Video Conferencing for Opening Classroom Doors in Initial Teacher Education: Sociocultural Processes of Mimicking and Improvisation

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Abstract

In this article, we present an alternative framework for conceptualising video-conferencing uses in initial teacher education and in Higher Education (HE) more generally. This alternative framework takes into account the existing models in the field, but – based on a set of interviews conducted with teacher trainees and wider analysis of the related literature – we suggest that there is a need to add to existing models the notions of 'mimicking' (copying practice) and improvisation (unplanned and spontaneous personal learning moments). These two notions are considered to be vital, as they remain valid throughout teachers' careers and constitute key affordances of video-conferencing uses in HE. In particular, we argue that improvisational processes can be considered as key for developing professional practice and lifelong learning and that video-conferencing uses in initial teacher education can contribute to an understanding of training and learning processes. Current conceptualisations of video conferencing as suggested by Coyle (2004) and Marsh et al. (2009) remain valid, but also are limited in their scope with respect to focusing predominantly on pragmatic and instrumental teacher-training issues. Our article suggests that the theoretical conceptualisations of video conferencing should be expanded to include elements of mimicking and ultimately improvisation. This allows us to consider not just etic aspects of practice, but equally emic practices and related personal professional development. We locate these arguments more widely in a sociocultural-theory framework, as it enables us to describe interactions in dialectical rather than dichotomous terms (Lantolf & Poehner, 2008).

Key words: video conferencing, improvisation, sociocultural theory, initial teacher education

Introduction

In this article, we present a sociocultural-theory framework for conceptualising video-conferencing uses in initial teacher education and in Higher Education more generally. We suggest that existing frameworks remain valid and that video-conferencing facilities used in teacher training allow to open classroom doors. At the same time, we also argue that there is a need to develop a model which focuses on the affordances of video conferencing for developing improvisation. Following this introduction, we provide a literature review focusing on video-conferencing uses in education and specifically in initial teacher education. We describe in somewhat more detail two similar set-ups in initial teacher education in the UK – the InSTEP programme at the University of Sussex and the interactive Teaching and Learning Observatory (i-TLO) at the University of Nottingham, as they are similar with regard to the general principles underlying them. We shall, however, focus predominantly on a detailed analysis of i-TLO data as both authors are based at the University of Nottingham and shall review our findings in relation to the literature in the field. We shall also discuss new findings which suggest a somewhat extended framework for video-conferencing uses in initial teacher education (ITE) and which suggest that video-conferencing uses in ITE contribute to developing improvisational processes with new teachers.

Video conferencing has been in existence for more than 40 years since first demonstrated in 1968 (Barnes, 1997). Whilst it was expensive and costly in the past, the advent of fast broadband connections and the capacity to conduct video conferencing via Internet Protocol (IP) links have reduced the cost of video conferencing calls dramatically. In parallel, the costs of video-conferencing systems have also been reduced, so that they have become more affordable for schools, teacher-training institutions and generally the Higher Education sector.

Together with the initial drive for developing educational Information and Communication Technology (ICT) uses as a change agent in education, as well as its potential contribution to reducing CO_2 emissions by cutting travel, video conferencing is now attracting more and more attention from various users. Video conferencing is introduced predominantly as a means for long-distance communication, to allow learners and teachers to link to external partners such as non-school based educational providers (e.g., museums), to partners abroad (e.g., overseas partner schools) and initial teacher-training institutions. In the UK, most universities tend to have video-conferencing facilities which are used for an increasingly wide range of purposes ranging from meetings with national and international partners via remote lectures to links into practice settings such as school classrooms or healthcare settings. To date, as far as we can ascertain, there are two UK-based teacher-training institutions that have integrated video-conferencing systematically into teacher training: the University of Sussex in the field of Science Education through the 'In-School Teacher Education Project' (Marsh et al., 2009; Mitchell et al., 2008) and the University of Nottingham in the field of foreign-language teacher education through the 'interactive Teaching and Learning Observatory (i-TLO)' (Coyle, 2004). Both initiatives share many common concepts in initial teacher training and are similar (though not identical) in the ways that both are theorised. In this article, we argue for an extended conceptualisation of key teacher-training concepts, based on a content analysis of interview data and a reinterpretation that there is a need for extending current models further to include video conferencing practices as a means for enabling mimicking and improvisational practices that facilitate

unplanned and spontaneous personal learning moments through improvisation.

We also locate these arguments in a sociocultural-theory framework as it allows us to develop a more thorough understanding of affordances of video conferencing by considering it as a semiotic learning and teaching tool. Viewing video conferencing in teacher education as a tool allows us to analyse related learning and teaching interactions as dialogic processes which are dialectical in nature (as proposed by Lantolf & Poehner, 2008) and facilitate a sociocultural analysis of observed learning and teaching interactions (as outlined for example by Mercer & Littleton, 2007).

In the following section, we review the related literature in more detail.

Literature Review

Video-conferencing uses in education have been reported widely in the related literature. For the purposes of this article, we focus primarily on a review of literature that focuses on video-conferencing uses for initial teacher education. A simple search on the ERIC database provides 309 references on Video Conferencing from 1966 to date. Of these 309 references 20 publications refer to specific uses of video conferencing for teacher training. The review also confirms the increasing use of video conferencing for initial teacher education as reflected in a variety of publications (Wright & Cordeaux, 1996; Cullimore, 1999; Coyle, 2004; Hu & Wong, 2006; Mitchell et al., 2008; Hunter & Beveridge, 2008; Marsh et al., 2009), with some studies focusing on schools students (Thorpe, 1998; Doggett, 2007). This literature explores a wide range of aspects of teacher training in a range of contexts and from a variety of theoretical perspectives.

Using video conferencing for initial teacher education has been growing since the late 1990s. Geographically, such uses have been integrated systematically into initial teacher-education programmes in Australia, followed by the USA and the UK. The development of video conferencing in Australia (Boylan, 1999; Crawford et al., 2002) reflects the long-standing tradition and necessity of distance education. The increasing uses of video conferencing in the UK are due to a range of factors: first, the additional funding that was made available to schools and teacher-training institutions in the late 1990s, for example, as part of the Training Schools initiative which funded the original equipment used in the interactive Teaching and Learning Observatory at the University of Nottingham's School of Education (Coyle, 2004). Another factor was the increased availability of video-conferencing equipment in the market and the fact that video conferencing plays a significant role in maximising staff time, reducing unnecessary travel and related CO_2 emissions (Wang et al., 2008). Technologically, it is also important to take into account some changes, as they have an impact on the availability, cost and quality of video-conferencing uses. Whereas video-conferencing uses in the 1990s relied on establishing connections via multiple Integrated Services Digital Network (ISDN), which resulted in high running costs, since the advent of video conferencing via IP connections the quality of links has increased owing to larger bandwidth capacity whilst the running costs have been further reduced.

The literature indicates that the theoretical perspectives of various studies in this field tend to emphasise a limited number of frameworks such as: use of constructivist approaches to education (Coyle, 2004; Taylor & Hsueh, 2005) and opening classroom doors by video-conferencing tools (Lee, 1997; Coyle, 2004). Coyle (2004) locates the teaching and learning observatory (TLO) in social constructivism. She writes:

> Social constructivism provides a theoretical approach to learning in which students construct their own knowledge as a result of interacting with their environment and of mediating their understanding through meaningful cultural and social contexts contained within it. (Coyle, 2004, p. 6)

She links her social constructivist understanding of TLO interactions to Lave and Wenger's notion of learning as an 'evolving continuous renewed set of relations' (Lave & Wenger, 1991, p. 50). These conceptualisations focus on the role of teacher trainees as learners through joint observation and related (scaffolded) discussion and dialogue. At the same time, Coyle also makes reference to video-conferencing uses as contributing to 'redefining classroom boundaries' and explores this by referring to a blurring of virtual and real classrooms and potentially changing roles of observed students in schools. These arguments are similar to Lee's (1997) arguments that refer to video conferencing as a means to 'open classroom doors', that is, video conferencing is considered as a way to make classrooms more accessible to interested outsiders and to open them up to learners in the classroom.

These different foci of frameworks illustrate the richness of teaching and learning interactions that video conferencing can facilitate. It is for this reason that we suggest a sociocultural-theory (SCT) framework for analysing these interactions as it allows us to capture and analyse the multi-faceted interactions that video conferencing facilitates. In order to set the context further for developing this SCT framework for video conferencing in education, we present two main UK teacher-training institutions that have systematically integrated video conferencing into their teacher-training courses. The similarities and differences between these two similar uses of video conferencing for teacher training are briefly reviewed in the following section.

The University of Sussex In-School Teacher Education Programme (InSTEP)

InSTEP was introduced in the academic year 2004-2005 by the University of Sussex's Science Teacher Education Programme in collaboration with six partner schools. As reported by Marsh et al. (2009), 'the purpose of the scheme was to "bring excellent teaching practice" (Adamczyk, 2005) to an audience of trainee teachers so that:

1. Trainees would observe good practice in real time as part of their PGCE programme,
2. Tutors in the teacher education classroom would be able to interpret what was being said in real time so that rather than just being taught theory, the trainees would thus be able to observe "theory in action".
3. Following such InSTEP observation sessions there would be subsequent discussion of these activities with either or both the PGCE tutors and school teachers involved, enabling and enhancing trainees' reflection (this is reflecting on the observed practice of others although the original intention was that the trainee teachers would also reflect upon their own practice)' (Marsh et al., 2009).

The authors conclude with the comment that 'it seems to us that the value of InSTEP might lie in its capacity to bring the practical learning of the school classroom into the university setting' (Marsh et al., 2009). This also confirms earlier findings (Mitchell, 2008) that describe InSTEP benefits as contextualising theory and decontextualising practice.

The University of Nottingham's Interactive Teaching and Learning Observatory (i-TLO)

The i-TLO was first introduced in 1999 as part of funding for the Training Schools initiative. It was originally set up as a means to overcome physical distance between a beacon partner school and the University of Nottingham's School of Education. Coyle (2004) focuses in her description of the programme on the various interactive uses of video conferencing, which are similar to the ones from the University of Sussex, but using somewhat different technologies. Also, it is important to point out that the i-TLO is primarily used with foreign-language teacher trainees rather than science teacher trainees.

In theoretical terms, Coyle (2004) stresses the development of 'communities of practice' as part of an overall constructivist framework and further theorises the i-TLO as a means to 'redefine classroom boundaries' owing to the multi-layered nature of possible i-TLO interactions and argues for i-TLO uses as a means to overcome the boundaries between virtual and real classrooms. Coyle's notion of 'redefining classroom boundaries' is also reflected in some of the other literature in this particular field (Lee, 1997; Hunter & Beveridge, 2008) where reference is made to metaphors such as 'opening classroom doors' to indicate the opportunities for collaboration offered by video-conferencing uses in initial teacher education. Whilst we accept the existing conceptualisations as valid and relevant, we also suggest that these need to be expanded to develop stronger models of video conferencing.

Similarities and differences between the In-STEP and i-TLO

The video-conferencing set-ups in both institutions focus on providing teacher trainees with access to good practice as a means to enable them to observe and critique experienced teachers' classroom performances. Technically, the set-ups are somewhat different. Whilst In-STEP provides the teacher with a separate microphone as well as a separate view of the classroom simultaneously, the i-TLO does not provide the same facility and does not have the capacity to offer simultaneously different views of the classroom. However, the i-TLO allows recording of live lessons for later more detailed discussion and analysis onto DVD and switching between two cameras (Coyle, 2004). It also provides a zoom-tilt-pan facility which allows 'observers' to focus on small parts of the classroom as needed for some parts of observations. Common to both video-conferencing set-ups is the focus on enabling teacher trainees to observe live lessons, that is, teacher-learner classroom interactions, as a group.

In the following section, we present the findings from a focus-group interview with teacher trainees from the University of Nottingham in order to develop our understanding of video-conferencing uses in initial teacher education further.

Interview data and analysis

In this section, we develop our understanding of video-conferencing uses in HE as a means to develop and support mimicking of practices and learning through improvisation. We shall present an analysis of focus-group interview data collected with a group of eight foreign-language teacher trainees at the end of their teacher training year in June 2009 to illustrate how video-conferencing uses can be conceptualised somewhat further. The teacher trainees interviewed had all taken part in interactive Teaching and Learning Observatory (i-TLO) uses at the University of Nottingham's School of Education, primarily in the initial university-based phase of their PGCE training year. These data confirm existing conceptualisations of video conferencing as reviewed in the recent literature presented above, but also lead us to suggest that video-conferencing uses can encourage the

development of improvisational learning through the initial mimicking of practices.

Unsurprisingly, the key topics raised by the teacher trainees confirm earlier research findings as discussed in the previous section. We present these briefly first. We refer to the interviewed teacher trainees as 'PGCE students' throughout this interview-analysis section.

Accessing a range of classroom practices

At a practical level, video-conferencing uses allow students to get access to a wider range of educational practices. This is illustrated by the following interview quotations:

> S1 I suppose it's the chance to see people teaching and students learning that you wouldn't get a chance to see normally because you're not going to travel to all these different schools or across the country – so that was useful.

> S2 And just getting all the different types of school because we've only seen two [as part of our teaching practices]. And also I think it was quite good to see what lessons were like and what the pupils were like and what the classroom was like without actually having to sit there and be there and you can literally relax and observe and see every little detail that you might be worried about before you actually have to go and do it yourself.

PGCE students refer in the interview quotation to the affordance that video conferencing provides them, with easy access to a wider range of teaching practices in schools and classrooms. The technology allows students to observe these practices remotely, independent of distance and locations.

Video-conferencing uses as a means to link theory and practice

These findings confirm the findings presented by the InSTEP team in a range of publications reviewed above. Video-conferencing uses as part of the PGCE programme allow students to link theory and practice together. In other words, video-conferencing uses seem to raise the consciousness of students to the applicability and practical worth of educational theories. Students refer to 'visualising theory' through classroom observations as illustrated in the following interview quotation:

> S1 I think maybe if we had a session on learning or the behaviour of learning and doing the session and then having an observation almost to consolidate things. Because once you can identify the strategies that were being used you can then visualise it and you can put it into practice. I think a lot of what we've got [at the university] is theory and it's not until you're in a classroom and you see it going wrong that you realise that this is what they were talking about.

> S2 That [classroom observation] would contextualise the theory and that would have been really useful.

At the same time, PGCE students point at the differences between being a lone observer in the classroom and observing remotely via video-conferencing link as a group:

> S3 [...] the main advantage that stands out between the two of them is that we can do group discussions and group observations live.

> Int. Is that important for the group?

> S5 Yes just on the reflection side which you can't do when you're by yourself and at the beginning, when you are first learning how to do observations, you don't really know what you're supposed to be looking for and I was writing down almost everything that was going on and it was not really helping me.

Also, it is important to point out the impact that observing as a group via video conferencing has on the PGCE students when they first go into a classroom setting as part of their first placement. They repeatedly refer to 'having [observation practice] before going into the 1st placement' and point also at ways to improve 'observation practice' as part of using video conferencing as a more systematic means to prepare students for teaching practice:

> Int. Do you think video observations have any impact upon how you observe later on during your school experience?
>
> S1 I think it's good to have the practice before you go out there because you don't really have anyone then to guide you on how to do this.
>
> S2 And I think it can help the tutors because they can show us what we are supposed to be looking for.
>
> S3 I think when we did the target language session we were divided into groups and some of us had to watch the teacher and some of us had to watch the reactions of the pupils and that was helpful.
>
> S4 And when you do the observations you do need to have a focus rather than just trying to see everything which is impossible because you don't know what you are supposed to be looking for.
>
> S5 I think it could have been exploited more though. We were saying that it was good but if we had more focus on observing lessons so that when we then went into schools we'd already been used to looking for certain things. I think that's where it could be more fully used because I think it is good.
>
> S1 I do as well and I think that's where it comes back to being able to record stuff and then they could have used more recorded lessons and not just live ones and that could be useful.

In this sense, we suggest that rather than solely linking educational theory and practice, video conferencing also supports the development of professional behaviour and related practices. This also relates to Coyle's (2004) claims that video-conferencing uses support constructivist models of learning and teaching. We explore these constructivist viewpoints further in the following section.

Video-conferencing uses as a means to support the development of professional dialogue through the joint construction of knowledge

Coyle (2004) adopts a constructivist view of video-conferencing uses in initial teacher education and combines this with the development of communities of practice. Although it is somewhat unclear how far communities of practice can be understood in Lave and Wenger's (1991) sense, our findings confirm the formation of learning communities of PGCE students as part of classroom observations via video-conferencing link as illustrated in the interview quotes below:

> S1 Instead of sitting there by yourself you can see it with others and discuss it while it's going on and you can get everyone else's point of view.
>
> S3 [...] when you're on school experience you only get that teacher's point of view on their lesson which is just one opinion and it is biased, isn't it, because it is their lesson. So if you've got a situation where we are all sitting here and we can switch off the microphone and we can discuss it as things are happening – as you were saying as well because we've all got different opinions on the same thing that we've just seen. So you've got all those different opinions and ideas that you can take away and then think about and then apply.

> S4 And we can still have a chat amongst ourselves while we were watching. So we could hear them but they couldn't hear us.

Our findings also confirm earlier points made by Marsh et al. (2009) and by Coyle (2004) regarding the development of professional dialogue as part of video-conferencing uses within trainee teachers' learning communities.

> S2 And it was great to get conversations going about what we thought was good practice or not. So that was really useful in terms of our PGCE before we even started doing it ourselves.

The support for the development of an i-TLO community of practice also contributes to processes of professionalization as illustrated in the following quotation:

> S1 Because instead of just saying: 'oh that was rubbish' it helped us to talk about it in a more professional way and actually being able to look at it from both sides and actually how to address people and how to talk about things you'd seen. So I think that was good.

In retrospect, the PGCE students interviewed were also able to comment more analytically on video-conferencing uses and to make reference to 'reflective practice' as illustrated in the following interview quotation:

> S3 And discussing what you've just seen as a group can help you if something you've seen happens to you in the future because it can make you more reflective.

The PGCE students also point at processes of depersonalising practice where they consider observations via video conferencing as a means to 'distance' oneself from individuals and to observe interactions instead as illustrated in the following interview quotation:

> S2 But when you are just watching the class and it's not going to be your class at all and you are just away from it then you can just concentrate on observing how they teach and what they're doing and how everyone is interacting. But when you're thinking that you might have to teach this class you've got so many different things going on in your mind that you're not really focusing on particular aspects.

The interviewee contrasts two scenarios. Whilst it is important for new teachers to get to know their students and to develop a professional relationship with them as part of their teaching practices, the interview data suggest that processes of depersonalisation or distancing have an important contribution to make. Distancing allows one to focus on observations of actual teaching and learning practices and related classroom interactions rather than on individual students' behaviours. In this sense, video observations have an important role to play in providing a somewhat depersonalised classroom setting which allows students to explore jointly and supported by their tutors' classroom interactions rather than focusing on individuals' behaviour.

PGCE students also commented on observing teaching practices which they might not agree with. They commented on these instances of practice as follows:

> S1 You can still find out the rationale of why people do this particular activity or task in a certain way and it could be because of their group or anything. So you can still pick up tips. Even to realise that you might not try that because there are still both sides of it so I still think it's valid to observe someone and think that you wouldn't do it that way personally. I don't think there is anything wrong with that side of observations because you still want to know how things are done.

This suggests that whilst it might be preferable to get students to observe what might be considered as exemplary practice, practice is also always personal and contextual. Video-conferencing uses seem to provide PGCE students with a wider repertoire of desirable and sometimes undesirable practices. This process of disagreeing with some examples of practice is useful in the sense that it serves as another entry point for the development of personal reflective practice in a group learning environment where a community of practice shares and develops their understanding of teaching and learning processes.

At the same time, student teachers referred to information overload that they might be confronted with when observing:

> S1 Sometimes you get so much information that you can't always register where it's from.

> S2 We hadn't even gone on to school experience so we really hadn't got any sort of professional experience ourselves to be able to say this or that or they could have done this.

It might be argued that this is unavoidable. It also is a part of becoming a teacher. However, as pointed out by PGCE students before (and as practised as part of the observation sessions via video conferencing) this information overload can be managed by developing foci for classroom observations which allow students to identify specific classroom practices.

PGCE students also refer to the personal-emotional aspects of their PGCE year and link video conferencing to this as supporting emotional aspects of the PGCE:

> S4 PGCE is not only intensive on the learning curve but also on the emotional side it's very hard and very trying and we've all gone through times when we thought that we just couldn't do it and it's just usually through talking to other people that you realise that you're not the only one struggling. So that is another one of the benefits of being able to observe as a group and then //

> S3 And from different angles.

> S2 Yeah so you can just get all these different points of view and all the shared emotions as well.

> S1 It's like a safety net, isn't it? And you're not on your own either.

Again, it seems that group observations serve as a 'safety net' which enable the development of professional dialogue whilst taking into account the highly emotional and personal aspects of the PGCE training year.

In summary, throughout the interview, PGCE students refer to a wide range of video-conferencing uses, say, for professional development, in order to observe examples of specific practice, in order to get practical tips and hints, in order to develop reflection (and as a means to build on practice perceived as negative), and as a means to support Newly Qualified Teachers. These student comments suggest that they can see a wide variety of uses for video conferencing (and some of these uses they have been exposed to). These comments also point at a current lack of systematic integration of video conferencing into a range of training activities such as observing examples of specific practice and as a means to support newly qualified teachers. At the same time, these comments seem to indicate a continuum of a range of initial teacher education and continuous-professional-development (CPD) activities. This continuum of activities could be facilitated via the systematic and integrated use of video conferencing in teacher education and adapted to different PGCE course phases and students' changing needs.

So far, drawing from our interview data, we have focused primarily on presenting conceptualisations of video-conferencing uses, which support previous arguments made for the use of video conferencing in teacher education. In the following section, we want to focus and expand on some final data that seem to suggest the need for the development of a more generic framework for video-conferencing uses in initial teacher education (and more widely in practice-related training in HE and potentially other sectors) that is related to supporting processes of improvisation.

Emerging themes: Mimicking and improvisation

In this section, we aim to extend our analysis and understanding of the data further by focusing in particular on the emerging themes of mimicking and improvisation. PGCE students refer to a process of 'mimicking' when describing their initial practices as new teachers:

> S2 And also you're stepping into somebody else's shoes so you're almost mimicking what they do and you see how they treat that particular kid and you make a mental note of that and you're not observing the practice so much. But with video observations you are never going to see the kids or the teacher again and you're not going to teach them so you can just observe and that's it. And so you can take in all the little things that you would otherwise miss.

The process of 'mimicking' referred to by the PGCE students is nothing new and constitutes a key part of new teachers starting to develop their own practices and underlying beliefs and informal theories. This process is necessary. This process can also be limiting in the sense that it is based often on the observation of limited teaching practices that might be appropriate in one particular setting with one particular class, but detrimental to learning in another classroom setting. When asked to explain this comment further the PGCE student linked 'mimicking' as follows to video-conferencing uses for classroom observation:

> S1 Well, you are mimicking but not so much - it's like you're saying: 'I wouldn't do that but I would do this'. But when you are on school experience and you have no experience at all of teaching you're thinking you have to do it like that with these kids because that's what they are used to and that's what they expect. It's different when you get your own class because then you can start afresh and you can say that this is what you expect from the kids and this is what the kids can expect from you, but when you are taking over someone else's class you don't want to undermine their authority by doing things your way especially if you don't have your own way.

> S2 [...] with video conferencing you can see a load of different things and how to use different things and getting different ideas.

This particular PGCE student comment triggered additional contributions from the other interviewees such as:

> S2 Yeah lots of different ideas from different people rather than one person's way of teaching.

> S3 And the same idea but done differently because everyone has their own style.

> S4 You can mesh a load of ideas together and you can take one person's style which you tweak a little bit and you can see if it works or not and then you can take other ideas from other people and it's a lot more flexible. It gives you a chance to see a wide range of practitioners. Especially if you are in a school with a small language department because you might only see only two or three teachers in the same school.

> S5 And even with some teachers they will say: 'oh don't do that with that class because they can't do it' but then you do do it and it goes very well. So those teachers have their own stereotypes and their own clichés and they will always

teach in a very similar way so it's quite interesting to see how you can change that.

It has to be taken into account that these comments were made when the PGCE students had reached almost the end of their PGCE year. It also has to be added that they participated in the interview voluntarily. Therefore, we would suggest that these comments need to be considered carefully in relation to integrating video-conferencing technologies into teacher-training programmes or similar fields. These comments also relate closely to notions of improvisation in teaching which we would consider to be key for the development of current and future practice of teachers. 'Mimicking' constitutes the initial part of improvisational processes that we consider to be vital for new teachers to be enabled to develop their classroom practices in a safe and mutually supportive environment which allows group discussion, reflection, depersonalization of practices and reacquisition and reinterpretation of others' practices through initial observation. We suggest that video-conferencing uses in ITE can make a significant contribution to learning and teaching as improvisation. Therefore, the notion of improvisation is one of the key concepts that we aim to use as a means of developing our understanding of video conferencing in ITE and more widely in HE.

The concept of improvisation originally comes from jazz and theatre performance. Wiesemes (2002) and Humphreys and Hyland (2002), for example, see teaching processes as jazz improvisation. Wiesemes (2002) has developed this jazz metaphor originally as a means to analyse and critique his own classroom practices in a (bilingual) secondary-school Content and Language Integrated Learning classroom setting. In this sense, the use of a jazz metaphor allows him to distance himself from his own practices. Humphreys and Hyland (2002) describe the challenges and complexities of teacher-learner classroom interactions through a jazz-performance metaphor and relate these to initial teacher education specifically as follows:

> 'In Berliner's (1994) account of the critical faculties of jazz musicians, entitled *The Never Ending State of Getting There: Soloing Ability, Ideals and Evaluations*, he notes that: by observing critical discussions and participating in them, learners become sensitive to wide-ranging criteria appropriate for the evaluation ... and they gain a deep respect for the refined listening abilities that attune seasoned artists to every nuance and detail of improvised performance' (pp. 234-4).

We would suggest that the creation of such a critical dialogue between mentor and student in an environment of demonstration, rehearsal and practice is the cornerstone of effective teacher education. We are arguing for a return to the preparation of teachers through 'an exploration of the performance and improvisatory aspects of the art of teaching' (Humphreys & Hyland, 2002, p. 12).

Lobman and Lundquist (2007) use the term 'unscripted learning' to describe the scenario of improvisational learning in classrooms. They argue that both teachers and students are essentially improvisers and performers. We would suggest that whilst improvisation in classrooms might look unscripted, it is not. It is rather a reflection of teachers' ability to use, select and adapt a wide range of standards (in the jazz sense as opposed to the National Curriculum sense) according to contextual and immediate needs and demands.

Improvisation is the ability to take existing pieces and to put them together in a new combination for a purpose. This process is vital for new teachers in order to learn from experienced practitioners and to develop their own improvisational practices in and for different contexts. Overall, improvisation of learning is an activity of collaboration, transformation and discovery. This description of improvisation in learning and teaching as a metaphor for Praxis is also generally apparent in Humphrey and Hyland (2002), Floden and Chang

(2007), Loveless (2007) and Montero et al. (2008). This notion of improvisation also allows us to take into account re-interpretation and change of practices according to changing contexts.

Improvisational practices in classrooms are a vital part of day-to-day classroom interactions. Video-conferencing uses in initial (and continuous) teacher education allow one to make sense of practices in different settings and to analyse the semiotic processes that video conferencing might facilitate (or not), as suggested by Tochon (2007) when he argues for the development of video pedagogy. We argue that 'mimicking' as raised by the interviewees constitutes an initial step in developing improvisational practices.

We locate these video-conferencing observations within sociocultural theory. Video-conferencing observations support mimicking and lead potentially to improvisation because observed practices are clearly located at the three levels of human activity that are key in sociocultural theory – the cultural, the psychological and the social levels (Mercer, 2007). Teacher trainees are enabled through video conferencing and related interactions to become part of a dialectical process of negotiating meaning (Lantolf & Poehner, 2008). Understood in this manner, the use of video conferencing creates a dialogic learning zone which Mercer (2006) calls an 'Intermental Development Zone' (IDZ). Mercer and Littleton describe this as follows:

> For a teacher to teach and a student to learn, they must use talk and joint activity to create and negotiate a shared communicative space, the IDZ, which is built from the contextual foundation of their common knowledge and aims. [...] The IDZ represents a state of shared consciousness maintained by a teacher and learner, which is focused on the task in hand and dedicated to the objective of learning (Mercer & Littleton, 2007, p. 21).

Video-conferencing uses in initial teacher education for classroom observation constitute an IDZ that is highly dynamic and allows teacher trainees to explore observed classroom activities through shared observation and related dialogic practices.

At the training level, the tutor is able to create an IDZ by providing an environment that is unfamiliar to the new teacher, but that is made accessible to the teacher trainee through joint and supported (or scaffolded) observation between tutors and trainees. At the same time, the use of video conferencing as an observational tool adds a means for contextualizing theory and decontextualising practice (as argued for by Marsh et al., 2009) through joined and supported observation that provides access to an environment (or a stage) that is semi-public and perceived as risky whilst remaining in a safe (somewhat distant from the real classroom) environment. This video-observation environment enables safe observation of practices that can be reflected upon jointly by the students and can be 'mimicked', that is, transferred to other learning and teaching environments that the teacher who is being observed actually will never set foot into. This 'safe and structured' environment is believed ultimately to encourage and capture the emerging unplanned personal learning moments of improvisation.

Conclusions

In summary, we argue that whilst current conceptualisations of video-conferencing uses remain valid, they need to be expanded further. Our data analysis suggests that one way to expand these conceptualisations is to consider video conferencing as a semiotic tool that enables development of improvisational techniques and performances. We locate video conferencing as a semiotic tool in sociocultural theory. We argue that SCT provides a framework that allows exploration of both scaffolded and dialogic interactions

between teacher trainees and tutors that are supported in turn through 'safe' audiovisual access to observed classrooms. Conceptualised as an IDZ the use of video conferencing for teacher training and development creates a semiotic space where video conferencing becomes a tool that facilitates processes of understanding through supported dialogic practices. In this sense, whilst we accept Marsh et al.'s (2008) arguments about video conferencing facilitating the contextualising of theory and the decontextualising of practice, we suggest that video conferencing for teacher education allows mimicking and promotes improvisatory practices. This means that video conferencing supports practices that are personalised by students based on the repertoire of practices that video conferencing makes available and on the related dialogic interactions as a group in the IDZ. This also implies that instead of solely copying one practice, students have the opportunity to explore jointly a range of practices and to make these parts of their emerging improvisatory repertoire as suggested strongly by Humphreys and Hyland (2002). Conceptualised in this manner, this points at the potential of much wider and more systematic uses of video conferencing for teacher training and other professional practices where access to practice sites is vital in initial training (e.g., in Healthcare Education). Locating video-conferencing uses for training in an SCT framework in particular opens up further avenues for developing international practices that could facilitate a range of intercultural (learning) dialogues and have a real impact on a wide range of teaching and learning settings.

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