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Deepening discipline: Digital reflection and choreography

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In this paper we discuss findings from a recent academic development project in which we engaged with students in an exploration of *how* they think and *what* they think about in the process of creating solo authored choreography. The project emerged from a revisiting of the reflective frameworks identified in the validation documents for a series of choreography modules, in order to explore how the incorporation of digital technologies might facilitate students in their choreographic practice. The discussion explores creative, critical reflection in and on action, and outlines what we mean by *digital reflection* (using digital technologies to enhance creative reflection). Finally, we evaluate perceived benefits and impact of digital reflection folded into choreographic practice, where enhanced personal awareness can help choreographers identify their deepening discipline as art makers.

Key words: choreographic discipline, digital reflection, critical thinking, dialogue.

Introduction

Experiments in learning how to choreograph either single authored or collaborative projects can present significant challenges for dance students. Early experiences of dance are often characterised by direct replication of taught material derived from codified vocabularies. It can be tempting for students to continue to rely on these formative doctrines to underpin their maturing choreographic practice.   However, experience in the university studio can be distinctly different, with encouragement to question what may seem essential perspectives and consequently re-pattern their accepted frames of reference. These new adventures in movement require engagement with non-linear realms of creativity, often starting with little more than the feel of an idea. Finding ways to engage students in an exploration that aimed to unravel what some might think inaccessible became the substance of our exploration and eventually this paper. We wanted to understand *how* the students' thought about their practice and *what* they thought it important to think about when making dances.

When Jonathan Burrows suggests that as choreographers we need to '… stay

close enough to what we're doing to feel it, and at the same time use strategies to distance ourselves enough to grasp momentarily what someone else might perceive' (Burrows 2010, 34) he captures the dialogic complexity involved in learning to handle the material practice of creating dance. Knowing how you might strategize the possibilities available during a choreographic process is something that many of us assume students are able to manage implicitly. At the beginning of the project we asked ourselves how we might foster a critical creative community and encourage the students to engage with reflection-in-action as well as reflection-on-action through integrating digital technologies into their practice. Our agreed aim at the planning stage was to attend to resources that might facilitate practice and through this enable the students to forge qualitatively distinct outcomes that they could recognise in terms of their own progression. We asked how we might teach differently to encourage this process of generation, selection and refinement, whilst asking ourselves how we might recognise the significant developmental changes that we sought.

So our starting point was to aim for the students to recognise an open-minded curiosity towards their practice. In the discussion below we outline how we incorporated reflective frameworks and digital technologies as 'guides' for the students to find their *own* way, facilitating a reflective, questioning approach to their work. We follow this with a discussion of creative and critical reflection, and then outline what we mean by *digital reflection* (using digital technologies to enhance creative reflection). After this we include a detailed review of the choreography module on which the project was based (Choreography II: Developmental Practice). In this discussion we explore the ways in which digital reflection supported our aim of helping the students to recognise their own practice. Finally, we evaluate the benefits and impact of digital reflection for student choreographic practice, where investments in time and enhanced personal awareness helped students identify their deepening personal discipline as art makers.

Starting Out

In our early discussions about the project we considered what goes on in the process of generating new knowledge in choreography. Particularly this drew us towards considering the need to cultivate interrelatedness between the imaginative generation of ideas in movement, and the manipulation of these material ideas. We wanted to find ways to help the students realise their concepts-in-action. In investigating how to forge such interconnections we targeted our support towards refining their ability to give attention to the processes of making dances and to investigating the generation of discriminating and sophisticated outcomes.

At the start we were aware of a number of aspects that often prove difficult for students when making performance, for example, an exploration of physical space and the subtlety of varied dynamic phrasing that emphasises the communicative impact of the design. We wanted to support them in striving to avoid the relative fixity of material, which often provides premature comfort for new choreographers under the pressures of assessment. As teachers it can be difficult to provide appropriate support to facilitate such methodical engagement. Trying to suspend their rush to 'finalities' did prove difficult even as we remained ever aware of the limits of our shared resources, the most precious of which was time.

Often it is attitudes towards exploration, particularly in reference to an individual's attention that can underscore the worth of learning to be found in choreographic practice. We came to understand that we were exploring how to instil a sense of endeavour and self worth. We needed to promote an appetite for dwelling with the potentialities of their own ideas through what we framed as, on-going methodical iterations of their curiosity and initiative. With Meg Stuart's, 'Are we here yet' (2011) as a refrain we challenged the students to investigate how they make ideas happen (Forsythe, 1999, 2011; Lavender, 1996, 1997; Theodores, 2000) rather than how they follow instructions on constructions of form, whether it be narrative or non-linear (Humphrey,1953; Smith, 1976; Blom and Chaplin, 1982; Hayes,1993).

Being in conversation with your own choreographic practice in these ways is about interaction and investment in sustained investigative dialogue. It can start by reconsidering the way we each arrive at the practice; pre-judgements, desires and learned behaviours are all influential and often we need to turn down the volume on certain aspects in order to hear the worth of a whisper. The challenge then is to learn to remain open to the dialogue between ideas and realisation. So, it means dealing with new working methods, new forms, and new attitudes, stumbling upon possible ways forward.   In the process of refining your ability whilst dealing with the unfamiliar there can of course be frustration. It is not a place where many people are easily comfortable and certainly not a place where the increasingly modularised curriculum allows us to dwell and to take time. However, it can be a place where new connections are made and new knowledge is generated through the transformations made available in the active experience of doing (Dewey 1934, 1989; Rogers1969; Kolb 1985).

This sense of arousing and sustaining curiosity is a vital feature of knowledge generation in arts based learning and ultimately can prove to be some of the most fulfilling learning experiences for dance students. It can be where they find their idiosyncratic voice, where there is more world in their dances. To overcome some of the anxiety brought about by an unfamiliar working methodology and to secure ways to communicate the range of knowledge generated many academic Dance programmes include forms of reflective practice as a means for learners to critically evaluate their investigation and come to terms with their new endeavours.

The Digitalis Project

In the discussion that follows we outline some of the work and achievements that became evident during the *Digitalis* project as we integrated modes of digital reflection into the studio work. We investigated the idea of 'tooling', in order to offer students a range of exploratory routes into the inspirations they were taking into the studio. Throughout the project we aimed to enrich their critical reflection, and through this support the generation of questions to enhance both process and relationships with materials. Ultimately with the aim of fostering more nuanced even alternate responses to tasks, we encouraged them to recognise their familiar habits and to be more conscious of their dependence on or reiteration of shared technique based vocabulary. This eventually led all of us to new engagements with meaning making. There was a more evident appreciation for the identity and logic required in making a work akin to Meg Stuart's suggestion that, ' each piece needs to have is own kind of logic or meaning (Stuart 2011, 14).

Digitalis (http://digitalis.leeds.ac.uk), with the subtitle 'Using Digital Technologies to Enhance and Embed Creative Reflection', was an eighteen-month, interdisciplinary research project funded by the University of Leeds' Academic Development Fund (ADF). The project involved a broad disciplinary range including theatre, dance, music, design, art history and curatorial studies. Across these disciplines, work is often practice-based and related to creative outputs. The use of technology as a mechanism to enhance reflection is therefore of particular relevance, especially given the ephemerality of many of the projects produced by students and the complex collaborative processes often undertaken to achieve them.

Digitalis was conceived as a vehicle both for capturing and communicating good practice and for generating new approaches to digital reflection through parallel strands of creative investigation.   In terms of working with the dance

students it started with the provision of a Flip Camera and tripod for each student to use for the duration of the module.   Alongside the use of this personal tool kit with set up discussion boards, blogs, critical response with peer-to-peer review and focus group discussions. The module started with each student preparing a formal proposal for his or her own choreographic project. The initial aim was to encourage the students to use the equipment to capture studio based ideas, rehearsal material and personal observations.   It is from these modest beginnings that significant changes in attitude and practice eventually emerged.

Three core intentions were identified, aligning the aspirations of the *Digitalis* project with the learning outcomes of the module itself. These intentions included:

1. working with the students to explore the manner in which they might identify their own abilities in reference to the manipulation of ideas and begin to forge connections in their practice of art making.
2. exploring ways in which a sophisticated yet simple to use digital intervention/tool might support a qualitative advance in independent student learning and a working methodology that could be sustained into future practice
3. exploring the use of digital technology as a means of digital reflection that might increase their involvement and support them in making connections between practice, theory and the generation of new knowledge whilst engaging with current technology.

Following the ethos of Maxine Greene (1988), that there is an importance in frequently reconsidering the things we come to habitually take for granted, we set out to de-familiarise what had become our 'ordinary'. We attended to our work as a new situation thus creating an opportunity to see the relationships of choreographic elements in different ways and importantly find new questions to ask regarding both teaching and learning experiences. At the time that the study took place the module had been delivered to three successive student cohorts.   The project offered opportunity to pause, to reflect and to re-imagine what was important to question and to learn as teachers and as student choreographers. In the next section, we review some thoughts on the nature of critical and creative reflection in learning.

Creative, critical reflection and learning

> …the process I go through when devising and creating a new work is one of exploration and of searching: I delve until the piece emerges (Lee and Pollard 2004, 71).

We deliberately promoted the sense that there is no formula, side-stepping a mass of literature presenting accepted recipes for making a 'good' dance. We agreed that it was the idea of delving into the context and offering opportunities for the development of new reasoning processes and conceptual ability that held most importance. It was also evident that this was going to mean embracing an approach that could trace their experiential learning. Reflective practice, based on the ideas of Donald Schön (1983), has been routinely encouraged within Higher Education (HE) over the last 25 years.   However, it is not always made clear to students or appreciated by them just what is meant by 'critical reflection' (James, 2007; Moon, 2009).   In searching for an accessible definition of reflection we found one promoted by Birkinhead and Stevens in work undertaken with performing arts students. They identify reflection as 'purposefully thinking about experience to gain understanding and change practice' (Birkinhead & Stevens, 2002, 2). We combined this work with a model of reflection introduced by Liz Lerman (2003) in her work with DanceExchange.

The *Critical Response Process* is a four-phase primer for critical engagement providing a structuring approach to reflection-on and reflection-in-action. A valuable attribute of the form is that through practice it becomes a tool that facilitates broad ranging dialogue, asking questions of attitude and decision making processes. The framework includes four steps; the first, *Statements of Meaning* asks viewers to share an impression or response to what they have been shown. The second, *Artist as Questioner*, turns the relationship around providing opportunity for the choreographer to ask questions of their peers about the work. In the third cycle, *Neutral Questions from Responders*, the viewers are invited to ask factual questions for points of clarification. The cycle is completed by a forth stage, *Permissioned Opinions,* where opinion can be offered if the choreographer wants to hear it. The process does take time to learn to use well and works best where there is already a practice of sharing and talking about work on a peer-to-peer basis. Working with this type of conversational cycle allowed a clear structure for critical engagement to develop. Utilising the response process provided a window onto the conceptual development and reasoning facility of the students as makers and as audience.   Effectively we were engaged with their advancing aesthetic development through episodes where they offered insights into the nature of their inquiry alongside the balance between their cognitive and felt responses. The approach has the potential to open avenues for further exploration

following threads of aesthetic development theory into areas of communication that we often hear referred to as inaccessible.

Moon (2004) makes an interesting distinction between learning, and the representation of that learning, suggesting that the representation of learning in itself is a further source of learning material. To capture these thoughts we asked each student to scribe their *individual* reflections through maintaining a blog. The idea being that as the learner re-organises the presentation of her ideas '…she is sorting out her understanding of those ideas and is learning more since the organisation and clarification of ideas are a process of learning' (Moon 2004,14). These re-presentations of learning represent a *process* of reflection within a chosen medium, rather than a 'direct mirror of what happens in the head' (Moon 2004, 80). According to Moon the process can in itself result in secondary learning. The representation of reflection will obviously differ depending upon the form in which it is presented – whether in writing, speech, drawing or indeed choreography. So learning can occur where there may be no ostensibly new material but there is processing or 'handling'. This case will be familiar in studio practice in dance where learning is often framed by externalising reflection, standing back from the event in order to re-present reflections on it, and then looking again at *how* those initial reflections were represented. In this way, ideas can be pushed around and reframed, deepening the level of reflection, where there is as Moon suggests an, '… increasing ability to frame and reframe internal and external experience with openness and flexibility' (Moon 2004, 100).

Most literature on reflective practice has focused on written reflection (James 2007). However, written reflection may not be the preferred method for all students in terms of either the process (writing) or the communication vehicle (Doloughan, 2002; Simons & Hicks, 2006). This is particularly true for students with a preference for forms of visual or aural reflection. One of the primary reasons we choose to work with the flip cameras was to stay in the realm of visual communication where there was less necessity for recourse to words. It became evident during the project that students would watch material and incidents they had captured, process and reform them during their preparation time and return to the studio with developed versions of the material found through re-moving the material as their aid-memoire.

Reason and Hawkins (1988) proposed two forms of reflecting on and processing of experience - *explanation* and *expression*. *Explanation,* they argue, is a mode of classifying, conceptualising and building theories whereas *Expression* allows the meaning of experience to become manifest, by

partaking deeply of experience rather than standing back. 'To make meaning manifest through expression requires the use of a creative medium through which the meaning can take form' (Reason & Hawkins 1988, 81). They suggest that the ideal is to develop a dialogue between the two so that expression illuminates explanation, and explanation can clarify expression.

In the next section, we introduce *digital reflection* as a proposed method for enhancing reflection on creative practice. The subsequent section goes on to analyse how digital reflection was incorporated into the case study.
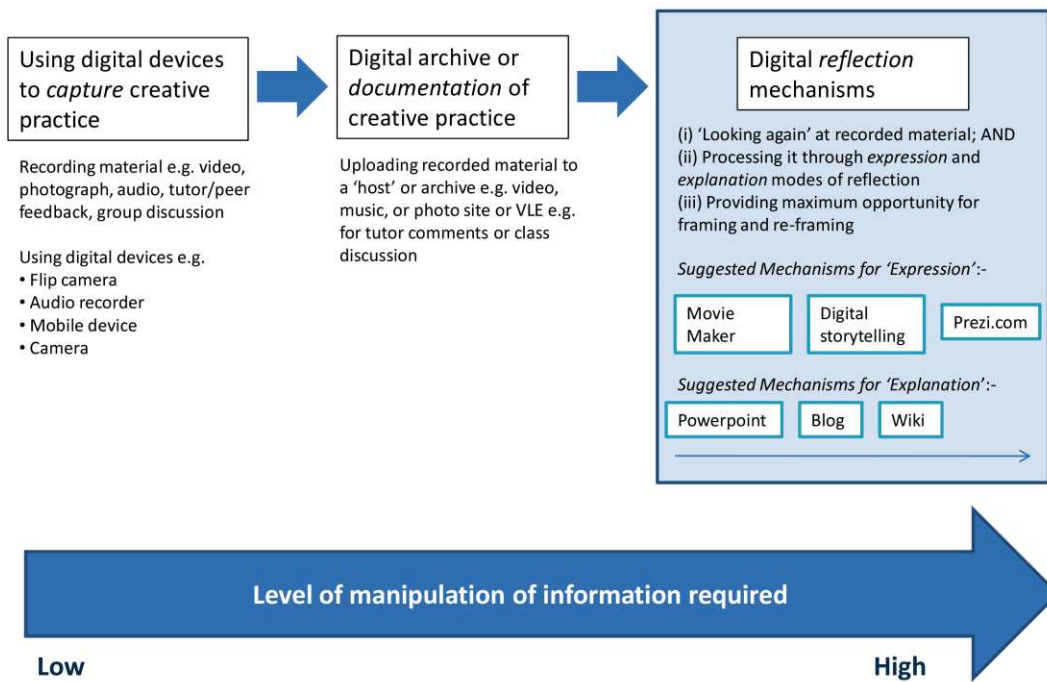

Digital Reflection

One of the aims of reflection is to reflect 'upon ourselves', literally providing a form of 'reflection' as in the mirror image to *reflect upon*. In performance-based work in particular, the camera can provide a 'mirror' to provide this 'other' perspective - as one student said, '… *being able to look at it from the outsider's point of view*'. Digital technologies can provide a distancing mechanism, for example, Delahunta and Shaw discuss a software tool called RotoSketch that enables choreographers to play back and draw on the moving image. The authors highlight a response shared by one practitioner who found that,

> Transferring the information into a different medium allows you to see or 'resee' what you've done. To be able to stand outside the movement … could allow you to go back into the movement with new information (Delahunta & Shaw, 2006 55).

It is worth noting that an increasing amount of artistic and cross-disciplinary engagement means that collaboration is becoming a common feature of practice. Digital technologies can provide a platform through which to share reflective practice as well as reflective outputs in ways that are both engaging and interactive. The viewer can provide responses that feed back into the learner's reflective process establishing a dialogic relation between practitioners, process and the work. Other examples include, *Capturing Intention* (Emio Greco and PC, 2007); *Inside Movement Knowledge*- IMK <http://insidemovementknowledge.net/>; Centre for Research into Creation in the Performing Arts. http://www.rescen.net/.

Through the generation of varied experiences during the whole Digitalis project a model of digital reflection was developed that helped us to frame and test our emerging ideas (Kirk & Pitches, 2013, Figure 1).

Model of 'digital reflection'

http://www.pvac.leeds.ac.uk/digitalis/files/2010/10/Figure-2.pdf

Figure 1 – Model of Digital Reflection.

We arranged different types of digital technology along a spectrum based on the degree of 'manipulation' of information that the digital technology requires. Based on Moon's (2004) suggestion that learning occurs in the presentation, re-presentation, organisation and framing of reflections, our premise is that digital technologies involving a high level of manipulation of information may actively facilitate a process of reflection (as long as the technology is sufficiently user-friendly as to not be a distraction from the essence of the work and that it facilitates a return to the work being created).

Technologies are organised into three broad categories. At the lower end of the 'manipulation' spectrum are *capture* technologies. These are essential in the recording and capture of the practice to be organised and reflected upon and to produce a *digital artefact*. In 'looking again' at the digital artefact, a process of reflection may occur, but those reflections are not annotated or represented. If the digital artefact stays on the device that captured it and is not processed in any further way, then there is a record of the thing-that-was-done. In this case there is no record of further engagement with the artefact and therefore no record of *reflection* upon it.

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Moving further along the manipulation spectrum are *archive* or *documentation* technologies. These provide options to upload digital artefacts *to* something, such as a computer hard drive or storage medium, or hosted archiving site. They provide opportunity for organisation, such as tags and descriptions, but do not involve manipulation of the digital artefact.

At the highest level of manipulation are *digital reflection mechanisms*. These are digital technologies that enable learners both to 'look/listen again' to their digital artefacts and to reflect on them. The reflection mechanism used could prompt 'expression', for example by the juxtaposition of image, text and sound; and the making of visual/auditory connections such as through video editing.   This could be done in a playful, improvisatory way. Or, the reflection mechanism could prompt the use of 'explanation', so that the selection of visual material, the ordering and presentation of it, and any verbal/textual commentary all prompt the process of making sense of your materials and thinking. The model is not intended to represent a 3-stage process. Learners can move straight from *capture* to *digital reflection* without going through a documentation stage, for example, especially with the use of mobile devices which can capture and then blog something almost at the push of a button. However, it is about putting the captured material to use and sometimes the easier it is, the less reflection may actually occur. We did find an aspect of this with one student who told us that in the (long) time it took for her videos to upload, she was busy writing ideas in her blog.

In the next section, we visit the Choreography II module, and look at how the introduction of digital reflection provided pedagogical tools to facilitate students' reflection on practice.

A choreographic case study

The students in the project were in the second year of their degrees when they agreed to join the study. The module ran for eleven-weeks and culminated in the presentation of a single authored choreography. The assessment design included evaluation of process and product in terms of the choreographed work (70%) and accompanying critical evaluation (30%). We aligned the learning and teaching with the aims of the *Digitalis Project,* in order to target enhancement of reflection throughout the process.

As mentioned earlier each student used a Flip Camera and tripod for the duration of the module, maintained their own blog and contributed to discussion boards on the VLE. We started a range of workshops exploring varied choreographic practice and reviewed their individual preparation of a formal choreographic proposal. In the module the students act as company

members for each other and together manage the shared rehearsal process. It is effectively an intensive laboratory involving the generation and manipulation of ideas, finding and solving problems as well as exploring ways to articulate the outcomes. It is a familiar model of choreographic practice echoed in many programmes in the sector. The central drive of the module is for students to be immersed in the process of making work where the studio is their learning resource. The individual flip cameras meant that students could organise their recordings on individual blogs partnered with written reflections, other contextual research and forward planning. The Flip recordings were used in focus group discussions and critical response forums (Lerman, 2003) in the studio.

Flip cameras are small, light-weight, easy to use, have good quality visual and audio capabilities, some zoom adaptability and sufficient memory to record 60 minutes of work. The task for the students was to find ways that they might work with them as part of their on-going practice. It was reasonable to think that the students would have some familiarity with the technology as they already used mobile technologies as part of their everyday lives. Most of the group had mobile phones that actually incorporated the capacity for photographic and video output, in many cases more sophisticated than the Flip. Interestingly few had used their mobile devices for this purpose although they had recorded festivals, parties, holidays etc.   This technology suited the task, potentially it could help them think at the speed of their dancing and usefully operate as part of a blended praxis.

We introduced the equipment through a number of familiarisation sessions including spatial orientation, interview techniques, guided observations, storage and retrieval. Later we outlined how recordings could be uploaded to the blog and shared a range of discussion themes that had been added to the discussion board for them to use.   This process started with a short self-interview where each student outlined their creative practice alongside any personal aspirations they had for the work at the early stage of development. Students were given guidance and prompt to help them get into the blogging habit. Things that they told us were particularly effective in helping them included: (i) the inclusion of as full as range of response as possible on the blog – there were no 'rules'; (ii) being given initial tasks to get started, such as uploading initial proposals, and a recording of them reflecting out loud; (iii) being given specific questions to respond to which helped guide the types reflection. They were also encouraged to enrich their blogs by including contextual research and writing up their ideas about that research and how it related to their emerging practice.

In the next section, we discuss how the students used the cameras and blogs; *what* they reflected upon, and *how* this changed their choreographic practice.

Digital Reflection and Choreography II

The key feature in mapping the students' activities onto the model of digital reflection is the use made of Flip cameras to *capture* practice. They told us they quickly adopted the habit of watching the videos, or used them in rehearsal. What we observed later was that the material generated further conversation, review and the revision of material in the studio. For evidence of the reflection and future reflexive action we had to look to the evolving dance works themselves and/or the later written evaluations that were uploaded on to the choreographer's evaluative blog.

The students used *archive* technologies, uploading their video to a hosting platform. We didn't ask them to annotate directly onto the video but they often wrote alongside or brought key identified sections into discussion in the critical response sessions. There is further potential to be explored in this aspect of the work where the digital choreographers' journals could be made by revisiting certain features of the rehearsal footage, annotating fixed frames and proposing developments that might become evident over time. Such an approach could provide a model for the structural analysis of a work as it progresses. With more recent social media developments of platforms like *Padlet* or *Pinterest* or *Prezi* this mapping approach is readily available and increasingly sophisticated.

Aspects of the students' *digital reflection* occurred on a personal VLE blog. By introducing the blog tool we hoped to encourage students to engage in on-going critical reflection of their creative practice – to treat it as a research investigation. The advantage of the blogs was that they enabled the students to embed multi-media resources, such as YouTube videos and links to practitioner websites. They were also encouraged to write about their captured rehearsal/ studio/ preparation footage via discreet themes, to evaluate links with various practitioners, relevant literatures and varied disciplinary or contextual influences. These became avenues along which they could *explain* (and therefore reflect upon) how they observed and understood the development of their creative work.

In this way the blog became an extension of their cognitive apparatus. Clark (2011) tells us of the Nobel Prize winning physicist Richard Feynman, who said that his original notes and sketches were not a *record* of the work but *the work itself*. The work happened *on the paper*. Clark suggests that the 'loop'

into the external medium was integral to the intellectual activity, and that Feynman was actually *thinking* on the paper. 'The loop through pen and paper is part of the physical machinery responsible for the shape of the flow of thoughts and ideas …' and thus a functional part of an extended cognitive 'machine'.

This is perhaps illustrated by one of the students, who described how,

> …on my blog it's amazing how your ideas just go like 'tssh' into different things and you can put everything with your videos.

 Another student commented that without the blog,

> …you would have just looked at your camera and then had it on your computer, you wouldn't be like a process you wouldn't be able to write stuff and it wouldn't all be together.

This is somewhat reminiscent of a Mobius strip, a one-sided looping surface where you can return to what is effectively a beginning but with the experience gained along a journey having seen both sides of the surface. Spiral learning like this allows for complexity, evidenced as a gradual building of understanding gained by taking a different or contrasting point of view, learning by observing and taking new action.

In coming to 'make sense', the choreography students recorded their thoughts out loud onto the flip camera. What this offered in terms of choreographic practice was a closer relationship between studio work and reflective practice where the later became more closely aligned with writing, recording, and analysing alongside real time events. It was interesting to hear one student tell us that she would listen again and again, aware that she never really re-read the notes although she had a habit of making them in the studio,

> … there was one task where she said 'record it, speak first, don't write it first', and then when I was typing what I'd said it was kind of unexpected, so that wasn't what I would have written – it's obviously what came to me first when I was saying it.

In future projects it would be worth exploring this interrelationship. We focus on the use of time and space as choreographers and this may influence connections between the visual and the aural in choreographic processes. It is important to note that many of the students transposed their analysis straight back into moving in preparation for the next studio session. It has the potential to offer closer connections than translating to written forms of documentation or the manipulative tools of digital software. This also highlighted something of the ephemeral, ghost in the process reminding us of

observations by Phelan (1993) concerning the life of performance being of the present: neither documented nor re-presented.

Evaluation and impact

The students learned about attending to work as an immersed, creative and reflective process. The digital capture provided them with access to gradual progressions through their material where they could identify and evaluate key developments in choreographic thinking and make decisions about further investigations. There is little doubt that this was supported in part by the familiarity many felt in the use of their personal mobiles. It is curious that they had not considered using their own mobile devices to record material before the project.

The overarching significance was the value they found in revisiting their practice, some commenting that it was like having the studio with them all week. The students were able to revisit footage repeatedly, and this process 'generated potential ideas', enabled them to 'think about and change' their choreography, and made it possible for them to 'develop it in your head' (quotes indicate the students' own words). Having a 'record of every movement' helped them 'to build on' ideas 'more thoroughly'. It allowed them 'to refine ideas', and reminded them of 'thoughts for edit' that they'd had whilst watching it live. It encouraged experimentation, 'greater than my boundaries', becoming 'more fluid and experimental', and deliberately 'videoing my dancers randomly dancing to see if I can capture something special'. They could 'capture spontaneous movements and make use of them'. By then watching this footage, they were then able to explore it 'in much more detail'.

In looking again, it seemed that they identified things that they had not noticed before, often quite incidental movement or combinations of ideas like the movement of a passer-by or coincidences in spatial arrangements of dancers that they then deliberately choose to explore in a future rehearsal.   In this way, it provided them with a tool to generate and refine ideas, which in turn influenced their practice. One student told us how it changed her choreography, as she noticed 'really small details' and from being 'really high energy', her choreography became 'quite minimal and gestural'.

Many identified that they valued being able to keep everything in one place, first on the flip and later on their blog, and that they were able to revisit and see the development of their ideas over time as 'a full process', a 'thread of

thoughts'. Without this, they said they could become 'lost' or 'confused'. Thus the flip/blog became a mapping tool to help them to find their way around their emerging process. It became a place that traced memory and process for them as choreographers and for the dancers that they worked with during the project. Eventually the system operated as a form of witness to practice, a choreographic dramaturge of sorts.

What seemed apparent was that the combination of using the Flip camera and the blogs enhanced their cognitive capabilities in the sense of Clark's ideas of extended cognition, for example '…when looking at improvisations I can find moments of coincidence I may have not saved otherwise through memory.' Thus capturing material on the camera is part of the machine influencing the shape of thoughts and ideas. It provided a mirror and an external perspective that enabled them to stand in the shoes of a viewer, with students intentionally positioning the camera to explore different viewpoints. Using the camera to interview themselves out loud provided an alternative 'feedback loop' to pen and paper. Some students found that in speaking their reflections out loud, they said things that they wouldn't have thought to write down. However, not all students relished seeing themselves on camera. We suspect this method may be useful for students who 'think out loud' but maybe less so for students whose preference is to think through writing. Further exploration to compile a choreographers' digital toolbox would be a valuable area for research. It is worth acknowledging the familiar practice of drafting and redrafting choreographic proposals, writing and overwriting in the margins of these documents can be a crucial way to maintain a map of changes in practice and this could happen online.

Digital literacy cannot be taken for granted. The flips were easy to use and YouTube was easy to access. The blogs required hands on facilitation to encourage the students to engage with them, although once achieved, they valued the ease with which they had an emerging record of their practice. The flip videos helped the choreographers to share their ideas and reflections with the dancers, proving to be a valuable outside eye in rehearsals. In terms of a collaborative tool, the blogs also enabled conversation between the students and tutors. This could be extrapolated to a group wiki operating as a forum for further discussion, a collaborative space for further learning.

Whilst the blogs enabled the students to organise and record their process, they didn't *manipulate* the visual information. Introducing video editing would open up opportunities for digital reflection in the sense of being able to work with *presentational knowing* using an alternate *expressive* mode of reflection. Video editing would enable students to reflect and create anew in the same modalities that they use in choreography, thinking in terms of movement-over-time. An understanding of such potentialities of manipulating time, space and

design echoes in the work of Sheets-Johnstone (1999, 249) when she suggests that in the movement of bodies we can become,

> …caught up in the flow of kinetic thought, perceptually experiencing the dance as an unfolding kinetic drama, a dynamic form-in-the-making. (Sheets-Johnstone 1999 [1979, 1980]).

It was evident that the students came to understand more fully the complexity of dynamic form, with a deeper appreciation of the manner through which they needed to approach the task. There was an increased willingness to engage with a range of ideas; through improvisation; peer-to-peer feedback and in the use of choreographic devices in support their practice. Between; the studio, the people, the ideas, the site, the library, the web there now sits the flip/blog – tools that help capture their material thoughts. When their next choreography module started the students asked for access to their blogs to continue to develop their resource bank of choreographic thinking.

Concluding remarks

At the beginning of the project our aim was to support students in learning how to utilise a range of tools that might enhance their own *choreographic process.* This included finding ways to draw their attention to organisation and spatial patterning; to noticing how interrelationships and dynamic phrasing cross the strands of the medium and to how their conscious manipulation of form and content could make a qualitative difference to the identity of their work. As one student said, 'I've become more critically reflective and more aware …'. What became evident to us in this process is that methodical exploration facilitated by digital forms of reflection provided ways for individuals to recognise new knowledge through the deepening discipline of their own practice. It has required that we as educators seek ways to unlock the learning process, reconsidering the constituent features of our own on-going dialogue with students. With the aim to arouse, stimulate and propel the students to ask more of themselves they started a journey that led them to know more of their way around, a complex artistic specialism as well as preferences in their thinking styles. It has required a degree of flexibility, mixed with a peripheral vision that enables them to recognise problems and perceive ways to forge solutions.

The discussion has considered choreography as a conversation between work, choreographer and process facilitated by digital reflection. The students learned to give their attention to the fine detail so often hidden in plain sight.

We learned to re-explore our critical awareness and to raise our expectation of engaging in a deep discipline of knowing. What became evident was the value in learning to let go of 'known', fixed methods and instead to explore the possibility and potential of the indefinite. With careful attention there is more opportunity to explore and expand thinking as an investigative dialogue, with emphasis on learning through doing and where doing is prized as a multifaceted practice.

Through the introduction of a range of easy to use digital technologies we found that students learned how they might recognise their practice by observing it. They became more readily able to investigate the creative potential they were generating and to recognise their interests and ingenuity.

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