# Students' Experiences of Emotional Connection with Pedagogical Agents

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## INTRODUCTION

Daily activities in the UK – such as socializing, shopping, or learning – are increasingly mediated through cyberspace environments. The exact nature of these environments can include predominantly textual 2D websites, such as forums or commercial websites, or 3D graphical environments, such as virtual worlds. Whilst these environments vary considerably in nature, certain similarities can be identified. One such pattern is the increasing presence of the chatbot in commercial, industrial, and educational settings. Chatbots are characters on a computer screen with embodied life-like behaviours such as speech, emotions, locomotion, gestures, and movements of the head, the eye, or other parts of the body (Dehn & Van Mulken, 2000). They are typically used to provide advice on a 24/7 basis, enabling users to ask a 'human face' for support without requiring a human advisor to be present at all times.

In recent years, the use of chatbots has become increasingly common in educational settings; as educational tools, they are known as pedagogical agents (Veletsianos & Russell, 2014). The current difficulty is that whilst research into the use of pedagogical agents has increased in recent years, it is somewhat inchoate and has failed to distinguish practices across different disciplines. Furthermore, the research that *has* been undertaken has not yet drawn distinctions between practices in difficult and sensitive settings which are particularly important for vocational courses

such as healthcare or counselling (for example, Heidig & Clarebout, 2011). Thus there is little understanding of how students might engage with pedagogical agents when discussing sensitive topics, and how this might impact upon truthfulness and trust, which are particularly complex concepts in a networked society.

This article begins by discussing issues of truthfulness and trust with regard to teaching and learning. It goes on to identify current issues surrounding the use of pedagogical agents, drawing upon research from both educational and commercial settings. Findings are then presented from two research studies that used responsive evaluation to explore students' experiences of engaging with pedagogical agents on sensitive topics. The findings from these studies identified truthfulness, personalisation and emotional engagement as vital components in interacting with pedagogical agents. It concludes by offering recommendations for practice and identifying priority areas which require attention in future research and development.

## BACKGROUND

The continuing debates about the nature and process of learning in higher education have created a minefield of overlapping concepts, with few clear frameworks for understanding the relationship between the context and the experience of the learner. However, those in the field of critical awareness have argued that theirs

is not simply another perspective on adult learning but rather a shift in ideology. The ideals of this tradition stem largely from theorists such as Freire (1972, 1974) and hooks (1994), who have argued that social and historical forces shape the processes through which people come to know themselves and develop their view of the world. Learning is therefore seen to occur in a social and cultural context and this necessarily influences what and how people learn. Learners therefore must seek to transcend the constraints their world places upon them in order to liberate themselves and become critically aware. Yet it would seem that higher education has increasingly become colonised by an enterprise culture and the result is that students and academics have become defined by and through this culture. These colonising forms of enterprise higher education reflect the market forces and the quick fix stance of commerce and industry. Higher education that only supplies 'training' is unlikely to equip students to work in an uncertain world. Giroux and Giroux (2004) have argued that educators should build courses by combining 'democratic principles, values, and practices with... the histories and struggles of those often marginalized because of race, class, gender, disability, or age' (p. 99). They argue that academics should shift beyond the lands of academia and integrate with the larger spheres in the community, where culture and politics are truly learned and made relevant. One such sphere is the online world, a core part of students' everyday lives.

Yet in doing so we are faced with issues around honesty, plagiarism and self disclosure, concepts which seem evermore challenging in the seeming anonymity of online environments. The notion of whether truth exists and whether it can be ascertained is one that has been discussed and debated *ad nauseum*. Notions of 'Truth,' 'truth,' 'truths,' 'truthfulness,' and even 'truthiness' have been considered for their applicability in education and social science (Major & Savin-Baden, 2010). While these concepts clearly are value laden and may be picked apart for accuracy, precision, desirability and achievability, it is still clear that the teachers and researchers should make some effort to present some version of multiple realities. Yet truth telling, disclosure and online behaviours remains a contested area in higher education. Some staff over regulate and over moderate behaviours, others do not. For example, approaches to teaching in virtual worlds often seem to differ not only because of the medium being used but

also because of the nature of immersion and presence that occurs in that environment. This is because 'being' in a virtual world prompts us and our students to engage with issues of embodiment and questions about positioning and power. Some questions that relate to these issues might include:

- How does the lack of face-to-face engagement influence students' willingness to trust teachers and other students when disclosing information?
- What is appropriate and acceptable behavior in a virtual world, i.e. students coming to class as an animal or naked, or changing clothes whilst the teacher is speaking?

These questions, and the ethics of being in virtual worlds, are beginning to be considered (e.g. Turkle, 2010), contributing to a critical and informed debate about learning and discussion in virtual worlds. However, notions of truthfulness, trust and responsibility with regard to pedagogical agents have rarely been addressed (Culley & Madhavan, 2013). The following section explores the key issues of truthfulness, trust and realism in pedagogical agent-student interaction.

## Trustworthiness and Truthfulness

Trust is defined here as 'an attitude of confident expectation that one's vulnerabilities will not be exploited' (Corritore, Kracher, & Wiedenbeck, 2003, p. 70). It has been established that the disclosure of information requires the formation of a trust relationship (Wheeless & Grotz, 1977), and that online environments can be the objects of trust (Corritore et al., 2003). For some, the fear and anxiety associated with making oneself vulnerable online is specifically associated with 'transactions characterized as faceless and intangible' (Beldad, de Jong, & Steehouder, 2010, p. 857); chatbots are neither faceless nor intangible, and thus pose different, but no less challenging, issues.

It has been suggested that students can become comfortable interacting with high-quality pedagogical agents, and that emotional connections may develop (Culley & Madhavan, 2013). Hasler, Touchman and Friedman (2013) also found, in a comparison of human interviewees with virtual world agents, that chatbots and human interviewees were equally successful in collect-

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