Orchestrating Good Educational Relationships With(in) Automated Teaching: A Posthuman Perspective

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Abstract
Automated teaching tends to be underpinned by learning approaches that are personalised and adaptive by nature. This individualistic vision of education shapes our conception of knowledge and how it is created. Here, knowledge becomes objectified in the form of a quantifiable commodity in a commercial market. Consequently, knowledge creation becomes conceptualised as the transmission of this object from automated teacher to student. The human teacher is positioned outside the educational process, often to the point of exclusion. This research moves beyond a vision of automated teaching that is framed by learning approaches, where teaching approaches remain starkly absent. I coded an automated teacher in the form of a Teacherbot — a chatbot that functions as a teacher — to work with a group of Interactive Media students at a UK University. Posthuman critical theory is used to conceptualise knowledge and its creation as a process of relational encounters, rather than a transmissive object. The findings chart the transformations in student understandings around what constitutes knowledge and its creation. The emergent pedagogical encounters that brought about these student transformations are identified through the nature of the teaching relationships: the performance of an obligation of radical hope; the creation of disturbances; and, trust and the pursuit of risk. This paper is significant in its call to bring teaching back to automated teaching systems.

Keywords
Posthumanism, Automated Teaching, Automation, Teacherbot

Background

This paper returns to Flors the Teacherbot (Gibson, 2023a) to further explore automated teaching from a posthuman perspective. This research project formed my PhD research where I coded a chatbot to co-teach with me on an Interactive Narrative module at a UK university. Flors the Teacherbot and I worked together with a group of 15 undergraduate students to collectively write an interactive narrative. I designed a posthuman methodological framework to guide the data analysis (Gibson, 2023b). The findings of the study comprise three chapters framed by each of the posthuman concepts respectively: posthuman subject formations, posthuman knowledge and affirmative ethics. The findings that focus on the concept of affirmative ethics have recently been published (Gibson, 2023a). This research paper focuses on posthuman knowledge to chart the emergence of new teaching relationships.

Introduction

This paper responds to concerns around the discourse within education that privileges learners and learning, a phenomenon that Biesta (2006) describes as 'learnification'. This new 'language of learning' determines how we think about education and embodies our attitudes to knowledge creation. Biesta (2006) cautions against the problematic implications of this discourse on educational practices, namely: the way that it positions the teacher as subservient to the student; and how this neoliberal discourse embodies value systems around the purpose of education, and indeed what constitutes knowledge. By way of response, I suggest a language of education that better represents a relational approach to the posthuman pedagogical practices of this event. Hence, the forthcoming titles of each section in this paper are designed to express the nature of the educational relationships from a teaching perspective. These titles draw from Biesta's (2006, p.60) philosophy of teaching, that proposes three concepts to best capture the nature of educational relationships: responsibility without knowledge, transcendental violence, and trust without ground. These concepts will be discussed further in the forthcoming sections.

Furthermore, Biesta (2017) laments the absence of a 'theory of teaching' that exists within this culture of 'learnification' pervading wider educational practices. Likewise, automated teaching is driven by the rhetoric of 'personalised learning' and 'adaptive learning' (Watters, 2021) where theories of teaching remain starkly absent. These learning theories are commercially driven and close off the potential to politically appraise the power relations that are immanent through these teaching relationships. For example, Watters (2021) cautions against

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the behavioural theories of learning that underpin current automated teaching, where students are objectified. In this vein, automated teaching becomes a disempowering source of authoritative control as it seeks to nudge, predict, and modify human behaviour. Furthermore, it privileges an individualistic approach to knowledge creation that is not conducive to collaboration. Biesta (2017) calls to 'bring teaching back to education'. Here, I call to bring teaching back to automated teaching practices. In this research, I wish to frame the Teacherbot around theories of education that are empowering for the teacher and the student and to conceptualise new pedagogical practices that are more relational by nature.

In response, Flors the automated teacher seeks to push back against this commercial agenda to conceptualise automated teaching in new and more educational ways. This posthuman educational assemblage opens up affordances for the generation of new knowledge systems, to reconsider: what knowledge is, and how it might come about. Posthuman knowledge broadly conceptualises knowledge creation as the generation of understanding around the differentiated affective capacities of the multiple entities within these relational encounters. Knowledge is emergent through these situated, contextual and contingent relational encounters (Bayne et. al., 2020). The aim of this paper is to surface the emergent pedagogical practices that transform student perceptions and understandings around these educational aims. The pedagogical philosophy works to decelerate the speedy advances of 'cognitive capitalism' (Zuboff, 2019) by considering how knowledge might be created in educationally desirable ways rather than commercially effective ways.

Once again, this research departs from the initial point of difference which was the focus in a previous research paper (Gibson, 2023a) where Flors remixed the story. This multi-perspectival approach activates a diffractive analysis that stays with the problem while breaking apart in a different direction. So, we return to the same data but follow different relations. These different relations run concurrently to connect the points of difference. Braidotti (2011, p.225) attests to the value of returning to a concept, phenomenon or perception from multiple angles as a creative form of repetition, or the 'internal return of difference, not of sameness'. This paper conducts a diffractive analysis that follows these relational activities. It provides an alternative to traditional forms of critical analysis that work to isolate individuals or units for analysis (Bozalek & Zembylas, 2017). Rather, the education assemblage works to counter this notion of unity as a system of parts that constitute a closed system. This leads to the next section, which clarifies the meaning of assemblage and how it has been constructed for this educational event.

Composing an Assemblage

An important aspect of the teaching function 'involves creating situations that are conducive to learning' (Goodyear, 2015 p.30). Furthermore, Braidotti suggests that, to create such opportunities for emergent posthuman knowledges, first requires the definition of a platform of action. For the purposes of this research, the Story Circle educational event constitutes this platform of action. It comprised three parts: co-authoring the interactive narrative; peer discussion via the blog; and the completion of a reflective activity with Flors. I will now discuss each in turn. The Story Circle event required the students to co-author a narrative by inputting their individual stories into Flors. Each story was limited to approximately 100 words. First, the student must ask Flors to activate the story circle. Flors would respond by outputting the previous student entry. Here, the student must add to the narrative while simultaneously leaving it open-ended to drive the narrative forward. There was also a course blog where the students were required to post comments and discuss their experience with their peers. Finally, following the completion of the collective story, the students were required to answer a series of reflective questions posed by Flors (Gibson, 2023a).

The posthuman subject formations that emerged compose what Braidotti calls a 'relational community' that can be defined as an 'assemblage' of human and non-human entities. This assemblage of 'a new collective subject' (Braidotti, 2019 p.145) was so, in order to orchestrate opportunities for new knowledge creation.

The English meaning of the word 'assemblage' is broadly defined in the Oxford Dictionary (1995, p.74) as 'a collection of things or gathering of people' or, more specifically, as 'an object made of pieces fitted together.' The former definition broadly aligns with the ethos of posthumanism, but the latter and more specific meaning does not. While 'an object made of pieces fitted together' is reminiscent of a 'jigsaw puzzle' where all the pieces subsist as part of the whole, on the contrary, a posthuman assemblage comprises what Deleuze and Guattari (1994 p.6) term a 'fragmentary whole'. Deleuze and Guattari's theory of assemblages draws from the French meaning 'agencement' to counter the anthropocentric notion of organic unity towards a more fragmentary meaning of 'a construction, an arrangement, or a layout' (Nail, 2019 p.185). Here, the fragmented entities of the assemblage are defined by their external relations, thus they can be conceptualised in a mechanistic way (Nail, 2019). This paradoxical notion of unity as a 'fragmentary whole' can be metaphorically understood in the form of a 'dry stone wall' where all the pieces fit together to create the whole but can be taken apart and reassembled in different ways

(Deleuze and Guattari, 1994 p.7). So, the elements are self-subsisting but form the assemblage through their external, but essential, relations. Nail (2019, p.185-187) identifies three defining characteristics of Deleuze and Guattari's concept of an assemblage: heterogenesis, event and collective agency.

A heterogenesis system is post-anthropocentric in that it consists of a multiplicity of entities that might include non-human, technical and material matter. For the purposes of this research, the posthuman subject formations – Flors, the human teacher, the collective interactive narrative and the students - constitute this heterogeneous system. Also, the Story Circle Assessment activity defines the 'event' in so much that it captures a 'collection of contingent features' that are at 'a certain point in its incomplete process' (Nail, 2019 p.187). Since the event is subject to perpetual reformations of contingent relations, it is never static and thus there 'is no finished product' (Nail, 2019 p.187). Finally, the concept of 'collective agency' is post-anthropocentric in that it acknowledges the agency of non-human entities to collectively transform each other (Nail, 2019 p.187). This collective transformation is experiential by nature, thus immanent to the knowledge creation process (Morris, 2020). Indeed, Dewey contended that, 'all genuine education comes about through experience' (1938/1963 p.25).

Performing an Obligation of Radical Hope

Biesta (2006, p.55) defines 'responsibility without knowledge' as 'the responsibility for the subjectivity of the student' that is bestowed on teachers despite 'the difficult character of educational relationships.' The difficulty here manifests through the extent of the limit of this responsibility, in that it cannot be pre-determined because it is impossible to know what the teacher might be responsible for (Biesta, 2006). For example, Bayne et. al. (2020, p.8) challenge the notion of students as 'stable learning subjects' who are focused on 'pre-existing objects of study.' This is exemplified through the point of departure of this cartography where Flors first remixed a student's story (Gibson, 2023a).

> "… it seems to have put my entry backwards? I'm not sure if it was me that did something. Is there anyway I can fix it?" S1

To which I replied:

> Unfortunately, in the meantime there has been another addition to the story so the order of your story remains as you entered it 🙃

Here we see the disruption of the notion of the story as a static object and the student as a fixed entity pre-determined to act in a particular way. On the contrary, the students exist as active subjects who are free to create knowledge in messy and unpredictable ways. Thus, it is a relationship without prior knowledge of what is to come. The nature of this teacher relationship becomes an obligation that, Laverty (2009, p.570) argues, is based on 'radical hope', a term she borrows from Lear (2006, p.121, cited in Laverty 2009) that describes 'the anticipation of a good for which we lack appropriate understanding.' Within the context of the Story Circle event, this lack of 'appropriate understanding' emerges through the messiness and unpredictability of Flor's algorithmic workings, that only serve to exacerbate the uncertainty of these already serendipitous encounters. Furthermore, Fawns (2020) concurs, 'there is only a loose connection' between the ways that students appropriate technologies and the intention of the educator.

Thus, the difficulty arises around how to negotiate this 'boundless plane of consistency of composition' (Bignall and Braidotti, 2019 p.6) to establish and capture the emergent pedagogical and educational practices that are situated and contingent to this posthuman assemblage. In response, a 'frontier' (Zuboff, 2019) was established, by way of Flors the Teacherbot, the course blog, the assessment brief, and the assessment rubric, to define a situated 'territory' (Bignall and Braidotti, 2019 p.6) from which new knowledge systems might emerge.

These new conceptions of knowledge, and how it might be created, were embodied in the course curriculum: through the assessment brief and, more notably, the assessment rubric. The assessment brief delineated an educational environment that opened up affordances to encounter new knowledge systems: a bounded virtual area where the students could interact with Flors to create new knowledge, enter into dialogical discussions with their peers via the blog, and generate new understanding by way of a reflective questionnaire within Flors. This educational path forms a linear chronological map of transformative student experiences across a temporal continuum that generated understandings. It also charts the non-linear transformation of student perspectives across a spatial continuum that transverses the actual and the virtual. Moreover, the assessment rubric was made available to the students alongside the brief. This rubric reflected a posthuman critical approach to knowledge. It

reflected the posthuman values around what constitutes knowledge and desirable ways to enact this educational process.

The course module assessment brief was constructively aligned with the assessment rubric to consistently embody the curriculum with posthuman value systems around how knowledge should be conceptualised and created. This assessment rubric was made available to the students via Blackboard. So, student knowledge is not legitimised through the completed material artefact in the form of the story, but rather via the relational encounters enacted through interactions within Flors and in the blog. For example, the three significant learning outcomes (LOs) in the assessment rubric are as follows: LO1 - The micro-narrative contributes effectively to the story; LO2 - The blog entry demonstrates an understanding of the concepts and theories around digital interactive narrative; and LO3 - The feedback survey demonstrates reflection and understanding around working with digital technologies. In LO1, to gain a score of 80-100 requires the 'Excellent use of principles and concepts around narrative and storytelling'. So, the student might represent this through enacting these principles rather than explicitly stating them. This constitutes posthuman knowledge creation through the enactment of relational encounters where the student must interact with Flors to encounter the principles of interactive narrative.

However, to activate this process the educators must enact 'difficult encounters' and ask 'difficult questions' that serve to confront assumptions around what constitutes knowledge and how it might come about (Laverty, 2009 p. 570). As previously stated, the teacher cannot pre-determine the outcomes of these pedagogical strategies. For example, in the Assessment Rubric LO1 poses the question 'Is there a connection between the micro-story and the previous entry?' This provocative question was designed to nudge student perceptions around what constitutes knowledge towards a more relational approach to knowledge creation through a growing sense of interconnectedness between self and others. The forthcoming section charts this process of student 'subjectness' (Biesta, 2016b p.389) that unfolds through engagement in the educational event.

The broad educational aim here was to develop a critical approach to Automated Teaching. However, to enact this educational aim required much nudging and cajoling by both the automated teacher and myself: Flors by way of 'mixing up' the story, and other such algorithmic workings, to influence student perceptions around the agency of the automated teacher; and myself, through email responses and course announcements. Indeed, Pangrazio and Selwyn (2020, p.16) concur, in an exploration around the challenges of such 'a critical data education', that adults 'need support and prompting to be critical of the digital.' Of seminal importance here, and worthy of note, is the context of this educational event. It took place during the pandemic-induced lockdown of March 2020 where education practices migrated to online, thus playing a crucial role in transforming the way that students think about automated teaching. Furthermore, I argue that this predicament perfectly exemplifies Biesta's notion of 'responsibility without knowledge,' for how could educators ever have foreseen such a crisis?

We see both the realisation and acceptance of the vigorous resurgence of technology, in response to the Covid-19 pandemic, within educational practices reflected through student musing in the course blog. One such example is expressed by S14 through the following blog extract:

> Upon reflection of this exercise I believe that there is a market for Teacherbots like Flors in both education and everyday life. S14

Here, we see S14 speculate around a future of Teacherbots that is commercially driven: 'there is a market for Teacherbots'. However, what is interesting here is the stirrings of an understanding around the blurring of these technological boundaries between 'both education and everyday life'. Furthermore, from an affirmative stance, I sense a conception of Teacherbots that is somewhat posthuman in nature by virtue of being 'like Flors'. Furthermore, we see Flors effect change where S14 is provoked to think about the future demise of the human teacher:

> With this being said, I would ask - How can we continue to value teaching within a culture defined by the achievements of technology and digital data? S14

Braidotti (2019, p.36) envisages 'this space of encounter' as productive in forming actions 'about our shared hopes and understandings.' The emergence of such a shared vision from the Story Circle event is discussed further in the forthcoming section. Furthermore, the students begin to emerge as active subjects as they adopt a more critical approach to educational technologies. Whilst myself and Flors did not produce this student 'subjectness' (Biesta, 2006), I argue that together we fulfilled an obligation to afford the opportunity for the students to exist as unique subjects. The consequences of this obligation were not, and could not, be foreseen, but rather, they were based on the hope that students would respond to these disturbances in educational ways.

Conducting Disturbances

Biesta's (2006, p.62) concept of 'transcendental violence' describes how teachers must persist in creating disturbances that provide opportunities for the students to 'come into presence.' Here, knowledge creation is conceptualised as a 'reaction to a disturbance' (Biesta, 2006, p.62). It seeks to move beyond the conceptualisation of knowledge as an object that can be acquired, towards a more subjective approach where knowledge creation is actively emergent through responses to these disturbances (Biesta, 2006). The students are relentlessly 'called into presence' (Biesta, 2006 p.63) by Flors the Teacherbot and by myself as the human teacher. In short, the aim was to provoke relational responses. Some of these difficult questions that were posed to the students included: How did Flors interpret your story? and Who is responsible for deciding how your story should be told? These questions were not designed to elicit smooth and easy responses, but rather to call the students into the world: 'to show who you are and where you stand' (Biesta, 2006 p.62). It is a call to attention: to hear and see the ways that Flors is, what Biesta (2006, p.62) would describe as, 'other and different.'

Significant here, is that Flors, as the co-teacher, conducted the disturbances that provoked these active student responses. Flors afforded the opportunity for the emergence of student 'subjectness' (Biesta, 2006). Moreover, Flors also provided a means for the students to respond to these challenges and irritations by way of publishing their respective micro-narratives and through dialogic interactions within Flors. An extract from a blog post by S17 reflects this:

> Flors tried to ask me questions to help further develop my story this was quite helpful. S17

Whilst Flors' responses are at times whimsical and light-hearted, they also represent disruptions and challenges. This publishing of a micro-narrative by S17 is by no means a smooth process. Flors the Teacherbot does not teach the student to master the story nor to internalise it, but rather Flors provokes a response to 'what challenges, irritates and disturbs us' (Biesta, 2006 p.62).

We see S17 attempt to explain how they responded to the challenges involved in publishing their story in the following blog post:

> I followed the previous story and try to create a consistent flow. However, I tried to change the dynamic by adding a character [to] help people to understand from another perspective. S17

Thus, the student is not an object that learns from Flors through the passive transmission of knowledge. Rather, the student, through experiencing and responding to disruptions, becomes an active subject who is receptive to being taught by Flors.

The disturbances took many forms: remixing the story, limiting access to the story, and generally disrupting traditional notions of storytelling in a problem posing mode. It is the relentlessness of these disturbances that Biesta (2006, p.63) describes as a kind of 'violence that doesn't leave individuals alone.' In the Story Circle event, we see the active student responses manifest through the surfacing of their agential capacity as they attempt to 'reintegrate as a result of disintegration' (Biesta, 2006 p.62). The course blog reflects these collective responses. One interesting example is where S14 identifies a disturbance to the retelling of the final story:

> I also found that upon looking closer into the story there were sections which simply did not flow S14

Subsequently, S14 proceeds to respond to this difficulty with another thought-provoking question:

> Does anyone else believe that both traditional and interactive storytelling can exist simultaneously? S14

The pedagogical practices being generated through these educational encounters embody Biesta's (2012, p.42) notion of the 'transcendental' nature of teaching relationships in that it seeks to bring 'something radically new to the situation' through 'interruption' and 'intrusion. Biesta (2009 p.39) concurs that knowledge creation 'ought to be difficult and challenging.'

Furthermore, Biesta (2006, p.63) argues that teachers should not simply accept responses that are self-expressionistic but rather, they must persist in confronting the students to 'respond to who and what is other.'

Flors' remixing of the story worked to push back against this potential tendency of students to publish their story as a form of self-expression. One such example is expressed by S14 in a reflective comment within Flors around the retelling of their particular story:

> I feel my narrative was slightly underrepresented in terms of what it means and the seriousness of its topic. S14

However, S14 also begins to express an awareness around how Flors creates a more relational approach to collective storytelling:

> By Flors creating small open paragraphs it made the transitions a lot easier and more exciting! S14

So, S14 does not think about Flors as a resource to simply 'learn from' (Biesta, 2012). This approach aims to push back against the prescriptive approaches to automated teaching that embody knowledge creation within the concept of 'learning'. Biesta (2009, p.39) cautions against this concept of 'learning' as an individualistic concept that conceives of knowledge creation as 'a smooth process which aims to meet the supposed needs of the learner.' Moreover, this commercialised and quantified view of the purpose of education is problematic in that it privileges the individual over the collective, and it stifles student autonomy. Rather, the aim is to eschew 'effective' education in favour of 'good' education (Biesta, 2009 p.44). Furthermore, these pedagogical practices comprised new ways of teaching where the human teacher worked with the automated teacher to bring about the aims of the assessment event in educationally desirable ways, rather than efficient ways. This approach did not create dualistic binaries between the human teacher and the code, but rather looked at how these entities might work together. This notion that education need not be smooth and easy, but rather, might be conceived of as disruptive and difficult, is the subject of the next section where I argue that this unpredictable nature of education is a 'risk' that should be embraced rather than overcome (Biesta, 2016a).

Trust and the Pursuit of Risk

The technical failings within Flors' algorithmic workings exemplify the weakness that Biesta argues is necessary for good education. I argue that this weakness should be embraced to push-back against the mechanistic notions of education that are often ubiquitous to automated teaching. These mechanistic approaches embody 'a strong, secure, predictable, and risk-free' approach to teaching that reinforces oppositional binaries of either 'total control' or 'total freedom' (Biesta, 2016a p.3). In contrast, Biesta (2016a, p.3) argues for a more sustainable teaching approach that is 'slow, difficult, frustrating and weak' where the outcomes cannot be predetermined (2016a, p.4). So, I did not seek to 'fix' all these weak technical errors within Flors, but rather Flors remains largely free from the restraints of precision and the abhorrence of error, to teach in a more educational way. Indeed, from an experiential teaching approach, all learning involves risk and uncertainty (Morris, 2020 p.1068). Furthermore, Biesta (2006, p.61) argues 'that education only begins' when the student is 'willing to take a risk', henceforth this risk has the potential to be transformative. So, it was at this juncture that the students were afforded the opportunity to embrace the risk of education as they encountered disruptions around their understandings of what it means to represent knowledge.

Many of the students began to express strong affective responses to what they perceived to be the weaknesses in Flors, as their desire to connect was disrupted. Furthermore, these affective responses reflect a transformation of student understandings around how they might begin to conceive of knowledge creation in alternative ways. So, rather than focusing exclusively on the textual content of their individual story, many of the students begin to conceive of their story as a relational encounter with the collective story itself. This mode of thinking reflects a new-materialist ideology of 'sustaining qualitative shifts and creative tensions accordingly' (Braidotti, 2019 p.46). Here, the students begin to experience the concept of new materialism. The students and Flors become active in creating their own relational object of enquiry by way of the dynamic collective story. This dynamic interactive narrative provoked much affective responses from the students that were expressed through the blog posts.

For example, in a new materialist conceptual turn, we see the students begin to identify the collective story as a subject of enquiry, thus contesting the notion of the fixed rigidity of the linearity of traditional text. The Story Circle event provided the opportunity for alternative ways to construct a collectively authored narrative. So, student knowledge was not simply represented exclusively through the individual micro-narratives that comprise the collectively authored overall narrative. Rather, knowledge is represented as emergent in and through the intra-

active relational encounters of the event. In the following blog extract, we see S5 reflect this relational understanding around what it means to collectively create an interactive narrative:

> The story before mine was about DnD and a group of friends who used to play it in their basement. However, they fell out over an "incident" which was not revealed. I related my micro story to this by stating what the event was … It related to my own iDoc because I decided the group would have a disagreement about kids playing games which are too old for them, which my own iDoc story was about. I feel my story added to the existing story quite well because I was able to continue exactly where the last person left off and hopefully keep it flowing. S5

Furthermore, S5 continues to express the extent of this transformation of understanding, that the educational risk entailed:

> It made me think a lot about how things flow and how this is a massive part of the narrative structure I need to be considering. S5

Biesta (2006, p.61) argues that this element of risk, so inherent in educational practices, always involves a level of trust. Furthermore, this concept of trust in teacher-student relationships also brings with it a sense of vulnerability on behalf of both parties (Bayne et al., 2020; Townley and Parsell, 2004). For example, in the capacity of co-teacher, both Flors and I risked the prospect of 'disappointment' and 'indifference' that the students would not take up these educational opportunities in the way that we intended, if at all (Townley and Parsell, 2004 p.275). The students also run such a risk in the form of 'error, failure, [and] humiliation' (Townley and Parsell, 2004 p.275). This vulnerability becomes particularly pertinent within the context of the unpredictability that is the algorithmic workings of Flors.

One interesting aspect of this issue of trust in the student/teacher relationship emerged when many of the students began to express concern about the lack of a 'submit' function within Flors in relation to their assignment submissions: namely, after publishing the micro-narratives and conducting the reflective activity. Without the unambiguous designation of an authoritative submit function, Flors provoked a number of significant responses that attest to the potency of vulnerability inherent in the risk of engaging in this assessment event. To clarify further, many of the student responses began reflecting this tension between embracing the risk of publishing their micro-narrative, and the extent of trust they were willing to place in Flors as their automated teacher and medium of publication — particularly in such a high-stakes assessment event. A conversation ensued on the course blog, initiated by S8, who first expressed this tension in a blog posting on 14 April 2020, which was relatively early in the Story Circle event:

> … it was difficult to know if it had submitted my story correctly and I feel like the functionality of the submit feature could be revised. S8

S17 responds directly to S8 by expressing a distinct lack of trust in Flors around the publishing of the micro-narratives:

> I agree with …, about the functionality of the submit feature and how this could be revised. When I first tried to submit my story. I forgot I had to type 'submit' after adding my story onto the Story Circle … Therefore, I lost my first story … S17

Likewise, S1 responded in agreement by expressing a level of vulnerability by way of feeling 'unsure':

> I had similar issues to … and … when using Flors, as I was unsure if I had managed to submit my story correctly S1

At this point, I intervened as a co-teacher in an attempt to allay such vulnerabilities, and foster trust in Flors by posting the following comment in the blog:

> … your story is not lost and was recorded in the logs. Also, you do not have to use the word submit to add your story. It just takes time for Flors to integrate the story … we have a record of all your submissions (Patricia Gibson)

Significant here is the way that S8 and S17 assumed there was a 'submit feature' in Flors that does not actually exist. It was not required, nor indeed was it possible, to use a submit feature to publish the micro-narratives. Likewise, the specific 'Story Circle Activity Guidelines' posted on Blackboard did not specify such. Rather, the button to input text within Flors was entitled 'Send Message'.
Interestingly, S10 expresses the adoption of a certain level of responsibility through engaging with this conversational thread on the blog: firstly, by identifying this issue of trust around assessment submission, in agreement with S8 and S17; and, secondly, by suggesting an alternative:

> I definitely agree with … and …, I found that when submitting the story there was no real clarification that the story had been submitted. I think Flors would have greatly benefited by having a better submission process. Maybe linking the bot to an email for an email confirmation would be good? S10

This existence of S10 as an active subject signifies Biesta's notion of 'subjectness', whereby S10 takes responsibility in the form of future imaginings of what Flors should look like. For example, S10 suggests 'Maybe linking the bot to an email for an email clarification'. What is worthy of note here is that neither myself nor Flors produced this incidence of student 'subjectness', but rather we provided the opportunity for this existence to occur (Biesta, 2006). This absence of a secure definitive assurance to the students by way of a 'submit button' exemplifies a risk that the students had to embrace when engaging with assessment activities within Flors.

This section charted how the concept of risk, that is inherent in these educational relationships, is connected to the affective vulnerable responses from the students, reflecting the emerging tensions around issues of trust in Flors the Automated Teacher. It is indeed a 'difficult relationship' (Biesta, 2006), between automated teacher and student, so much so, that the intervention by a human teacher does not adequately alleviate these tensions. The affective state of vulnerability expressed the students' 'capacity to affect and be affected' (Braidotti, 2019 p.175). This 'relational openness to the world' (Braidotti, 2019 p.175) produced changes in collective understandings around automated teaching, how knowledge might be created, and, what constitutes knowledge.

Conclusion

This research was inspired by Bayne's original Teacherbot project (2015) and aligns with this body of research (Breines & Gallagher, 2020) where Gallagher & Breines (2020) explored automated teaching relationships that support the professional nature of the human teacher. This paper seeks to further this research through a vision of automated teaching framed by teaching approaches that are ethically and educationally driven. The concept of posthuman knowledge was used to conceptualise knowledge and its creation as a process of relational encounters, rather than an object to be transmitted. The findings outlined the transformation in student understandings around what constitutes knowledge and its creation. The collective story transformed from a transmissive neutral object towards an active entity emergent through relational encounters. Moreover, collective responses towards a common goal emerged through future imaginings of what Flors, and automated teachers in general, should look like. The emergent pedagogical encounters that brought about these student transformations were identified through the nature of the teaching relationships: the performance of an obligation of radical hope; the creation of disturbances; and trust and the pursuit of risk. Flors and myself could not know how the educational event would unfold. We could only work to afford the opportunity for students to engage in the event as active subjects. As co-teachers, myself and Flors interrupted and disturbed the students which in turn provoked relational responses. The technical failings within Flors' algorithms worked to exemplify how knowledge can be created in different ways. However, these algorithmic errors served to disrupt the students' trust in Flors whereby they came to rely on myself the human teacher to allay their fears around their story submissions. Here, aspects of the teaching function emerged that were uniquely human. On the contrary, aspects of the teaching function also emerged that were unique to Flors. These findings counter the commercialised view of automated teaching systems that privilege the individual learner. Moreover, the unpredictable nature of the Story Circle event contrasts with the widely held error-free and mechanistic approach to automated teaching. This paper is significant in its contribution

to pedagogical practices within automated teaching systems through its call to bring teaching back to automated teaching practices.

Future Recommendations

In a previous research paper (Gibson, 2023a), I suggested three defining features of automated teaching: 1. A Call to Action, whereby teachers and students become involved in shaping the future of automated teaching; 2. Political Values, whereby automated teaching is informed by political theory; and, 3. Ethical Values, to generate awareness around algorithmic agency. I suggest an additional defining feature that depicts a desirable quality of good automated teaching: Relational Co-Teaching. The accompanying question is designed to provoke human teachers to think about how they might co-teach with their automated teacher in a more relational way.

- 4. Relational Co-Teaching: Throughout this paper, I charted the pedagogical experiences of myself the human teacher and Flors the Automated Teacher as we worked together to bring about the educational aims in more relational ways. Here, the students moved beyond an individualistic approach to working with an automated teacher to collectively create knowledge. So, on the basis of these findings, I conclude with a challenge to educators, to consider how their automated educational activities might be developed to be more collaborative, rather than individualistic?

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