# Student Engagement and Feedback in a Digital Context: 360 Immersive Video and Feedback

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## Summary

This case study discusses a recent small-scale research project that investigates the integration of 360 camera and head mounted display units (HMD's) to enhance formative video feedback in Dance Technique in Higher Education (HE). The project was funded by the Teaching and Learning Innovation Fund at the University of Lincoln and led by academics in the School of Fine and Performing Arts. The project took place throughout the academic year 2020/2021 and was designed to respond to the challenges the pandemic had created for Dance in HE. A group of 10 final year BA Hons Dance university students chose to participate in the project for the duration of the year.

For the purpose of this study, a Go Pro Max 360 camera mounted on a monopod was used to record the action, and an Oculus Go Headset was used to watch the immersive 360 footage. The objective of the research was to integrate 360 digital technology into Dance Technique teaching to generate an alternative approach for the dancer to view their own moving body in a different format and critically reflect on tutor feedback. In doing so, the project hoped to transform the student feedback experience by providing autoscopic experiences that relocate the dancer into a digital environment. This environment refers to the immersive, digital space of their dance studio. The dancer is able to watch their moving body from an allocentric perspective (Tversky & Hard, 2008). The immersive environment hosts the second body of the dancer and they are able to view themselves from the perspective of the other, as the Body-object (Merleau-Ponty, 2002). 360 video was used to facilitate self-reflective feedback; this provided multi-dimensional views of the dancers moving body. It was hoped that this method would allow the students to connect their tutor and peer feedback to their own bodies and be able to recognise the strengths or areas of improvement. By providing opportunities to engage the student meaningfully in asynchronous tasks, the project was able to respond to the face to face restrictions of the Covid-19 pandemic by encouraging students to connect feedback to action outside of tutor led sessions.

## Description of project

Initially, three aims were created to lead the design of the project:

1. To enhance and develop methods of feedback in Dance Technique to enhance student engagement specifically during the pandemic.
2. To encourage students to engage in self-reflection and take ownership of academic progress outside of contact time.
3. To maintain student attainment during the pandemic.

These aims tie into principles of 'Student as Producer' at the University of Lincoln, supporting students to work collaboratively to become producers of creative knowledge, thus giving them responsibility and ownership of their learning (Neary et al, 2014). It was hoped that with the application of this feedback method, students

would be able to apply their self-reflective and tutor led feedback to their practice and continue to develop, regardless of the numerous shifts to online learning.

For the purpose of this project, the definition provided by Nicol and Macfarlane-Dick will be used to contextualise what is meant by feedback; they identify it as "information about how the students' present state (of learning and performance) relates to goals and standards" (Nicol & Macfarlane-Dick, 2006, p.200). They also describe the pedagogical field at a time where student learning was understood as a "simple acquisition process based on teacher transmission, learning is now more commonly conceptualised as a process whereby students actively construct their own knowledge and skills" (Nicol & Macfarlane-Dick, 2006, p.200). In 360 video, students are able to recognise feedback directly through observation. The immersive, embodied nature of the project allowed students to view their own bodies as if they were in the studio physically, watching their own body perform. This method of reflection transformed their understanding of their own progress and gave them opportunities to step outside of their own body and view the action as an outside eye. Students were able to immediately re-experience the action and enhance their ability to reflect on their own progress. The project provided a solution to the restriction on face to face contact by allowing students to critically analyse their own body and recognise both peer and tutor feedback through observation outside of the tutor led sessions.

Developing methods of feedback that integrate technology is becoming a widely invested area. Buday and Jones have contributed to the discussion around technology and feedback specifically within a dance context. They address the gap between the "often-dissonant realities of self-perception and perception by others" (Buday & Jones, 2014, p.1), in other words, how the student views their own bodies in relation to how other's see them. Buday and Jones argue that the elitist climate of the professional dance industry requires a student-centred approach to feedback that promotes a pedagogy that facilitates independence, self-reliance and autonomy (Buday & Jones, 2014). Their project used smart phone technology to record performance in dance technique class. Students then watched the footage and engaged in a discussion led by the tutor. The study aimed to increase the student's ownership of their learning and enhance their self-reflective skills, in doing so, the student's intrinsic motivation would improve (Buday & Jones, 2014). The project demonstrated that students wanted to self-correct immediately. The student is encouraged to participate in a deep learning process; deep learning enables the student to extract meaning and produces active learning processes (Entwistle, 2000, p.3). Buday and Jones' study evidenced that the "the student's intention of what they thought they were doing, what 'the doing' felt like, and what it actually looked like were clearly converging" (Buday & Jones, 2014, p.10).

This method allows the student to identify tutor feedback and apply it accordingly. It locates the student at the centre of the learning process and promotes autonomous learning. Observing their own performance through video documentation reinforced the verbal feedback from the tutor, this further clarifies and ensures by direct relation that correct understanding has been achieved. Using technology to enhance deep learning enables the student to engage in deep cognitive processing; the students can reflect on what they have learnt, apply this to actual examples of practice and make connections, analyse, evaluate and synthesise what they have learnt (Kivunja, 2015).

This project advances on Buday and Jones' work to consider how immersive 360 video can be used to enhance feedback and self-reflection asynchronously outside of the studio. Due to the pandemic, the need to engage students outside of the live studio context was vital. The process began with the dancers learning and rehearsing the Technique exercises. Verbal feedback was provided as normal by the tutor, this was complimented by a range of peer feedback exercises. Once the dancer felt they had rehearsed and embodied the material, they moved to the next stage which is to film the exercise with the 360 camera. The exercises tend to be filmed a number of times to ensure that the 360 camera has been placed in the optimal position. The footage is then edited and uploaded to YouTube. The dancers are then able to immerse themselves into the 360 space to watch the exercises through the HMD. The dancers watch the exercises a number of times to make the most of the multiple viewing points offered and they are encouraged to consider their existing feedback in relation to what they are viewing.

For the purpose of this research project and in an effort to collect the students experiential responses of using the HMD, after the student had watched the footage the tutor guided them into an open discussion. The tutor asked a range of questions to gather their responses of their experience of watching their own performance through the HMD. The discussions were structured by a series of questions but the conversation remained open and transformed into a dialogue that tended to refer to the students' progress, previous feedback and the student's own revelations. Finally, the recorded discussions were transcribed and coded to discover any thematic strands from the student group.

**Evidence of effectiveness and impact**

After transcribing the student interviews a number of common themes emerged, the main commonalities were categorised under the following six topics;

- The use of mirrors and body alignment
- Enhanced perspectives of the body
- Attention to detail
- Watching the body as the other
- Understanding peer/ tutor feedback
- Critical observation

All students spoke about the difference between viewing their bodies in the mirror compared to the immersive video and how this affected alignment. One student said:

> *"watching myself on that (HMD) I could see my whole movement from kind of a lot of different angles without having to affect the movement" (Student A).*

This suggests that the 360 immersive footage allowed students to view their bodies in new ways, creating perspectives on the self that were inaccessible previously. The students also reported the difference between watching in a 360 immersive environment rather than 2D footage commenting that:

> *"It makes you observe your movement in a new way, so then there's more feedback for yourself from yourself, because when you watch*

*it, like personally, when I watch myself 2D you don't ever see the full extent of what your body is doing" (Student C).*

Thus, 360 immersive environments provide another layer to the experience of watching the body that transcends normal 2D experiences providing rich opportunities for learning outside of the studio. The 360 immersive environment provided opportunities to see detail on the body, one participant commented that *"you start to notice so much more than things that I see in the mirror" (Student B).* This suggests that watching their own body in 360 immersive video provides more detail, further perspectives and encourages the student to feedback on themselves. It was interesting to hear the students discuss the phenomenon of observing themselves as the other, they suggested that they could recognise that they were viewing themselves *"as others could potentially perceive me" (Student B).* In doing so, the students were able to enhance their understanding of tutor/ peer feedback, with the recognition that they were then able to apply the feedback. This was revealed by one student who stated:

> *"When you're doing movement, it sounds really stupid, but you don't always think about everything, you just do it and think, oh yeah, I'll get feedback and it'll be fine, but when you actually watch it back in 360, you're like, oh I get why they gave you that feedback now, you fully understand it" (Student D).*

This was articulated further by another student who admitted *"if I can see it I'm more likely to fix it*" *(Student G).* Student responses were majority positive however, one student did reveal a concern that needs to be identified as a potential hazard of this method of student reflection. They state:

> *"before in a studio you have a mirror at the front, now we've got a mirror at the front and the side, and now I'm in this immersive environment where I'm actually experiencing myself as another being, I 'm seeing myself as I am with others, rather than from inside myself, if that makes sense. So it makes me more critical in some sense of myself. Even more so, I'd say it kind of heightens that 'cause I'd say I'm quite, I do have perfectionist qualities anyway, and I can be quite tough on myself. People would say I'm critical in that manner, but having that 360, that made that heightened" (Student G).*

This may highlight a potential concern for students who tend to be overly critical on themselves or those students who suffer with body image issues. The student's statement verifies the need to work closely with the students and recognise that this method will not be appropriate for every student.

**Reflections on the project**

In the Dance Technique sessions, the tutor is responsible for delivering class material, observing the student, providing feedback both aural and physical correction in preparation for assessment. During the Covid-19 pandemic, face to face contact with the students was limited and safety restrictions in the studio space meant that regular methods of feedback such as physical correction could be difficult to provide. 360 immersive video encouraged the students to engage in peer feedback and self-reflection and take ownership of their own learning. In doing so, the learning

environment becomes a democratic space for dialogical exchange to create a shared understanding of what the student needs to do, why and how to progress, without the requirement of being face to face with the tutor. This approach focuses on the student's subjective experience, with the emphasis being to encourage autonomous learning and take responsibility for their own progress.

The purpose of the immersive video was to relocate the user into the virtual studio; in doing so the student is able to be among and central to their environment. Their perspective and experience of space is important here; the immersive nature of the HMD provides a completely different perspective and experience in comparison to watching 2D footage. Borrowing from film theory, the work of Gerner and Guerra on the potential of cinematic experiences to alter the self, paves the way for new phenomenological understandings of autoscopic experiences in 360 immersive performances. They reveal that the historical field of film studies has already established the potential for film experience to "challenge our spatio-temporal cognition and implies an alteration of viewers' self and body and thus their embodied self" (Gerner & Guerra, 2014, p.86). They posit that this type of experience can be articulated and developed through the adoption of some aspects of Out-of-Body-Experiences (OBEs). OBE's can be used as a framework to reconceptualise how we view the double of our self in 360 immersive environments. The OBE provides the opportunity to see "one's own body from alternated allocentered perspectives in relation to the somatic body" (Gerner & Guerra, 2014, p.90).

The student's perspective of their own body and self is integral as part of this experience of viewing one's body in the immersive environment. The work of Tversky and Hard (2008) on spatial perspective-taking highlights a misconception that an egocentric perspective is the primal and dominant position assumed by a subject. An egocentric perspective is to perceive through the framework of one's own body; the subject is the centred self-referential point to objects. An allocentric perspective is to understand oneself in relation to a wider framework by understanding objects as "represented or described with respect to each other" (Tversky & Hard, 2008, p. 124). In an effort to highlight the importance of spatial perspective in immersive performance to better understand our own self, our environment and the world, Tversky and Hard confirm that "seeing another person in a scene might prompt thinking about the world from the others perspective" (Tversky & Hard, 2007, p. 128). In the context of this research, these theories are important as they suggest that the experience of adopting a different perspective, viewing the second body and viewing your own body as the other, has the potential to open up new discoveries and revelations about our own bodies.

In summary the students discovered that they were able to recognise the verbal feedback provided by both tutors and peers directly by watching the footage. They found that using 360 technology to view their bodies, rather than the mirrors, allowed them to stay immersed in the moment. Students revealed that watching their bodies in 360 video exposed issues that they had not identified previously or could not be seen on a 2D camera. The 360 immersive video enhanced the students understanding of their performance and ultimately, a greater understanding of their own progress. They are able to identify and observe existing feedback and therefore developed their ability to apply this. The positive responses revealed a high level of student engagement during the pandemic and demonstrated the ability to positively engage

students asynchronously. 360 technology has the potential to open up new spaces for learning and delivering feedback, ones that allows the learner to develop their relationship with their own body. The learner was able to revolutionise their own reflective experience of Dance Technique and invest in their own progression both inside and outside the tutor led session, a vital skill when the pandemic restricted face to face contact.

## Follow up and future plans

This method of feedback transformed the student's perception and gave them the opportunity to step outside of their body and view the action as an outside eye. Students were able to immediately re-experience the action and enhance their ability to reflect on their own performance. 360 digital technology can be used as a potential pedagogical tool, enabling students to engage in both tutor feedback and self-reflection without the need to be located in the same space. In doing so, student engagement increases as the student becomes an autonomous learner. The potential of this method allows feedback processes to extend outside face-to-face environments; the student can engage in their own self-reflective feedback process outside of the studio. This method also offers the potential for tutors to engage in the 360 immersive environments to observe students from any location, thus becoming an innovative tool at a time where face to face contact may not always be possible.

The research project continues to evolve as the 360 immersive method of self-reflection remains embedded into the final year Dance Technique module of the BA Hons Dance programme at the University of Lincoln. As the project progresses the direction will shift slightly to focus on the somatic aspect of the experience of filming and observing the body in the immersive environment. The study will consider the relationship between the student's felt, internal sensation in the studio, which allows them to develop their own understanding of their body and technical progress through bodily attention and how this can be integrated in to the 360 digital environment. The intention here is to bring forward the somatic body as part of the process of documenting and observing the digital body in 360 environments.

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