

# Pedagogical Theory and Embodiment: Some Provocations for Virtual and Augmented Reality in Education

Erica Southgate\*

School of Education, The University of Newcastle,  
Callaghan 2308, Australia

Shamus P. Smith

School of Electrical Engineering and Computer Science,  
The University of Newcastle, Callaghan 2308, Australia

## ABSTRACT

Virtual and augmented reality technologies have been heralded as bringing an end to education in its traditional, institutional forms. This paper explores this claim by deploying two areas of educational theory: non-technicised pedagogical theory and sociological theories of embodiment. The paper traces each theoretical area, weaving a series of provocations, throughout which raise significant questions for the development and study of educational technology. This paper highlights a number of educational issues and tensions that need to be deeply considered and debated if virtual reality is to become the much heralded transformative technology for education and embodied learning.

**Keywords:** Virtual reality, augmented reality, pedagogy, sociology, social theory, embodiment, educational technology.

**Index Terms:** H.5.1 [Information Interfaces and Presentation (e.g., HCI)]: Multimedia Information Systems—Artificial, augmented, and virtual realities;

## 1 INTRODUCTION

In November 2015, at the Web Summit conference in Ireland, the founder of Oculus virtual reality (VR) technology, Palmer Luckey boldly stated: “I think there’s a lot of potential for virtual reality in the education industry...Classrooms are broken. Kids don’t learn the best by reading books” [1]. While his prediction on the death of the classroom, a globally proliferating staple in the organization of mass education systems [2], may be premature, Luckey’s observation on the potential of VR and augmented reality (AR) to transform learning experiences is tantalizing. He suggests that these technologies will open up opportunities that most learners will never experience, such as field trips to museums or distant cities, intimating that immersive, experiential learning may surpass traditional strategies such as reading.

These observations raise questions about the potential for VR/AR to revolutionize the organization and experience of learning, and pedagogical relationships. However, as critical scholars have long suggested, technology is neither good nor bad nor neutral [6], nor does educational technology automatically have a positive transformative or empowering effect on individuals, groups, institutions and systems [3][4][5]. In line with this critical position, the purpose of this paper is twofold. Firstly, it traces some key ideas from two substantial bodies of theory; (non-technicised) pedagogical theory, and the sociology of embodiment. Secondly, the paper weaves six provocations on VR/AR in education, throughout the theoretical discussion. These provocations, in the sociological sense, are designed to unsettle central assumptions and incite critical reflection [7].

## 2 PEDAGOGY

The term pedagogy has no agreed upon definition but it does have a long history of popular and theoretical usage [8]. In popular terms, it is considered ‘coterminous with teaching’ [9] and is used to describe particular teaching styles. In popular culture, the ‘pedagogue’ is usually an authoritative, didactic and dogmatic teacher [9]. Generally, pedagogy has been defined as ‘any conscious activity by one person designed to enhance learning in another’ [10]. There is a history of reducing pedagogy in a technicist manner. Technicism occurs when ‘good teaching’ is equated with an efficient performance which achieves a narrow set of prescribed ends for teachers and learners [11]. Technicist versions of pedagogy frame it a set of instructional strategies, skills or competencies that can be enacted across educational contexts and that operates like a production line involving controlled inputs, regulated action and relatively predictable outputs [12].

Technicist versions of pedagogy have been challenged by more by approaches that view education as a socially implicated (and complicated) set of intentions and practices embedded within different traditions, cultures of learning, spatial-temporal locations and/or institutional contexts [2][13]. Some non-technicised pedagogical theories include, but are not limited to: Bernsteinian pedagogy [14][15]; critical pedagogy [16] which draws on the work of Dewey [17] and Freire [18]; feminist and poststructural feminist pedagogy [19][20][21]; authentic pedagogy [22]; and Alexander’s cross-cultural framework [2].

Non-technicised pedagogy challenges the ‘banking’ model [14] of education where educators, through a narrow set of instructional strategies, ‘deposit’ pre-existing knowledge into the heads of learners, with assessment being a demonstration of how well the learner can ‘spit out’ the correct answers (a bit like an automated teller machine (ATM) analogy). Non-technicised pedagogical frameworks do not reduce teaching and learning to a set of *a priori* skills, techniques or strategies. Rather, pedagogy is concerned with how teacher and learner identities, and relations of power and authority, interplay to construct and organise knowledge, desire, values, and skills in formal and informal learning settings [15]. Pedagogy becomes more than a set of replicable strategies designed to facilitate learning in relation to any setting, curriculum or type of student. Rather, pedagogy is a relational activity involving agency (or the capacity to freely act and constraints on this), ethical decisions, power and resistance, and, the exchange and/or co-production of knowledge. As Lusted [9] explains, this conception of pedagogy disrupts:

‘...the conventional transmission model wherein knowledge is produced, conveyed and received....The transmission model is unilinear; anyone trying to turn-back in the one-way traffic is unceremoniously run over. To insist on the pedagogy of theory...is to recognise a more transactional model whereby

---

\* Contact author: Erica.Southgate@newcastle.edu.au

knowledge is produced...in the *consciousness*, through the process of thought, discussion, writing, debate, exchange; in the social and internal, collective and isolated struggle for control of understanding; from engagement in the unfamiliar idea, the difficult formulation pressed at the limit of comprehension or energy; in the meeting of the deeply held with the casually dismissed; in the dramatic moment of realisation that a scarcely regarded concern, an unarticulated desire, the barely assimilated, can come alive, make for a new sense of self, change commitments and activity. And these are also *transformations* which take place across all agencies in an educational process, regardless of their title as...teacher or learner.’ (p.4, original emphasis).

**Provocation 1:** Will VR/AR, even as it provides experiential learning, replicate traditional technicised input-output pedagogy and ‘one-way’ curriculum design to reinforce the transmission model of education? What would be required for VR/AR to be authentically transformative of traditional pedagogical relations?

Extending on this, Ellsworth [21] suggests that we should design and facilitate learning that ‘activate complex human relational dynamics such as: mind-brain-body + material situation + human interdependence’ (p.66). Within such environments, the dominant idea of knowledge as ‘a thing to be made’ is unsettled by valuing ‘knowledge-in-the-making’. Moreover, pedagogical events are often ‘non-compliant’: they generate ‘strange becoming’ or learning through collective interaction that is outside of the original ‘set up’ of a curriculum designed to guide learners towards the acquisition of specific answers/skills. These observations reflect the relatively undertheorized understanding of the unintended effects of pedagogical interactions and the unpredictability and value of ‘teachable movements’ [23].

**Provocation 2:** Can VR/AR learning environments generate, value and dynamically respond to ‘knowledge-in-the-making’ and the unpredictability of power pedagogical interactions and teachable moments?

While often having different foci for investigation and action, and dissimilar formulations of key concepts, non-technicised pedagogical frameworks view teaching and learning not as discrete activities but as part of a set of questions regarding the larger purpose of education [24][25]. Webster [24] states:

‘Not all pedagogies are educative. The contrast between pedagogy as a means only and having an end (purpose) that informs the judgements that professional educators must make, can be recognised as providing an important characteristic of pedagogies if indeed they are considered as having value for education’ (p.51).

The type of pedagogy Webster is advocating moves beyond highly individualized notions of ‘teachers’ and ‘learners’ and personal (cognitive) benefit. A clear articulation and argument for of the ultimate purpose of pedagogy is required. Philosopher Gert Biesta clearly articulates this when describing the benefits and dangers of the recent ‘learnification’ of education [25]. He suggests that the increasing emphasis on learning has the potential to both positively undermine transmission models of education, and negatively silence important, long-standing conversations about the value of education beyond the personal. He argues that currently ‘learning’ is:

‘basically an individualistic concept...even if it is couched in such notions as collaborative or cooperative learning. This in stark contrast to the concept of ‘education’ which implies a relationship: someone educating someone else and the person educating thus having a certain sense of what the purpose his or activity is...’(L)earning’ is basically a process term. It denotes processes and activities but is open – if not empty – with regard to content and direction’ (pp38-39).

**Provocation 3:** What is the broader purpose of VR/AR in education? Will it subsumed under a ‘learnification’ approach, as a process tool or as a means towards personalized ends, or will it forge a relationship to a broader, clearly articulated conversation regarding the ultimate values, aims and purposes of education? Is VR/AR conceived as a learning tool for individuals and groups interacting of individuals or as a radical reworking of existing relations between education and society, pedagogical relations between ‘teachers’ and ‘students’, formal and informal learning, and knowledge production for greater, collective good [3]?

In line with posing philosophical questions, some pedagogical frameworks contest underlying dualisms that permeate Western thought (mind/body, reason/emotion, nature/culture). It is to these, particularly in relation to embodiment that we now turn.

### 3 EMBODIMENT AND EDUCATION

Heidegger [26] states: “We do not ‘have’ a body; rather, we ‘are’ bodily” (pp. 98-99), a declaration that challenges a dominant dualism in Western thought: the Cartesian mind/body split [27]. The Cartesian split posits the mind is the seat of a superior form of thought, instrumental rationality (or reason). Instrumental rationality is apparent when a person deliberately formulates the means towards a goal. It involves conscious calculation of the costs, benefits and probabilities of success of certain actions undertaken to meet the goal. Some argue this is an ‘over-rationalised’ representation of human action [28]. Sociology provides a typology for other types of rationality, including Weber’s framework that posits that action is influenced by: a) *instrumental* rationality (zweckrational) or the calculating pursuit of one’s goals; b) *value* rationality (wertrational) or the pursuit of goals based on a beliefs and values that are derive from ethical, philosophical or religious values; c) tradition (traditional), where custom or habit (often unconsciously) influence action; and c) affectual state (affektuel) or emotion, sentiment and feeling as a driving force in action [29].

Such rationalities have been documented in sociological studies of education. Specifically, this literature disrupts the dualism of mind/body, and its adjunct binary reason/emotion, by theorizing and empirically documenting the emotional ‘economies’ that circulate through individuals and at a collective level in formal educational settings [30-33]. These studies illustrate the ‘intercorpality’ of the emotional economies [30]. Emotions are social, educational phenomena: they are palpably derived in and between ‘learners’ and ‘teachers’ through the curiosity, excitement, confusion, risk-taking and boredom in learning interactions; they infuse meaning-making in pedagogical encounters; they are intrinsic to the ‘climate’ of learning institutions; and are at play in the structural power relationships that influence institutional pedagogical approaches and curriculum and assessment development and in the relational power dynamics that circulate within and between people as they are ‘educated’ or resist ‘education’ [31-33].

**Provocation 4:** Can VR/AR account for and (productively) respond to the differing forms of rationality imbued in educative processes and their settings, including the powerful emotional economies that influence the development of and circulate in learning environments?

Another pervasive dualism of Western thought is the nature/culture split [34]. This dualism is reflected in specific views about bodies, for example, essentialized understandings of biologically determined roles and behavior (for example, in the ongoing sex vs gender debate or the quest for the gay gene). Philosophers, anthropologists and sociologists have long contested this dualism by offering nuanced analysis through which to understand the phenomena of ‘the body’ and ‘embodiment’. For example, while there is recognition of the biological or *natural body*, sociologist would argue that the meanings of embodiment are mediated by explicit and implicit socio-cultural norms that vary across time, culture and context [35]. This *socially constructed* body reflects, enacts and resists the socio-cultural and historical norms. In the social world, including educational arenas, bodies are simultaneously experienced and interpreted according to intersecting social categories such as ‘race’, class, gender, age and sexuality etc. This influences the experience of education for individuals and groups. The *phenomenological body* is one that experiences being-in-the-world: the body acts as by establish a mutual connection or relationship between people and the world (including objects and people in the world) and mediates these relationships, so the self and the world do not meld [36]. The *represented body* refers to the social inscription of meaning onto bodies as they are written, spoken of and visually imagined in media, popular culture and other communication modes. Bodies are represented in idealized, normative and deviant forms and imbued with judgements and values that reflect or resist broader ideological positions [37]. The body (and embodiment) should be a *multi-dimensional* medium, profoundly implicated in socio-cultural and historical processes and contexts, all of which profoundly influence educational experience.

**Provocation 5:** How will VR/AR account for and dynamically engage with the multi-dimensional body to foster positive and inclusive learning environments?

There is an insightful literature on embodiment, education and power. For example, Foucauldian scholars have utilized the notion of discipline, a concept that describes the impersonal way power operates in institutional contexts to transform, train and reward individuals who ingrain norms related to compliant (or docile) behavior. Disciplined individuals do not need to be told what to do; they have habituated, self-monitoring and self-regulating behavior, and those who have not embodied such norms are deemed deviant [32]. This points to the way educational institutions are implicated in the social reproduction of inequality through embodied practices. Bourdieuan scholars are interested in habitus, a concept that entails a durable (usually unconscious) system of lasting dispositions that are developed through one’s upbringing in a particular socio-cultural environment and influenced by social class, religion or ethnicity, among other factors [38]. While one’s habitus is a result of socialization within the family, it can be re-made through encounters with the outside world, including through education. Bourdieuan scholars have documented how educational institutions privilege a white middle

class habitus, thus reproducing structural inequalities within societies. They demonstrate that educational success is difficult unless a student adapts their habitus to middle class norms and dispositions reflecting these norms (in oversimplified terms, evident in certain modes of dress and speech, cultivated cultural interests and tastes, and meritocratic, aspirational and highly individualized belief systems etc). Non-adaptation to a middle-class habitus can result in students feeling discomfort in educational settings and even ‘dropping out’ [39]. To summarize, social educational theories demonstrate that the body is a key site in the reproduction of inequality and maintenance of social stratification. Selwyn [5] argues that those working within the field of educational technology should account for the ‘state-of-the actual’, rather than just the ‘state-of-the-art’, urging them to actively engage with “how digital technology use in educational settings may be reshaped along fairer and more equitable line” (p. 71).

**Provocation 6:** How will power and ethical relations be conceived and responded to in VR/AR learning environments for inclusive education? Will VR/AR reproduce educational or will it create more equitable educational and social outcomes.

#### 4 CONCLUSION

Palmer Luckey’s [1] prediction on the potential of VR/AR technologies to revolutionize education through new modes of learning highlights a number of educational issues and tensions that need to be deeply considered and debated if even a partial version of his vision is to be realized. This means an expansion of the educational technology discourse from the ‘technology as a learning tool’ and individualized ‘learnification’ perspectives, to encompass a robust *interdisciplinary* conversation on (a) what constitutes transformative pedagogical dynamics and remaking of the status of knowledge production, (b) the broader values and purposes of education as collective endeavor, and (c) the multi-model complications of embodied learning. Ultimately we are interested how challenges in these areas are met through the use of VR/AR technology and their relationship to more equitable outcomes in education.

#### ACKNOWLEDGMENTS

This work is supported in part by the National Centre in Student Equity in Higher Education (Curtin University, Australia) through an Equity Fellowship for Dr. Southgate.

#### REFERENCES

- [1] S. Dredge, *Oculus VR: “Classrooms are Broken. Kids don’t Learn the Best by Reading Books”*, *The Guardian*, <http://www.theguardian.com/technology/2015/nov/03/oculus-vr-founder-classrooms-are-broken>, [Last access 02/02/2016].
- [2] R. Alexander, *Essays on Pedagogy*, Routledge, London, 2008.
- [3] S. Livingstone, “Critical reflections on the Benefits of ICT in Education”, *Oxford Review of Education*, 38(1), pp.9-24, 2012.
- [4] M. Oliver, “Technological determinism in educational technology research: some alternative ways of thinking about the relationship between learning and technology”, *Journal of Computer Assisted Learning*, 27(5), pp. 373-384, 2011.
- [5] N. Selwyn, “Looking beyond Learning: Notes towards the Critical Study of Educational Technology”, *Journal of Computer Assisted Learning*, 26(1), pp. 65-73, 2010.
- [6] M. Kranzberg, “Technology and History: Kranzberg’s Law”, *Technology and Culture*, 27(3), pp. 544-560, 1986.

- [7] S. Woolgar, "What happened to Provocation in Science and Technology Studies?", *History and Technology*, 20(4), pp. 339-349, 2004.
- [8] D. McNamara, "Vernacular Pedagogy", *British Journal of Educational Studies*, 39(3), pp. 297-310, 1991.
- [9] D. Lusted, "Why Pedagogy", *Screen*, 27, pp. 2-16, 1986.
- [10] C. Watkins, Mortimore. P, "Pedagogy: What do we know?" In: Mortimore P. (ed). *Understanding Pedagogy and its Impact on Learning*, Sage, London, 1999.
- [11] J. Halliday, "Technicism, Reflective Practice and Authenticity in Teacher Education", *Teaching and Teacher Education*, 14(6), pp. 597-605, 1998.
- [12] P. Hodkinson, "Technicism, Teachers and Teaching Quality in Vocational Education and Training", *Journal of Vocational Education and Training*, 50(2), pp. 193-208, 1998.
- [13] B. Lingard, "Socially Just Pedagogies in Changing Times", *International Studies in Sociology of Education*, 15(2), pp. 165-186, 2005.
- [14] B. Bernstein, *Codes and Control. Volume 3. Towards a Theory of Educational Transmissions*, Routledge & Kegan Paul, London, 1975.
- [15] B. Bernstein, *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique*. Rowman and Littlefield, New York, 2000.
- [16] H. Giroux, "Cultural studies, public pedagogy, and the responsibility of intellectuals", *Communication and Critical/Cultural Studies*, 1(1), pp. 59-79, 2004.
- [17] J. Dewey, *Experience and Education*, Simon and Schuster, London: 2007.
- [18] P. Freire, *Pedagogy of the Oppressed*, Bloomsbury, London, 1968.
- [19] E. Ellsworth, "Why Doesn't this Feel Empowering? Working through the Repressive Myths of Critical Pedagogy", *Harvard Educational Review*, 59(3), pp. 297-325, 1989.
- [20] E. Ellsworth, "The Wicked Problem of Pedagogy", *Textura*, 17(34), pp. 65-70, 2015.
- [21] E. Tisdell, "Poststructural Feminist Pedagogies: The Possibilities and Limitations of Feminist Emancipatory Adult Learning Theory and Practice", *Adult Education Quarterly*, 48(3), pp. 139-156, 1998.
- [22] F. Newmann, H. Marks, A. Gamoran, "Authentic Pedagogy and Student Performance", *American Journal of Education*, pp. 280-312, 1996.
- [23] C. Ballenger, *Puzzling Moments, Teachable Moments: Practicing Teacher Research in Urban Classrooms*, TC Press, New York, 2009.
- [24] R. Webster, "Why Educators should Bring an End to Pedagogy", *Australian Journal of Teacher Education*, 34(1), pp. 34-45, 2009.
- [25] G. Biesta. "Good Education in an Age of Measurement: On the Need to Reconnect with the Question of Purpose in Education", *Educational Assessment, Evaluation and Accountability*, 21(1), pp. 33-46, 2009.
- [26] M. Heidegger, *Neitzsche*, Harper, San Francisco, 1979.
- [27] R. Descartes. *Philosophical Writings*, Nelson, Melbourne, 1968.
- [28] W. De Haan, J. Vos, "A Crying Shame: The Over-rationalized Conception of Man in the Rational Choice Perspective", *Theoretical Criminology*, 7, pp. 29-54, 2003.
- [29] R. Brubaker, *The Limits of Rationality*, Allen and Unwin, London, 1984.
- [30] M. O'Loughlin. *Embodiment and Education*. Springer, Dordrecht, 2006.
- [31] M. Boler, *Feeling Power: Emotions and Education*, Routledge, New York, 1999.
- [32] E. Southgate, *Remembering School: Mapping Continuities in Power, Subjectivity and Emotion in Stories of School Life*, Peter Lang, New York, 2003.
- [33] M. Zembylas, "Pedagogies of Strategic Empathy", *Teaching in Higher Education*, 17(2), pp. 113-125, 2012.
- [34] J. Gerber, "Beyond Dualism. The Social Construction of Nature and the Natural and Social Construction of Human Beings", *Progress in Human Geography*, 21(1), pp. 1-17, 1997.
- [35] C. Shilling, *The Body and Social Theory*, Sage, London, 2012.
- [36] T. Fuchs, "Corporealized and disembodied minds", *Philosophy, Psychiatry, & Psychology*, 12(2), pp. 95-107, 2005.
- [37] S. Bordo, *Unbearable Weight: Feminism, Western Culture, and the Body*, Berkeley, UC Press, 2004.
- [38] P. Bourdieu, *Outline of a Theory of Practice*, Cambridge University Press, Cambridge, 1977.
- [39] W. Lehmann, "Habitue Transformation and Hidden Injuries Successful Working-class University Students", *Sociology of Education*, 87(1), pp. 1-15, 2014.