digital, biological, material and social considerations (Jandrić et al. 2018), then efforts to explain videogame learning that focus solely on the object will be insufficient. Accounts of postdigital literacies already reveal the importance of understanding digital devices from the perspectives of interfaces, practices, and spaces, rather than devices alone (see Apperley et al. 2016; Jayemanne et al. 2016). Complex entanglements between the digital/non-digital render claims about what videogames, in and of themselves, can achieve problematic.

Third, the adoption of critical views towards human-tech relations (Jandrić et al. 2019) has opened up digital technologies like videogames to a range of critiques. While challenging the hyperbole represents one component of this analysis (see Grimes 2021), another focuses more closely on hidden or taken-for-granted dimensions. For example, analyses of ClassDojo, a digital communication and behaviour management platform common in schools across the globe, have found that the software represents gamified technology for producing prescribed behaviours through surveillance, competition, and consumption (see Robinson 2021; Williamson 2017). Like other investigations of real-world integrations of gamified learning platforms (see Zomer 2023), or efforts to develop students' critical videogame literacies (Apperley and Beavis 2011; Bacalja 2018; Berger and McDougall 2013), there are good reasons to challenge normative assumptions about videogames and education.

This paper asks new questions about the relationship between learning, literacy, and videogames, drawing on perspectives characterised by 'a critical attitude (or philosophy) that inquires into the digital world' (Peters and Besley 2019: 30). Engaging collective writing methodologies (Jandrić et al. 2023), which highlight the power of collective knowledge making and dissemination, I placed a call for contributions in late 2023. 21 submissions were reviewed and synthesised into the five categories offered below. Individually, and collectively, they offer insights

into the relationship between videogames and learning that reach beyond mechanistic explanations and deterministic discourses, and seeking to build on, rather than dismantle, the foundations laid by Gee.

Postdigital Literacies

Unsettling 'Game Literacy': A Technopolitical View (T. Philip Nichols and Bradley Robinson)

One outgrowth of Gee's *What Video Games Have to Teach Us about Learning and Literacy* (2003) has been the theorization of 'game literacy' (Buckingham and Burn 2007), which frames videogaming as a literacy practice and encourages the analysis of games as texts. In light of scholarship on the postdigital condition (Jandrić et al. 2018), however, the tidy coupling of gaming and literacy warrants interrogation. What does the concept of *literacy* do for *gaming*, and *gaming* for *literacy?* And how might their pairing paper over the technopolitical relations that underwrite each?

'Literacy' does for gaming what it does for most concepts to which it is appended: legitimizes it, and its associated practices, by virtue of their proximity to literacy's own cultural capital (Collins and Blot 2003). In turn, scholars have mobilized 'game literacy' in taking seriously players' creative and interpretive practices related to gaming—e.g. their engagements with game narratives (Apperley and Walsh 2012), mechanics (Walton and Pallitt 2012), and communities (Squire 2008). Though generative, the focus on such 'literacies' in this work elides the technopolitical relations that underpin, and overdetermine, how these practices unfold.

When Marlatt, for instance, describes *Fortnite* players as 'literate members of a digital gaming community' (2020: 3) whose literacies ought to inform classroom pedagogy, the spotlighting of players' social practices brackets the less-visible imperatives that shape how this 'community' coheres—where status and belonging are mediated by purchasable items (e.g. cosmetic 'skins'), whose cost and availability are conditioned by vast data infrastructures designed to maximize player revenue and retention (Needleman et al. 2022). From a postdigital perspective, then, 'literacy' offers pedagogical cover for the expansion of data-driven surveillance into young people's play, where the discursive power of game literacies launders the interests of a $3.2 billion global industry as a desirable, even progressive, educational intervention.

Literacy, likewise, benefits from this coupling. One way literacy retains its social currency is by subsuming competencies associated with culturally significant phenomena such as media literacy and AI literacy (Nichols et al. 2023). Inasmuch as literacy's expansion unsettles, as its champions claim, the dominance of print-based reading and writing (New London Group 1996), it also produces new forms of 'illiteracy' and imperatives to remedy it with targeted research and pedagogy (Nichols et al. 2024). In this way, 'gaming' offers literacy a means to move its own goalposts—reinforcing its power as an aspirational, yet recalcitrant social achievement while obscuring its complicity in processes of social reproduction through an image of progressive inclusivity.

As a result, literacy educators can borrow on gaming's allure in repackaging their subject matter to appeal to students, even as it remains unclear whether, or in what ways, videogames—as dynamic technopolitical assemblages—are amenable to reading as 'texts'. Ultimately, then, the notion of 'game literacy' may serve to sidestep thorny questions about whose interests are served by this coupling, questions partially enabled by Gee's (2003) work, but which warrant ongoing critical engagement that is tuned to the technopolitics of gaming and literacy in the postdigital world.

Gaming as Postdigital Literacy Ecologies (Ibrar Bhatt)

In *What Video Games Have to Teach Us About Learning Literacy*, Gee (2003) extends the principles of the New Literacy Studies (NLS) to encompass digital technologies, arguing that literacy involves more than just the use of digital tools. It includes various modes of acting, interacting, valuing, believing, and knowing, often incorporating multiple tools and technologies. As NLS emphasises multiple literacies as 'social practices', which are not to be taken as given and are always ethnographically discovered, Gee's (2003) framework is particularly adaptable and expandable in our current postdigital condition.

We could begin to explore this by first inquiring why a scholar recognised for his contributions to language, literacy, and cognition would advocate for gaming, particularly during an era marked by widespread concerns over a 'literacy crisis', and why parents, policymakers, and language educators were driven to pay close attention to his reasoning. Gee's (2003) insights presented a complex yet compelling counter-perspective. He argued that videogames not only engage players in reflective problem-solving and active, critical learning, but also necessitate strategies that consider multiple progression paths and the recognition of intricate relationships and networks. This highlights the diverse *literacies* which students, particularly proficient gamers, bring into educational settings. His work encourages educators to acknowledge and leverage these literacies across various domains of life.

Within the interdisciplinary domain of NLS, where Gee was a leading exponent, researchers perceive cyberspace not as an isolated realm, but as a fundamental component of the postdigital condition (see Bhatt 2023b). Literacy and meaning-making are thus rooted in practices which are 'more-than-digital' (Gourlay 2023). This perspective prompts a reorientation in the study of gaming towards an *ecological* or holistic approach to literacy practices (see Bhatt 2023a). A postdigital framing—or sensibility—offers a unique lens to explore the intricate interplay between gaming, society, and individuals, recognising the mutual interplay of digital and nondigital domains.

The challenges posed to literacy research in this context are manifold. Firstly, there is a need to integrate offline data to enrich our understanding of online gaming practices. This integration is crucial for a comprehensive view of gaming's impact on practices of literacy in everyday life. Secondly, literacy researchers must consider how the interfaces and underlying structures of videogames, including their algorithmic structures and business models, mould and influence particular forms and varieties of literacy. These forms and varieties of literacy do not just significantly

influence individuals' daily interactions with games, but permeate their reality in subtle yet profound ways.

Thirdly, a challenge also extends to the literacies of artificial intelligence within games, or 'AI literacy'. It is essential to explore the factors that contribute to the specific character of AI literacy, investigate how games themselves can exhibit a species of 'literate thinking', and understand the implications of this for everyday literacy and emerging social practices with AI. These explorations necessitate a reconfiguring of Gee's (2003) work which encompasses not just human users but also the (semi)autonomous agents within videogames, thereby heralding new forms of social connectivity and learning approaches.

Knowledge, Affinity and Identity: Using Gee to Explore Children's Postdigital Play-Literacies (Stefan Kucharczyk)

Researching the postdigital is not limited to rethinking play, literacy, and other practices in light of the ubiquity of digital and computer technologies (Koutsogiannis and Adampa 2022). It also calls for examination of the complex interplay between the digital and non-digital, the new practices that emerge, and the tensions between binaries (Nansen et al. 2019; Marsh 2019; Pettersen et al. 2022).

My research explores children's curatorship—a social literacy practice interweaving play and digital/non-digital making with the enactment of identities (Potter 2012; Potter and McDougall 2017)—and the ways this emerged through how children played *Minecraft* at an afterschool videogames club in England. Gee's (2003) central ideas about identity, affinity, and knowledge finds renewed relevance here.

An example to illustrate this. Tashifa, a British Pakistani, is an 8-year-old girl who attended the *Minecraft* club. While constructing a virtual log cabin, Tashifa used her avatar to kill a chicken that had wandered into the building space. A usually unremarkable act in *Minecraft*, it prompted Tashifa to reflect on how the game allowed her to project aspects of her identity into the virtual world, particularly about the morality of killing animals—who she described as 'Allah's creatures'—to progress in the game. She concluded that it *was* compatible with her identity as a Muslim, but only in the context of *Minecraft*. In turn, this led to a discussion with her friend, Sara, about how they reconciled this with their understanding of how Ramadan should be observed. This understanding framed how they inhabited *Minecraft's* world.

What is being curated here is not just the virtual house; experience and knowledge are playfully and thoughtfully reconstructed by Tashifa and Sara's interaction, interwoven with a narrative about their faith and friendship—traditionally non-digital domains. This recalls Gee's (2003) framing of videogames as sites of situated meaning, and practices that—however small—are potentially transformative. Tashifa's deliberation has helped her negotiate a subtly different way of being—*probing* the world as Gee (2003) called it—and, in doing so, expose the tensions and possibilities at the intersection of digital and non-digital spaces.

Indeed, reading Gee (2003) in the early stages of my research had awakened my childhood memories of playing videogames in the 1980s, and the textual

practices—mapmaking, roleplay, drawing, writing—that defied the digital/non-digital binary. Gee, then, describes gaming as I, Tashifa, and Sara experience it: as something meaningful, reaching across spaces and contexts beyond more rigid educational possibilities.

As well as revisiting Gee's (2003) work in the lens of the postdigital, it can perhaps help us frame new questions about the evolving nature of children's play-literacies. How, as shown in Tashifa's example, can children's curation be a nexus point between local and global discourses as children move between digital and non-digital spaces? How do children negotiate their way through this? And how do children reconcile the shapeshifting of identities as they move between contexts? In this way, Gee (2003) can continue to be a guide to researchers of literacies.

Critical Perspectives

'Gameful' Learning in a Postgamified World (Chris Zomer)

Many of my bachelor students seem genuinely surprised to discover that the applications they are using on a daily basis are indeed gamified. As is the case with the postdigital (Jandrić et al. 2018), we now live in a postgamified world where gamification is firmly integrated into everyday life, from social media to educational platforms.

From its introduction, educational gamification has relied heavily on utopian narratives of game-based learning (Selwyn 2014), of which James Paul Gee's (2003) work is arguably the most prominent. Narratives of a 'ludic century' (Zimmerman 2015) seem naïve and overtly deterministic from a postdigital perspective, which critically examines the construction of 'sociotechnical imaginaries' and, for instance, the role of EdTech in these constructions (Forsler et al. 2024).

Gee himself has said about gamification that it does not offer 'the deeper features of games as teaching and learning sites and … intrinsic motivation' (Gee and Price 2021: 36). Indeed, educational gamification is predominantly based on the incorporation of points, badges, and leaderboards (Dicheva et al. 2015) which have little to do with Gee's (2003) re-imagining of the educational project based on learning principles found in videogames, such as 'situated meaning-making', 'projected identities', and 'affinity groups'.

Instead, gamification should be seen as what Kirkpatrick (2015) has called 'ludefaction'; an incorporation of the play principle by capitalism, which perpetuates (and arguably exacerbates) the status quo. The power of play—or the social imaginary of play as 'alternative'—is softened, decontextualised, and 'tamed' (Bogost 2015) and used to train students to be 'competing, self-directed, constantly and voluntarily surveilled consumers' (Tulloch and Randell-Moon 2018).

Instead of reimaging education, gamification 'rewrites' traditional educational practice using the vocabulary of videogames rather than its learning principles. Instead of grades, digital learning platforms use point systems that continuously reward students for their contributions, which is often accompanied by real-time comparisons on leaderboards, replacing (in almost parodic fashion) the already

prevalent competition among students in the (real or imagined) race for upward mobility (Keddie 2016).

In the postgamified world, educational gamification is firmly embedded in the sociotechnical assemblage of platformisation, underpinned by a logic of surveillance, automation, and algorithmic personalisation (Perrotta and Pangrazio 2023). Through points, badges, and competition, gamified learning platforms encourage students to continuously produce data through which they can be surveilled (Zomer 2024) and 'calculated' (Williamson 2016). By rewarding task completion, gamified learning platforms also facilitate automation as students are encouraged to complete ever-more personalised tasks, without any interference from a teacher.

In this light, the question is if Gee's (2003) almost humanist reimagination of education based on videogames can be achieved at all, considering that what counts as 'game elements' is already bound up in a sociotechnical imaginary of educational technology heavily promoted by EdTech companies (Selwyn 2016). They inform, to a large extent, what 'gameful' learning looks like and how we 'do digital' in education. Postdigital scholarship should critically examine these 'logics' and expose them as mere contingencies (Glynos and Howarth 2008). Only then alternatives can be conceived.

What is Good Learning Anyway? Applying a Postdigital Lens to Critical Video Game Analysis (Brady Nash)

Gee's (2003) account of 'good' learning principles in videogames framed games as examples from which schools and teachers could learn. Although Gee recognized problems of representation in games, his focus was not on critically analysing games. His use of the word 'good' learning signalled effective, rather than ethical, principles. In the decades since, scholars have examined how educators not only draw from the learning principles in games, but also include games themselves in school curricula (e.g. Bacalja and Clark 2021). This body of research has largely emphasized the importance and affordances of games within school environments otherwise moored to autonomous, print-oriented conceptions of literacy and learning (Bacalja and Nash 2023; Nash and Brady 2022). A postdigital perspective, in establishing the entangled nature of the digital in students' lives (Knox 2019), affords educational researchers additional theoretical tools for not only exploring whether and how students learn through games, but also for critically questioning the theoretical underpinnings and value orientations of the learning that happens within games.

Games, often produced by massive multinational corporations, structure learning principles for particular ends. In Gee's (2003) account, these ends were self-evident; game designers needed to teach players how to play the game. Although this kind of in-game learning remains, games also reflect other purposes, particularly in an era of microtransactions and more nuanced monetization of gameplay (McCaffrey 2019). Games like *Candy Crush*, *Diablo*, or *Fortnite*, for example, include gameplay loops that encourage spending additional money for power-ups or social markers. Such games often draw on behaviourist learning principles to create addictive feedback loops for players (Belechak 2015) at odds with the kinds of sociocultural learning Gee

and new literacies researchers celebrate. From a postdigital perspective, there is a need to critically examine how the learning within games is 'embedded in, and entangled with' larger affective, social, and economic practices and structures (Knox 2019: 358).

Doing so requires examining multiple aspects of games, including multimodal semiotic systems, input from players, and the ways in which games habituate players towards behaviours, habits, and ways of thinking and engaging with the world. Building on critical analyses of the kinds of learning happening within games (e.g. Apperley and Beavis 2013; Robinson and Whittaker 2020; York and Collins 2022), researchers and educators could critically examine the procedural rhetoric of games—the ways in which game play systems make arguments or convey themes to players (Bogost 2007). Such analyses need to be guided by a critical awareness of the larger ideological discourses and economic systems surrounding games, game-based learning, and technology.

This kind of multifaceted analysis highlights the central affordance of a postdigital lens in relation to Gee's larger corpus of work (e.g. 2003; 2015): the ability to *presume* the effectiveness of the learning principles within games while training a critical eye on how these learning principles engage learners in experiences that foster values, habits, and ways of reading and being embedded within larger ideological, social, and economic contexts (Knox 2019). The postdigital perspective can facilitate research that problematizes the celebratory nature of game-based learning, questions the values embedded within gameplay systems, and critically examines meaning as emerging through human-game interactions. Postdigital analysis thus suggests new directions for embodied, multimodal, ludic, rhetorical, and critical exploration of games and game-based learning in an era of increasingly ubiquitous and school-embedded interactive media.

Contemporary Video Game Design and Governance Challenge Principles of Safe and Active Learning Spaces (Bruno Dupont, Rozane De Cock, Bieke Zaman, Maude Bonenfant, Eva Grosemans)

In the context of the 'ludicisation of the everyday' (Bonenfant and Genvo 2014: 6), where gaming elements permeate non-gaming domains, videogames have become a key medium for educational technology (Levine et al. 2014). James Paul Gee (2003) already captured this importance, and significantly influenced two decades of research and practice on the potential of videogames for teaching and learning. However, since then, the material, social, and cultural contexts of videogames have evolved, necessitating to subject them to the critical, postdigital reflection in the sense of Jandrić et al. (2018: 895).

Following what Knox (2019: 367) proposes for digital technology in education, we must thus hold videogames 'to account'. Therefore, we propose moving beyond design to also illuminate the role of videogame governance and the way it challenges principles of safe and active learning spaces. Leveraging Gee's (2003) distributed principle, we recognize that knowledge acquisition occurs within a global ecosystem. Gee anticipated that thinking and reasoning were 'inherently distributed and more and more so in our modern technological world' (2003: 184). This has

turned true, as today's educational actors must be able—and thus literate—to navigate the global ecosystem, to achieve the desired impact in local contexts.

While games were once purchased outright by gameplayers, they are now heavily reliant on subscription-based business models (Games as a Service) within a global video game platform governance. This subscription can occur against payment or as free-to-play, yet with persuasive incentives of micro-payments. Navigating this model requires new notions of ludoliteracy: having 'cultural models' about the 'world', about 'semiotic domains', and about 'learning' (Gee 2003: 211) is still relevant, but learners must develop cross-media economic literacy skills as well.

Yet, the economic purpose behind design features can be obfuscated and global platform ecosystems are often complex, counteracting critical positioning regarding the ideological content of games. This is especially the case for what Zagal et al. (2013) name 'dark patterns': design elements voluntarily aimed at deceiving players. Dark patterns are designed to make players spend more money or time in the game, watch advertisements, or share personal information against their best interest. These mechanics endanger Gee's principle that with videogames 'learners can take risks in a space where real-world consequences are lowered' (2003: 67). Monetization techniques, sometimes disguised as child-friendly aesthetics (Nicoll and Albarrán-Torres 2022; Bonenfant et al. 2024), make the space of play permeable to the real-world economy.

Additionally, contemporary games diversify progression mechanics beyond skill-based achievements. By encouraging players to wait until something happens, let others play, repeat a mundane task, or simply contemplate, contemporary games shed light on low-agency models of behaviour, challenging the hegemonic 'imperative of action' (Genvo 2024: 152) and the active/passive dichotomy. It makes us wonder if videogames always hold potential for active learning. Gee made it his first principle, arguing that '[a]ll aspects of the learning environment … are set up to encourage active and critical, not passive, learning' (2003: 49). In response, we embrace a broader set of learning experiences beyond the improvement of cognitive-motoric skills, and challenge Gee's (2003: 208) proposition that 'success' only follows from the resolution of 'compelling' 'task[s]'. In contrast, we propose an alternative concept of multifaceted learning that revisits what is meaningful and successful in alignment with the diverse modes of learning supported by today's media.

In sum, opening up the perspective beyond game design alone, a critical understanding of the global, distributed, and cross-media platform-based ecosystem of video gaming reveals that safe learning principles now increasingly rely on economic literacy. Additionally, principles of active learning must be revisited beyond mere achievement, embracing multifaceted learning instead.

Entanglements

Videogames, Literacies, and Learning: Postdigital Reconfigurations (Sandra Schamroth Abrams)

In 2004, as a then-student in the Ph.D. program at Rutgers University, I had begun investigating adolescents' out-of-school literacies and noticed how students seamlessly

moved across non-digital and digital spaces and practices, which included videogaming. Recognizing the entangled meaning in multimodal orchestrations—concepts that started to come to light at the time (see Kress 2003; Kress and Van Leeuwen 2001)—I wrote about students' interactions with, what I interpreted were, *synergistic texts*. Around the same time, James Paul Gee (2003) published *What Video Games Have to Teach Us about Learning and Literacy*, and Gee's 36 learning principles helped scholars to identify, to contemplate, and to explore elements of videogame play, thereby propelling the burgeoning field of research of videogame practices.

Despite being parsed for the sake of definition and discussion, these 36 principles were 'equally relevant' and situated in larger landscapes of learning with videogames (Gee 2003: 49), which were vastly different from contemporary videogame spaces. Now, with the charge to rethink Gee's work in terms of postdigital literacies, I return to the concept of synergy—of texts, of practices, of spaces, of meaning—and the seamless assemblages (and reconfigurations of assemblages) of digital and non-digital experiences that cannot be distinguished as separate entities.

The fusing of experiences reminds me of posthuman perspectives (Barad 2007) that disrupt the human and nonhuman binary and call attention to the inherent 'intra-actions' among and across bodies, practices, and meaning:

> The relationship between the material and the discursive is one of mutual entailment. Neither discursive practices nor material phenomena are ontologically or epistemologically prior. Neither can be explained in terms of the other. Neither is reducible to the other. Neither has privileged status in determining the other. Neither is articulated or articulable in the absence of the other; matter and meaning are mutually articulated. (Barad 2007: 152)

Barad (2007) characterized posthuman intra-actions as being in a constant state a flux, something that resonates in and through postdigital perspectives of videogaming. Consider, for example, the seamless blending of artificial intelligence (AI) and videogame play to create a 'very personal experience' (Abrams and Hanghøj 2024), thereby disrupting the digital/non-digital binary and highlighting the postdigital synergy in entangled, nuanced, and evolving meaning making.

Thus, exploring postdigital reconfigurations to Gee's 36 principles might necessitate an integrated framework that specifically attends to immersive experiences and technological synergy (Nagorna et al. 2024: 589; see also Cooper et al. 2024; Vlasova et al. 2020). Although Cooper et al. evaluate the application of immersive virtual reality in science education, their framework specifically addresses the interactivity and the embodiment of meaning, aspects of the body-practice-experience that are neither hierarchical nor privileged. In terms of videogames, this approach can create important openings for questions about tacit and overt instantiations and replications of social norms and power structures.

What role(s) do game developers and businesses have in shaping players' thinking? How do immersive experiences and the presence of AI guide players' movements, actions, and belief systems? How are political, social, and cultural views supported, supplanted, and/or suppressed? Postdigital reconfigurations of videogames, literacies, and learning require us to delve deeper into these and other critical questions concerning the ever evolving and enmeshed practices in and adjacent to videogame play.

Playing for Real (Carmen Vallis)

Gee was prescient in arguing for 'situated, experiential, and embodied forms of learning and thinking' in videogames (2003: 76). Such virtual experiences stimulate knowledge and thinking skills, with players 'reflecting on their previous embodied experiences in the world' (73). Since then, digital technologies have become enmeshed in human thinking and experiences, extending beyond Gee's vision of being 'distributed' across people, tools, and technologies (184). Both embodied learners and disembodied technologies are irrevocably entangled (Barad 2010); they define and shape each other, and games are no exception.

The boundaries between human and non-human entities, the real and virtual, the authentic and synthetic, are blurring (Vallis 2024). In game environments, experiences flow between human and digital entities. Barad (2010) describes this as 'intra-action', where identities emerge through play. Players and game avatars are interdependent, instead of pre-existing, separate entities that interact. Through Barad's posthuman performativity, we understand gaming as a more fluid, entangled experience than traditional ideas that separate mind and body, player and game. We can extend Gee's (2003) distributed knowledge to blurred identity, agency, and embodiment in digital spaces.

Research on a multiplayer online role-playing game shows players connecting with their game characters in profound ways, mutually constituting each other's identities (Wilde and Evans 2019). Game avatars influence players' experiences, emotions, and behaviours, just as players shape their avatars. Calleja (2014) goes even further and proposes the term 'incorporation' rather than 'immersion' to capture how players absorb and become absorbed into virtual environments through their avatars. Equality between humans and non-humans is central to this 'fluid, horizontal and relational experience' (Wilde and Evans 2019: 795).

Virtual worlds could become reality. Immersion in advanced virtual worlds could radically alter self-perception and social interaction, and some players might choose to lose their sense of identity and connection to the material world altogether (Pérez Cortés and Kessner 2023: 915). Human and AI systems may co-evolve, leading to new forms of intelligence and agency that cannot be attributed solely to either humans or machines (Brailas 2024). Advances in text-to-video and text-VR generation are accelerating this reality change, creating ethical questions about avatar use in education (Vallis et al. 2024).

What are the ethical implications of human-AI assemblages in games and education? On the one hand, digital technologies are not (and have never been) neutral, nor a panacea for education (Knox 2019). On the other, game narratives could immerse players in experiences that explore human responsibility and vulnerability in the Anthropocene, rather than engage in missile wars (Milesi 2022). In 2003, Gee predicted that conversation would become more important in games as computational possibilities advanced. 'As realistic forms of conversation become more computationally possible (a very hard task), I predict that shooting will be less important and talking more important in many games, even shooter games'. (Gee 2003: 10). The promise of ethical educational games is to marry 'human beings and living machines and collective learning opportunities' (Jandrić and Hayes 2020: 289). We have more to learn and teach with videogames when we play for real.

Videogames in (Literacy) Education: from Learning Affordances to Schooling Complexity (Dimitrios Koutsogiannis)

Gee's (2003) seminal book marked a significant turn, shifting the focus from videogames as popular out-of-school cultural artifacts to significant learning and literacy practice environments. Subsequent literature has expanded this argument, emphasizing the potential of videogames to challenge existing educational pedagogies (for a critical literature review, see Koutsogiannis and Adampa, 2022; Bacalja et al. 2024).

In a recent text (Koutsogiannis and Adampa, 2022), we referred to the main relevant literature as 'videogaming-centered' and highlighted the necessity of a shift 'towards a critical post-videogaming perspective'. In my view, this shift must take into account two interconnected areas: the complexity of video game usage in children's daily lives and their use in a formal educational contexts. We extensively addressed the former in our aforementioned text, indicating that a critical postdigital direction must consider videogames as integral to the contemporary socio-cultural context and children's literate identities. Here, I will shift my interest to the latter area.

To understand the shift to schooling, where the dominant argument suggests that video game usage can transform existing teaching pedagogy, I propose focusing on at least two interconnected directions. The first relates to the notion of 'recontextualization' (Bernstein 1996). Bernstein posited that anything transferred to education (in this case, videogames) is not what it was before (a leisure-time game) but must be understood and analysed in the 'sequencing and pacing' (Bernstein 1996: 49) of what he called 'the pedagogic device'. This means that recontextualizing videogames in pedagogy is not a simple and neutral procedure but a deeply ideological one.

This assumption leads to the second significant direction that must be taken into account: analysing videogames as organic elements of a complex educational reality with existing structures and teacher agency, but also with local traditions and current global realities. Bernstein made a systematic effort to highlight the 'grammar of schooling' (Tyack and Tobin 1994), which plays a crucial role in how anything is pedagogically recontextualized. However, his theoretical framework requires significant readjustment to current conditions. There are already interesting publications in this direction, emphasizing an 'entangled pedagogy', mainly based on sociomaterial approaches (Bacalja et al. 2024; Fawns 2022). I argue that an interdisciplinary approach is necessary to study this complex issue, within which critical sociolinguistic traditions can also be employed (Koutsogiannis and Adampa, 2022). In this theoretical and methodological discussion, the critical question to me is not only what is entangled as videogaming pedagogy but why.

The issue is complex and cannot be extensively discussed here, where my goal is to establish a framework for understanding a postdigital videogaming perspective. I believe that such an interdisciplinary frame can very well encapsulate and extend two main priorities in postdigital research. First, it can 'transform borders into connections' (Veletsianos et al. 2024), given the holistic character of the proposal. Second, it contributes to making 'postdigital research more socially relevant' (Veletsianos et al. 2024: 653) by avoiding the uncritical recontextualization of technologies in education without considering the complexity of the issue (e.g. Selwyn et al. 2017).

What the Postdigital Has to Teach Us About Designing Games and Learning: Going Back to- and Beyond Gee (Gideon Dishon)

The impact of Gee's (2003) contribution to research and thinking about videogames cannot be overstated. Writing in a time when games were often depicted as 'chocolate covered broccoli' (Bruckman 1999), Gee (2003) expanded work on videogames in two vital directions.

First, Gee identified and highlighted the complexity and diversity of learning and interaction taking place in games. Second, Gee challenged the clear distinction between games and education, blurring the lines between games playing and learning. Examining Gee's work through a postdigital lens, I suggest that research on videogames ought to both go back to some of Gee's (2003) essential arguments, which have been too-often overlooked, but also to go beyond Gee—accounting for the complex entanglement of games as designed environments with broader features of educational and social ecosystems.

First, a postdigital approach requires paying more attention to Gee's (2003) arguments about the need to attend to the social and situated nature of learning. Though Gee highlighted the importance of Big G games—which include the game's social environment (Gee 2003)—research has tended to focus on the more easily studied components of the games themselves (e.g. Granic et al. 2014; Ke 2016). While such analyses are vital, from a postdigital perspective, we need to concurrently interrogate how games are entangled with other aspects of learning environments—the pedagogy, methods, purposes, values, and context in which games are situated (Fawns 2022). As perhaps most poignantly illustrated by the #Gamergate controversy, the fact that games can be used to promote learning tells us very little about the modes and ends of such learning if we do not account for the communities and cultures with which gaming intersects (Mortensen 2018). More specifically in the context of education, this implies exploring the reciprocal relations between gaming cultures and social and institutional aspects of education (Koutsogiannis and Adampa 2022).

Second, one of the central and enduring legacies of Gee's work was the emphasis on the design of 'good digital games as learning machines' (Gee 2005a). This emphasis sought to push our understanding of learning beyond a focus on direct instruction, and into the design of active and participatory modes of learning. However, the designed nature of videogames could act as a double-edged sword (Dishon 2021). While games offer players complex modes of engagement and problem solving, they concurrently create a context that is more strictly divorced from other domains due to its unique rules and goals. Thus, games are an extreme instantiation of the complexities of intentionally designing learning environments that aim to afford learners more freedom (Dishon 2024; McDonald 2021).

From a postdigital perspective, this calls for laying out a more nuanced analysis of how the designed nature of games interacts with players' actual experiences and the aforementioned facets of educational and social environments. To do so, we ought to examine games not as standalone educational interventions but rather as particularly evocative components in intricate educational assemblages.

Minecraft and Young People's Postdigital Nature Literacy (Jack Reed)

Increasingly, human relationships with nature have been described as disconnected (Beery et al. 2023). This backdrop raises significant questions about whether engagements with virtual nature in online and screen-based environments can cultivate novel forms of a 'postdigital nature literacy'. Here, 'nature literacy' may be defined as the ability to understand, interpret, and engage meaningfully with the natural environment (Barrette et al. 2024), which must now encompass the role of technology in shaping these entangled relationships. With this contribution focussing on gaming spaces specifically, the binary Gee (2003: 199) constructs when describing the 'power of digital games, for good or ill, resides in the ways in which they meld learning and identity', is curious in the context of a postdigital approach. A postdigital perspective would challenge Gee's (2003) dichotomous evaluation of 'good and ill', arguing that such binary assessments often overlook a series of complex entanglements at the intersection of virtual worlds, modes of engagement, and contemporary learning.

Drawing on empirical data from my doctoral research on how young people construct a sense of 'knowing' nature in online environments (Reed 2024), the role of videogames such as *Minecraft* emerged as a focal point for young people's nature literacy development. This assessment is drawn from data generated with young people aged 12–17 in the United Kingdom (UK) who were visiting, often for the first time, one of the UK's national parks as part of a residential outdoor education programme with The Outward Bound Trust. The findings demonstrated that young people's prior interactions with *Minecraft* provided a filter through which they interpreted and interacted with nature. Without fail, each group I engaged with related their experiences in nature back to their prior *Minecraft* experience. This was particularly so during activities where the focus was on developing a sense of nature connection, one of The Outward Bound Trust's core learning outcomes. The young people would readily apply their knowledge of geology (volcanoes, mountains, rivers), flora and fauna (oaks, netherrack, alliums), and insects and mammals (bees, bats, foxes) from *Minecraft* into the physical world. This very often generated a gamified lens through which nature was interpreted and engaged with, giving rise to an emerging postdigital nature literacy.

Here, Gee (2003) offers us a starting point for establishing the foundations of a postdigital nature literacy, particularly in relation to his transfer principle, which suggests that the learner may take what they have learned in one domain and apply it to another. In this instance, the prior context was the *Minecraft* interface, from which young people transferred their virtual experiences of nature into the physical environment. Similar in many ways to the concept of game transfer phenomena (Ortiz de Gortari et al. 2011), a postdigital interpretation reveals an entangled assemblage of innumerable technological and in-person factors which came together to inform how nature was interpreted and engaged with. My findings indicated that young people's in-person experiences of nature were underpinned by a gaming space that, to the casual onlooker, seemed far removed from the mountainous and coastal environments which characterise learning experiences at The Outward Bound Trust.

Outlining a postdigital nature literacy encourages reassessment of the roles virtual environments play in shaping how young people understand, value, and talk about nature. In this sense, much greater examination is required to assess how gaming architectures such as *Minecraft* underpin how young people understand and connect to nature. These future assessments may utilise Gee's (2003) 36 learning principles in relation to videogames, learning, and literacy, providing a set of criteria against which to facilitate such developments.

Resisting the Post for Com(Post) (Thomas Byers)

Our current postdigital reality views once novel and disruptive digital systems as taken for granted across various environments (Jandrić et al. 2018). Now we face the temptation of regarding videogames with that same post perception. Koutsogiannis and Adampa (2022) offer a compelling post-video game framework which, following other post discourses, risks flattening both the pedagogical and individual value of videogames. Instead, conceptualising a com(post)-video game attitude inspired by Sinclair and Hayes (2019) presents a more beneficial path forward that continues to platform the emergent properties of videogames for learning and play.

Digital com(post) is an aptly playful metaphor from Sinclair and Hayes (2019) to describe the networked value of materiality, users, and systems. Digital com(post) builds on the work of Haraway's posthuman iteration (2016: 32) which identifies com(post) can be done badly, recycled, and offers that the ideal com(post) is sustainable and nourishing. While Koutsogiannis and Adampa (2022: 2) note the necessity of videogames in education and value the 'unique learning potential', they link the necessity to the perceived homogenous activity of digital play by young people. However, necessity and access across contexts does not reduce novelty nor reflect that digital play is taken for granted. By presenting post attitudes there is a want to consider our agency with something to be at an end (Friesen 2018: 1) and reflects a privilege that ignores inequalities in other contexts (Dyer-Witheford and de Peuter 2020). To contrast, a com(post)-video game attitude represents a fertile ground for developing knowledge for user engagement, design, and peripheral communities without assuming homogenous engagement (Sinclair and Hayes 2019: 127).

By resisting a post perspective and valuing a com(post) attitude, videogames present diverse learning experiences and develop various literacies through digital play (Gee 2003). Bogost's (2008) 'procedural' literacy offers that, through play, users develop an understanding of how videogames are designed and how systems (physics, audio, etc.) interact with each other. While Fuller and Jandrić (2019: 215) argue for the postdigital that 'the digital has lost its novelty or salience', videogames remain pragmatic tools of diverse learning potential. Beyond standard curriculum aims, videogames can teach temporal concepts through mechanics (Stamenković and Jaćević 2015) and be vehicles for temporal literacies – an understanding of both time spent in play and how games are designed to compel that time (Zagal et al. 2013).

To build upon the networked (or mulched) dimension of the com(post)-video game, I look to the established communities of digital play and consider what will emerge next. From diverse content creation roles (Johnson and Woodcock 2019) to

competitive eSports (Bányai et al. 2020), each presents a unique participant culture and system of use to learn from. Postdigital discourse prompts a focus on the next or newest form of digital interaction to be normalised (Taffel 2016: 330). Koutsogiannis and Adampa (2022: 22) perpetuate this focus by stating that 'digital games are not the only one new element in our time', implying the race has been run for videogames. However, as Gee (2003: 205) put simply 'we ain't seen nothin' yet', and by resisting the temptation to adopt a post-video game perspective. we can iteratively build upon what has been established, value emerging systems, and create an ongoing and nourishing learning resource through digital play.

Revisiting the Learning Principles

VR Postdigital Embodiment (Rania Magdi Fawzy)

Gee's (2003) 36 principles set the scene for the transformative learning benefits associated with playing. How virtual reality (VR) educates participants to engage with cultural literacies and pro-social attitudes is worthy of further investigation within this view. The postdigital notion of embodiment (Otrel-Cass 2023) can help think about VR beyond engagement and immersive interaction (Vindenes and Wasson 2021). Human-non-human embodiment is a postphenomenological concept that gives expression to how technological artifacts enhance human experience of the world. An example of these relations is looking 'through' eyeglasses to the world (Ihde 2002; Verbeek 2005, 2015). This notion is closely related to the postdigital doctrine which suggests technology to be experiential, relational, and embodied in its implementation (Berry and Dieter 2015; Jandrić et al. 2018). Postdigital embodiment interprets body experience with technology as an entangled online and offline interactivity (Otrel-Cass 2023). Interpreting VR immersive interaction through the lens of postdigital embodiment refutes linear sequence that recognizes a division of labour between being online and offline. Rather, it acknowledges blurred online/offline boundaries 'where spaces and activities, footprints and relationships, behave like a liquid' (Otrel-Cass 2023).

This marks the intriguing possibilities of incorporating the modes and mechanisms of postdigital embodiment into Gee's (2003) 36 principles when studying VR interaction, since the experience of participants' analog/digital performances and their interaction with VR technology are at the core of the learning experience in the particular stance of VR (Fawzy 2023; Fawzy and El Shazly 2023). The notion of postdigitality can be deployed in this regard to explain what it means to be engaged in a virtual storytelling practice and the resulting conflated transgression between ontologically different worlds: virtual and physical. Correspondingly, it is important to notice that the postdigital identity of the participants should be semiotically differentiated into analog 'human interactants' and digital 'avatarian users' who are postdigitally related to and semiotically interact with the virtual semioscape. This perspective includes VR participants among the resources available for the meaning making process shaping the virtual world and its culture knowledge.

The VR world is thus *embodied* rather than *communicated*. This notion interestingly corresponds to and yet extends Gee's (2003) 30th, 32nd, and 36th principles about expanding cultural knowledge by exploring varying semiotic domains from an insider perspective. Participants' semiosis of choices and extradiegetic interaction with the VR technology (ex. the HMD and gestural/haptic-enabled controllers) are translated in the screen as multimodal input and semiotic meaning-making resources through the actions of their intradiegetic avatars (Fawzy 2023). That is, the self in the peculiar context of VR functions as both a participant and an avatar. This may affect participants' actions and choices. Interacting with VR hardware, participants can be argued to represent the narrator version of the self who is constantly tailoring the story to the self as audience, thus customizing their avatarian performance in conformity with their preferences. Avatarian embodiment can be argued then to enable participants to take part in semiotically instantiating the values advocated by the VR world.

Thinking postdigitally, Gee's (2003) 9th principle: 'Self-Knowledge Principle: Learn about self, current and potential capabilities' can be extended as well beyond interaction and engagement. Embodiment with VR technology situates participants in a virtual space of actions and *doings* [Gee's (2003) 28th principle is echoed here] and hence encourage them to configure their desired self(ves) across different immersive interactions. In this view, the avatar acts as embodied alter-ego (Bell and Ensslin 2011), an intradiegetic entity that changes and alters the virtual world into possible worlds inhibited by participants' hoped-for self(ves) (Fawzy 2023). Embodied in these selves, participants transform the virtual world into possible worlds of their own passion, agency, choices, hopes, and desires. To conclude, it is through the analysis of postdigital interaction and embodiment that new blind spots of VR genre will be discovered.

Identity Interplay: Bridging Digital and Physical Spaces (Hsiao-Ping Hsu)

Gee (2003), in his identity principle, proposed three types of identity: real-world, virtual, and projective. Real-world identities refer to a person's various identities in the real world. Virtual identity refers to one's identity within the game world. Projective identity represents how a person projects their real-world values and desires onto the game. As videogames become widely used in education through blended learning approaches (Hong et al. 2013; Masek et al. 2017; Ye et al. 2018), they serve as digital spaces where students can collaborate, discuss, brainstorm, and contextualize learned knowledge in a physical classroom. Digital gaming in the physical classroom represents the blurred boundaries between digital and physical spaces in education (Lamb et al. 2022). Gee's identity principle, focused initially on the videogame world, now extends into the physical classroom. It involves an interplay between students' real-world and virtual and projective identities, bridging digital and physical learning environments. Thus, a postdigital perspective (Jandrić et al. 2018) is required to examine the educational application of videogames involving digital and physical integration.

In the physical classroom, students may have various real-world identities, such as the one defined by the school, known as institutional identity (Gee 2000), and the one shaped by daily tangible peer interactions, known as peer identity

(Adler and Adler 1998). Real-world identities influence students' virtual identities during game-based learning engagement (Bacalja 2020). For instance, students might choose unique avatars to differentiate themselves from their real-world peers (Zimmermann et al. 2023) or create avatars less likely to attract teachers' concerns. Real-world identities also influence projective identity (Bacalja 2020). For example, classroom rules and peer expectations remain in effect while working together in the game world. Students may project their values of being a good student and desires of being a good team player onto their avatars, acting accordingly to complete a game-based learning task.

Conversely, students established identities in the game world can influence their real-world identities. Students passionate about leading teams in massively multiplayer online role-playing games may be keen to lead group learning tasks in the physical classroom (Mikhailova 2019). This leadership experience can enrich their projective identity in videogames, making them more willing to take on future leadership roles in multiplayer games. Thus, the rise of the blended learning approach of using videogames for education can promote a reciprocal enrichment among learners' real-world, digital, and projective identities.

Exploring the identity interplay bridging digital and physical spaces highlights a postdigital form of identity research in education (Knox 2019; Lamb et al. 2022). While Bacalja (2020) empirically identified the key factors that shape students' understanding of the relationship between virtual and real-world identities in a pure gaming setting, including game design, student habitus, and classroom pedagogy, the critical elements impacting students' understanding of identity interplay in a boundary-blurring learning environment need a postdigital exploration. This exploration may inform the future educational use of videogames, enabling learning experiences that support learners' identity development by integrating the strengths of digital and traditional place-based learning approaches.

Videogames, Identity and a Postdigital Perspective (Nathan Lowien, Georgina Barton, Jon Callow, Zirui Liu, Frank Serafini)

Re-examining Gee's (2003) seminal work on videogames, literacy studies, and education from a postdigital perspective enables the entanglement between videogames as texts and gamers' identities to be reassessed, providing several implications for education. Cramer (2015) explained that postdigital perspectives are concerned with challenging traditional digital-analog narratives and shifting from semantic to indexical, more specifically from coded texts to contextual implications for users of digitally coded texts. The entangled relationship between digital texts and users was discussed by Jandrić et al. (2018), who highlighted that this relationship exists across everyday lives, relationships, cultures, etc. From a post-videogaming and literacy education perspective, coded texts are understood to be digital texts, such as videogames. At the same time, contextual implications consider how people draw on their funds of knowledge informed by their identity within sociocultural contexts to shape their engagement with digital literacy practices in various ways (Koutsogiannis and Adampa 2022).

Revisiting the relationships between Gee's (2003) multiple semiotic modalities and identity principles would enable the relationships between the designed worlds and the values players bring to their gaming to be better understood. First, Gee's (2003) multiple semiotic modalities principle describes the aesthetics of videogames as comprising multiple semiotic modalities. This principle can be further enhanced by understanding how the modalities combine in videogame texts to realise their *mechanics*, *dynamics*, and *aesthetics* (MDA) (Hunicke et al. 2004). *Mechanics* refer to the coded algorithms that realise the game rules, *dynamics* refer to how players can utilise the playable actions of avatars to play, and *aesthetics* refer to the emotional responses invoked in gamers when playing. Also, the modalities principle would be enhanced by understanding how the modalities combine to form playable narratives referred to as ludonarratives (Kapell 2015).

Second, Gee (2003) outlines three identities engaged with by gamers. The *real-world* identity encompasses the identity of gamers playing the game. The *virtual identity* refers to the game avatar's identity used by gamers. The *projective identity* refers to gamers' hopes for what they envision their avatar's identity will become while playing the game (Gee 2014). The identity principle can be enhanced by examining how players are aligned with the *virtual identity* of a game's playable avatar, such as Lara Croft from *Tomb Raider* (Gee 2003), through the combination of multiple semiotic modalities and how the modalities combined with MDA and ludonarrative resources. Moreover, the contextual entanglement concerning how players affiliate with game characters according to the values of their *real-world* and *projective identity* while gaming could be examined. This approach would reveal new insights in instances of a clash between implied socio-political values represented in a videogame's ludonarrative, causing players to experience dissonance or rejection from the simulated environment (Hawking 2007; Seraphine 2016).

Systemic Functional Semiotic (SFS) identity and multimodal tools (van Leeuwen 2022; Martin 2009; Hasan 2009) can be used to investigate the entanglement of how players are allocated multimodal resources that align with an avatar's *virtual identity* and use values from their *real-world* identity to affiliate and bond with their avatar's *projective* identity. Examining identity in games would extend SFS research conducted by Lowien (2022) into how videogames imply socio-political values. Implications from the research would inform post-videogaming multimodal pedagogies utilised in educational contexts that examine texts' aesthetic, affective, compositional, and critical dimensions (Barton 2023; Callow 2005, 2020).

Affinity Spaces in Platformised, Postdigital Times (Zowi Vermeire)

One of the 36 good principles for learning that Gee (2003) introduced is that learning takes place within *affinity* spaces. I want to reflect on how *affinity spaces* can be read through a postdigital lens in which big tech companies have increasingly taken control of online spaces (van Dijck et al. 2018). Specifically, I am interested in how this affects the affinity spaces' interactions and practices: the grammar through which they relate to affinities.

Gee introduced 'affinity space' in the context of a larger discussion about changes brought on by digital technologies for learning communities, such as more fluid notions of membership (Gee 2005b; Angouri 2015). Since his introduction of *affinity space*, online spaces have become increasingly controlled and *platformised* by big tech companies that steer users towards surveillant and commercial goals (Dijck et al. 2018). I will use Cramer's (2015) idea of the postdigital as subversive of original intents of digital designs as a conceptual lens to understand affinity spaces on digital platforms. Cramer (2015: 18) comes to this subversive idea of the postdigital by positioning it as part of a 'postdigital hacker attitude of taking systems apart'. Digital spaces are not perceived as innovative, but as a tool among others to use for one's own goals. I use this postdigital lens and apply it to an example, to understand how affinity spaces might subvert digital platforms' intents.

In earlier research, I observed how affinity spaces subvert original intentions of BigTech companies on platforms, while simultaneously these intentions become integrated in young people's interactions with affinity spaces (Vermeire 2023). For example, YouTube-users engage in practices that can be described as *perceived algorithmic curation.* Their practices demonstrate a perceived ability to subvert platforms' algorithmic control over the visibility of, and access to, their affinity space. Transgender content creators, for instance, claim that YouTube algorithmically supresses content that deals explicitly with being trans, providing less visibility on the platform. These creators attempt to subvert this perceived algorithmic control over their affinity's visibility by calling upon their followers to use YouTube's like, comment and share buttons to, as a comment says, 'put this shit back in the algorithm' (Bosch 2021). These users attempt to force a space for their affinity on YouTube by subverting its commercial mechanisms for their own purposes.

If we understand the postdigital as describing the digital as integrated in everyday learning environments (Forsler et al. 2024; Jandrić et al. 2018) and as subversive of technologies (Cramer 2015), the practice of *algorithmic curation* is exemplary of affinity spaces' postdigital existence. First, this practice demonstrates how the digital is not seen as innovative, as is common for the postdigital (Jandrić et al. 2018). Platforms technological workings, and their algorithms are an integrated, everyday part of affinity spaces' grammar. Second, this practice demonstrates how affinity spaces subvert platform algorithms, exemplifying the postdigital attitude of taking platform designs and systems apart. Affinity spaces can be argued to have been ushered into platformised, postdigital times: we might wonder what this implies for 'good' learning.

Teaching and Learning

There Is Nothing New, Only Truth ('The Pedagogy of Multiliteracies'): Now What? (Jonathan deHaan)

Good Learning, Better Teaching

Gee, co-author of the New London Group's (1996) pedagogical manifesto, argued that a game-based education should foster understanding of identities, perspectives,

and cultural models as 'equipment for living' (Gee 2003: 203). Integrating these concepts into any context enhances learning and improves schools and society. To achieve all this, Gee (2003) emphasized (though perhaps not enough) the role of teachers and peers in transitioning players from active to critical learners. Gameplay alone is insufficient; learning occurs through a balance of immersive experiences and reflective conceptualization. Effective learning with games requires experts to provide advanced guidance and help students interpret and apply experiences (deHaan 2019, 2020a, 2022, 2023). Pedagogical practices facilitate peer collaboration on complex projects, making teachers, mentors and peers crucial to productive multiliteracies work with games.

A Good Postdigital Balance

Educational technology hype leads to inflated expectations followed by disillusionment (deHaan 2019, 2020b, 2020c). However, Gee's (2003) focus on critical reflection and community participation offers a sustainable model for leveraging games beyond the hype, integrating them as essential components of a mature educational ecosystem. A postdigital teaching and learning ecosystem based on Gee's (2003) literacy messages and instantiated by the Pedagogy of Multiliteracies could absolutely be 'game-based'. But instead of thinking only about games as content or skill practice in a 'banking model' (Freire 1970) of schooling, games can be utilized for their simulation of systems and concepts, for their experiential instantiations of language, and for their cultural connections to technology, representation, professional practices, and audience meaning-making.

Games in this ecosystem would be used for the liberating transformation of students, school, and society, so the pedagogy would begin with teachers and students choosing games that held promise for connections to individual and shared dreams and goals for health and happiness. Gameplay would be debriefed and concepts that emerged from gameplay would be explored in depth (e.g. through established media literacy education questions). These concepts would then be situated and linked to social phenomenon and cultural understandings (e.g. through fieldwork). Finally, students would apply their academic and social knowledge to participate, as they wished, either reservedly or riskily, in personal, pupil, public, or professional lifeworlds (e.g. through activism, design, critique, financial gain, artistic, or educational work). A critical and comprehensive understanding and application of games, alongside a critical and comprehensive understanding and application of pedagogy, would ensure that games are not touted transient trends but integral to a deeper, ongoing learning process shaped by skilled educators.

A Great Postdigital Games and Teaching and Learning Agenda

Education is what it has always been—a maelstrom of policy, practice, pundits, and passion (deHaan and York forthcoming). Will postdigital progressive pedagogy-driven partnerships finally integrate videogames and deep and broad literacy practices to achieve monumental changes? Through collaborative inquiries between educators and scholars, there is much work to be done in this space.

Postteaching in the Postdigital (Alison J Croasdale)

In the years between the publication of Gee's *What Video Games Have to Teach Us About Learning and Literacy* (2003) and now, we have seen not only greater emergence of ideas around the postdigital but also, arguably, a move towards an era of *postteaching*, where 'post' indicates a shifting field needing interrogation (Sinclair and Hayes 2019; Jandrić et al. 2024), offering an opportunity to critique the possibilities implicit in Gee's (2003) claims, post-pandemic.

During the COVID-19 pandemic, teachers pivoted to deliver online content, often with little training. Post-pandemic, teachers are still managing repercussions from students experiencing (or avoiding) learning online (Brannen et al. 2023; Watts and Pattnaik 2023; Wilson et al. 2023). The frequency of (though not always, with variability of digital access) screen-focused learning students experienced during the lockdowns resulted in a blurring of what screens 'meant' as communicative sites, with learning and playful spaces condensed into homes, sometimes even single devices, interpolating the kinds of multiliteracies Gee (2023) evokes in his work.

Widespread, cross-phase, online teaching destabilised understandings of what 'teaching' is, eliciting various arguments about what support teachers need, and how teaching could evolve digitally post-pandemic (for example, Jansen and Farmer-Phillips 2021; Nikolopoulou and Kousloglou 2022). In Gee's (2003) work, he suggested the 'good learning' of games mapped onto the literacies required of digital spaces, and this was very true of the period students spent learning online. However, the 'post' of postdigital also calls us to interrogate the limitations of the forms of learning foregrounded in Gee's (2003) argument, and question how his ideas could potentially reinform our understanding of 'good learning' post-pandemic.

The assumption students are happy on screens is problematic, and often the experience of online learning was one of disengagement (Bond et al. 2021; Bergdahl 2022; Maimaiti et al. 2023). We have entered a postdigital era of challenging the early claims of digital media scholars (Knox 2019). Gee (2003) explores how we learn to play a game within the game itself as a successful digital literacy. What he identifies can represent good learning in the classroom or online, yet when teaching moved into online spaces, the 'good' learning did not manifest as self-contained experience, particularly from the perspective of students themselves (Walters et al. 2022). Frequently, the barrier for both teachers and students was technology itself—an unplayful world away from familiar apps and consoles—or that learning was no longer situated socially in a classroom, but remotely online (Manca and Delfino 2021; Chen et al. 2022; Walters et al. 2022). This kind of critique sits within the concerns of the postdigital, and warns against technology-focused, digitally isolated postteaching.

Gee's (2003) principles remain the same no matter *how* the 'good' learning is delivered. However, whilst issues of digital access and Covid-19's aftereffects remain unresolved, what postdigital considerations demonstrate is that digitality in education has never been consistently realised, thereby limiting the potential of what can be taken from Gee. Without support from policymakers, teacher training incorporating technology consistently, and recognition of the influence of in-person learning, the postdigital possibilities of Gee (2003) remain only possibilities.

Innovative Educational Practices: Multireality Environments in the Postdigital Era (Angel Torres-Toukoumidis)

In the postdigital era, society progressively transitions from an explicitly techno-centric focus, laden with techno-positivist innovations (Cramer 2015), towards an organic and merged integration of technologies into everyday life. Building on this premise, and acknowledging the conclusion of the transmission era, videogames have become formally incorporated into media culture (Wark 1994), becoming the primary apotheosis of human–computer interaction (Newman 2002) and permeating the development of students' skills and competencies at all educational levels (Luzuriaga et al. 2022).

In the postdigital context, the boundaries between the virtual and the real blur, particularly in videogames, fostering new forms of technological omnipresence in playful-educational experiences (Lacković 2021). While commonly valued among youth, this carries the persistence of socioeconomic inequalities in access to and use of these resources (Koutsogiannis and Adampa 2022), but also promotes fair and inclusive pedagogies ensuring learning is an ethical experience (Savin-Baden 2023). Within the framework of the learning practice principle posited by Gee (2003), where it is stated that students have the opportunity to extensively practice in an environment they find interesting, this allows them to achieve constant success and learning, motivating them to devote a significant amount of time to the proposed activity.

From this precept, a significant postdigital possibility associated with video game literacy is the implementation of multireality environments, as discussed by Dragone et al. (2005). Although the concept is not novel, its application within the context of postdigitality represents an innovative approach. This trend suggests a normalization of such environments in society, unencumbered by epistemological constraints that limit autonomous experimentation and trial, and avoiding confinement to a specific type of reality, technology, or laboratory. Casas et al. (2018) introduce the term 'multireality games' to describe interactions that blend physical and digital elements, encompassing the full spectrum of the reality-virtuality continuum.

Building on Gee's work on situated learning and videogames, these multireality environments provide meaningful contexts for learning. Gee (2003) asserts that students have the opportunity to engage in environments they find compelling, fostering continuous success and learning. These interactions can enhance affordances such as enjoyment and motivation (Pinto and Cooper 2023), creating an immersive learning experience that supports the active and empirical role of students, thereby influencing their cognitive, affective, and psychomotor development (Dengel 2022). By leveraging the affordances of games, such as engaging narratives and interactive challenges, students are enabled to immerse themselves in deep, active learning experiences that are both enjoyable and educational. The postdigital age brings the potential for immersive technologies to transform educational practices, making learning more interactive, engaging, and effective.

Blockchain Applications in Digital Game-Based Learning (Xiao Xu)

In the postdigital era, the intersection of emerging technologies with educational theory presents complex challenges and opportunities. Gee's (2003) seminal work on videogames as learning tools is revisited in the context of blockchain technology, a tool often hailed for its potential to revolutionize educational systems. While the innovative application of blockchain technology is claimed to monitor and enhance the learning experience (Alammary et al. 2019), a postdigital critique, echoing Ralston's (2020) call for realism, compels a more nuanced examination of these claims, particularly within digital game-based learning environments that incorporate blockchain.

Blockchain has been proposed as an emerging technology to track learners' progress, especially in multiplayer and competitive games for language learners, where the outcomes can vary between winners and losers (Ongoro and Fanjiang 2024). Choi et al. (2022) developed a blockchain-based educational program leveraging the ASSURE model, aimed at enhancing digital literacy and blockchain awareness among South Korean elementary students through gamified learning. This program highlights the potential of blockchain to facilitate self-directed learning and integrate seamlessly into both online and offline educational contexts. However, from a postdigital perspective, the assertion of blockchain as a purely beneficial technology must be critically assessed. Blockchain's support for Gee's (2003: 69) Achievement Principle does provide transparency, yet it also raises significant concerns regarding the commodification of educational achievements.

Kosmarski (2020) highlights a crucial tension in the application of blockchain, particularly its reliance on incentive systems designed around tokens. Such systems, while effective in certain contexts like cryptocurrency, introduce problematic dynamics when applied to education. The tokenization strategy promotes behaviours that align with the system's predefined rewards but may also undermine intrinsic motivations, such as the pursuit of knowledge for its own sake, echoing concerns in scientific communities where the push for monetizable outcomes can detract from the core values of education.

While the potential of blockchain to support the Gee's (2003: 67, 197) Distributed and Identity Principles is intriguing, its actual application in gamification of learning demands critical scrutiny. The capability of blockchain to maintain a distributed ledger system could revolutionize information storage and sharing among video game participants, simulating collaborative environments akin to real-world interactions. However, this technology also embodies a tension inherent in postdigital contexts; it requires balancing technological possibilities with a critical awareness of implications for privacy and equity.

Muñoz-Rodríguez et al. (2021) highlight the importance of maintaining anonymity and protecting privacy in digital identities, areas where blockchain could play a significant role through cryptographic mechanisms like zero-knowledge proofs (Xu 2024). Nonetheless, these technologies also introduce complexities regarding user control over personal data and the potential for creating exclusionary practices within educational environments. Ralston's (2020) critique emphasizes the importance of not overlooking non-digital solutions, which offer equally effective

or superior educational benefits such as personal interaction in tutorials that have proven educational value across centuries.

While blockchain technology aligns with and could potentially enhance Gee's (2003) educational principles: Achievement, Identity, and Distribution, its integration into digital game-based learning must be approached with caution. From a postdigital standpoint, it is critical to reevaluate the enthusiastic embrace of blockchain, emphasizing the need for a balanced assessment of its technological.

Beyond the Games: New Conditions and Recontextualization as Postdigital Literacy (Karoline Schnaider)

In the context of a rapidly evolving digital landscape, the shaping of networked environments through increasingly used gamified systems are considered conditional to the multimodal features of these systems and the multimodal capacities of learners (Fernando and Premadasa 2024). Gee (2003) posited that these multimodal conditions enable seamless integration of technology and learning into social practices, thereby shaping these practices and new learning opportunities.

However, in a recent analysis of game-based curricula, Bacalja et al. (2024) argue that relying solely on technology to facilitate learning in situ is no longer adequate. Existing knowledge of multimodal conditions to transfer contemporary intelligent gamified systems and learning into educational contexts also appears to be insufficient. This text highlights that a postdigital (multimodal) approach can benefit from ideas of emerging conditions of new technologies and learning for recontextualization into educational contexts, to better understand how these contexts will support new learning.

Gee (2003) argued that gamified virtual worlds are designed to support learning not only within specific domains but also through the development of multimodal meanings. The multimodal nature of these games fosters embodied experiences, encouraging learners to reflect on optimizing the complex design of imagined worlds as part of learning (Campbell and Olteanu 2024). Gee (2003) concretely illustrated how such multimodal conditions within gamified systems easily facilitate recontextualizations by demonstrating how students connect virtual commands, like 'walk', with the physical act of pressing a key, thus anchoring the virtual experience in a tangible context. The virtual experience recontextualized into an educational context potentially reflect the achievement of its goals and facilitate the progression of new learning therein.

In contemporary educational settings, there seem to be a widespread unfamiliarity with the design conditions and complexities of new intelligent game-like feedback systems, as well as with the conditions for effective learning and integration into educational contexts. This is particularly problematic because semiotic work, or the process of creating meaning, is deeply entwined with these feedback systems. Consequently, learning is often recontextualized from one digital domain to another without ensuring that learners understand what the transitions entail or how to relocate them into a context (Bezemer and Cowan 2020; Schiavetto and Schnaider 2022). While these systems ostensibly uphold the necessary multimodal conditions,

they actually bring forth specific technology-learner conditions that require careful consideration (Schiavetto and Schnaider, 2024). The challenges highlighted by Gee (2003: 70) in mastering 'ever newer semiotic domains' have gained increased relevance with the rise of intelligent feedback systems in education, particularly in how these domains become performative in shaping the learning process.

Scholars have suggested that in postdigital realms, it is crucial to look beyond merely trusting intelligent game-like feedback systems and instead critically examine their relationship with learning and educational contexts (Bacalja et al. 2024). Current postdigital literacies, which already includes a common understanding of multimodal conditions, must be enriched by incorporating emerging technology-learner conditions and the concept of recontextualizations. This addition can provide valuable insights into mastering the new semiotic domains within intelligent educational contexts and enhancing their capacity to effectively support learning.

Conclusion (Alexander Bacalja)

In considering the many views expressed across this collective paper, I am reminded of Foucault's (1972) investigation of fields and his interrogation of rules that inform their formation. Foucault's interest in the techniques, strategies, and rationalities that transform multiplicities into unity, and his inclination to disrupt what is taken for granted in a field, offer useful standpoints by which to approach past, present, and future relations between humans and videogame technologies. While there should be little doubt that Gee's (2003) work will continue to be influential in how such relations are understood, the difference, divergence and discontinuity that underpins Foucault's (1972) multiplicity, and the evidence of such proclivities in the above contributions, suggest the emergence of attitudes towards videogame literacies that are more sceptical and critical.

Such positions will be important if current trends regarding EdTech interventions in education extend full-force into game-based and gamified solutions. Behind the business interests of EdTech lie what Williamson (2022: 157) refers to as 'a kind of shadow education industry of business managers, market forecasters, deal-makers, investors, venture philanthropists, and private equity firms'. The future digital imaginaries that underpin much of this investment (see Williamson and Komljenovic 2023), are not dissimilar to the evangelism of Digital Game-Based Learning (DGBL) and gamification. Those interested in problematizing claims and assumptions about the affordances of videogames for learning would do well to extend their attention beyond game design. As recent analysis has suggested, the producers of education technologies are the same economic and political actors engaged in constructing narratives and imaginaries privileging utopian possibilities (see Bayne 2024; Komljenovic et al 2023).

The impetus for more critical perspectives towards videogames is a distinct divergence from Gee's (2003) work. A multitude of factors associated with learning with and through videogames has led scholars to question whether the learning associated with well-designed games is worth it. These include concerns about: algorithmic cultures (Ehret 2024), platform practices (Nichols and LeBlanc 2020), psychosocial surveillance and discipline through gamification techniques (Robinson 2021; Williamson 2017), gaming cultures (Golding and Van Deventer 2016), and fluid boundaries

between intended and actual gameplay (Consalvo 2007). As Kline et al. (2003) remind us, videogames need to be considered in terms of the interconnectedness between technological experience, market transactions (including the consumption of digital commodities produced large by transnational corporations and media empires), and the active production and consumption of cultural meaning by players.

Where I see the generative capacity of the postdigital to be most fruitful in discourses about videogame literacies is in terms of investigating entanglements. Gee (2003) was not wrong to draw our attention to game design features which nudge players towards particular behaviors that support learning. However, such activity is always entangled with other factors. The impossibility of disentangling videogames from the digital, biological, material and social (Jandrić et al. 2018) considerations of education need not be the reason to discard all consoles. Rather, it is a reminder that the disruption (economic, social, cultural) that accompanies the introduction of videogames into learning environments need be approached with caution.

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Authors and Affiliations

Alexander Bacalja[1] · T. Phillip Nichols[2] · Bradley Robinson[3] · Ibrar Bhatt[4] · Stefan Kucharczyk[5] · Chris Zomer[6] · Brady Nash[7] · Bruno Dupont[8] · Rozane De Cock[8] · Bieke Zaman[8] · Maude Bonenfant[9] · Eva Grosemans[8] · Sandra Schamroth Abrams[10] · Carmen Vallis[11] · Dimitrios Koutsogiannis[12] · Gideon Dishon[13] · Jack Reed[14] · Thomas Byers[1] · Rania Magdi Fawzy[15] · Hsiao-Ping Hsu[16] · Nathan Lowien[17] · Georgina Barton[17] · Jon Callow[11] · Zirui Liu[17] · Frank Serafini[18] · Zowi Vermeire[19] · Jonathan deHaan[20] · Alison Croasdale[21] · Angel Torres-Toukoumidis[22] · Xiao Xu[23] · Karoline Schnaider[24]

✉ Alexander Bacalja
alex.bacalja@unimelb.edu.au

T. Phillip Nichols
phil_nichols@baylor.edu

Bradley Robinson
bradrobinson@txstate.edu

Ibrar Bhatt
i.bhatt@qub.ac.uk

Stefan Kucharczyk
stefkucharczyk@gmail.com

Chris Zomer
c.zomer@deakin.edu.au

Brady Nash
Brady.nash@ufl.edu

Bruno Dupont
Bruno.dupont@kuleuven.be

Rozane De Cock
rozane.decock@kuleuven.be

Bieke Zaman
bieke.zaman@kuleuven.be

Maude Bonenfant
bonenfant.maude@uqam.ca

Eva Grosemans
eva.grosemans@kuleuven.be

Sandra Schamroth Abrams
sandra@sandrasabrams.com

Carmen Vallis
Carmen.vallis@sydney.edu.au

Dimitrios Koutsogiannis
dkoutsog@lit.auth.gr

Gideon Dishon
gdishon@post.bgu.ac.il

Jack Reed
j.reed2@exeter.ac.uk

Thomas Byers
tom.byers@unimelb.edu.au

Rania Magdi Fawzy
raniamagdi@aast.edu

Hsiao-Ping Hsu
hsiao-ping.hsu@dcu.ie

Nathan Lowien
Nathan.lowien@unisq.edu.au

Georgina Barton
georgina.barton@unisq.edu.au

Jon Callow
jon.callow@sydney.edu.au

Zirui Liu
zirui.liu@unisq.edu.au

Frank Serafini
serafini@asu.edu

Zowi Vermeire
z.vermeire@uu.nl

Jonathan deHaan
dehaan@u-shizuoka-ken.ac.jp

Alison Croasdale
a.croasdale@ucl.ac.uk

Angel Torres-Toukoumidis
atorrest@ups.edu.ec

Xiao Xu
x.xu@unsw.edu.au

Karoline Schnaider
Karoline.schnaider@umu.se

[1] University of Melbourne, Melbourne, Australia

[2] Baylor University, Waco, TX, USA

[3] Texas State University, San Marcos, TX, USA

[4] Queens University Belfast, Belfast, UK

[5] University of Sheffield, Sheffield, UK

[6] Deakin University, Melbourne, Australia

[7] University of Florida, Gainesville, FL, USA

[8] KU Leuven, Louvain, Belgium
[9] Universite du Quebec a Montreal, Montreal, QC, Canada
[10] University of South Africa, Pretoria, South Africa
[11] University of Sydney, Sydney, Australia
[12] Aristotle University of Thessaloniki, Thessaloniki, Greece
[13] Ben-Gurion University of Negev, Beersheba, Israel
[14] University of Exeter, Exeter, UK
[15] Arab Academy for Science, Technology & Maritime, Cairo, Egypt
[16] Dublin City University, Dublin, Ireland
[17] University of Southern Queensland, Springfield, Australia
[18] Arizona State University, Tempe, AZ, USA
[19] Utrecht University, Utrecht, Netherlands
[20] University of Shizuoka, Shizuoka, Japan
[21] University College London, London, UK
[22] Universidad Politecnica Salesiana, Cuenca, Ecuador
[23] University of New South Wales, Sydney, Australia
[24] Umea University, Umea, Sweden