

**Designing and implementing video-based peer feedback tasks to  
develop communication skills in a Hong Kong higher education  
institution: An analysis of sociocultural re-mediation through  
collaborative formative intervention**

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**Author's declaration:** This thesis is entirely my own work and has not been submitted in substantially the same form for the award of a higher degree elsewhere.

The word count of 53,521 conforms to the permitted maximum.

Signature: Dave Gatrell .....

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## Abstract

The use of video-based peer feedback to enhance communication skills is increasingly widespread in higher education, with a growing number of research papers attesting to its importance and impact on learning. Yet whilst existing works evaluate the effectiveness of this approach in terms of learning outcomes and student satisfaction, they do not take sufficient account of the sociocultural aspects that influence the design and implementation of video-based peer feedback activities, or the ways students engage in these activities using video.

In this thesis, I investigate how the introduction of a novel video annotation tool into a real setting *re-mediate* peer feedback practices, in order to highlight sociocultural considerations. To do so, I draw on data from a project in which I used a formative intervention research design to collaborate with instructors in three modules to design and implement tasks where students engage in video-annotated peer feedback on their recorded presentations. Using a theoretical framework based on Engeström's notion of expansive learning and Scanlon and Issroff's Activity Theory-derived criteria for evaluating technology in higher education, I analyse interview, survey, annotation and system data from each intervention. I present three reports of how peer feedback was re-mediated, followed by a cross-intervention analysis to illuminate points of commonality and difference.

My findings suggest that sociocultural factors were critical in shaping the design and implementation of video-based peer feedback tasks and the ways in which students used the tool to engage in them. Particularly important in each intervention were the extent and nature of instructor facilitation, cognitive scaffolding and social-affective support, and the grading policy. My core contributions are to emphasise the centrality of the instructor's role in encouraging peer dialogue through structure and guidance, in-class and online; to uncover the relationship between forms of cognitive scaffolding and students' use of the tool; and to signpost how the negative impact of affective factors on motivation might be mitigated.

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## List of abbreviations

HE	Higher education
NSS	National Student Survey
PolyU	The Hong Kong Polytechnic University
TDG	Teaching Development Grant
THE	Times Higher Education
UGC	University Grants Committee
UK	United Kingdom

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## Publications derived from work on Doctoral Programme

Gatrell, D. (2022). Challenges and opportunities: Videoconferencing, innovation and development. *Studies in Technology Enhanced Learning*, 2(2).

<https://doi.org/10.21428/8c225f6e.f347ddf1>

Gatrell, D. (2022). A second pair of eyes: Remediating formative assessment in a clinical optometry module using a video annotation tool. *Studies in Technology Enhanced Learning*, 3(2).

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# Chapter 1: Introduction

## 1.1 Introduction

This thesis seeks to contribute to the literature on the use of video in peer feedback for communication skills development in higher education (HE). I argue that, whilst the existing literature successfully addresses the effectiveness of video-based approaches in terms of their impact on learning outcomes and student satisfaction and the elements that contribute to their effectiveness, other issues are missing, underacknowledged, or worthy of further investigation. The literature does not take sufficient account of the sociocultural aspects which influence the design and implementation of video-based peer feedback activities and the new ways students engage in these activities using video.

The use of video-based peer feedback to enhance communication skills is increasingly widespread in HE, with a growing number of research papers and policy documents attesting to its importance and impact on student learning (Evi-Colombo et al., 2020; Lam & Habil, 2021; Li & Huang, 2023; Times Higher Education, 2021;). Used in a broad variety of subject disciplines and skill domains, the process of reviewing and commenting on video recordings of peers' performance combines the well documented benefits of peer feedback and video. The former has been found to improve students' skills of critical reflection, judgement and self-regulated learning (Ajjawi et al., 2018; Carless & Boud, 2018; Fu et al., 2019; Nicol, 2019). The latter, in presenting dynamic visual and verbal information, is especially useful for analysing actions and voices (Fukkink et al., 2011; Hsia et al., 2016; Lai et al., 2020; Li & Huang, 2023). It is also interactive, allowing students to control their viewing (Gedera & Zalipour, 2018; Li & Huang, 2023) and 'autonomously regulate their information intake' (Cattaneo et al., 2022, p. 4). Using video to facilitate peer feedback is by no means new (Fukkink et al., 2011). However, recent advances in video technology, including the development of *video annotation tools*, and the increased adoption of online and blended learning in response to the Covid-19 pandemic, have meant that the approach has gained in prominence (Cattaneo



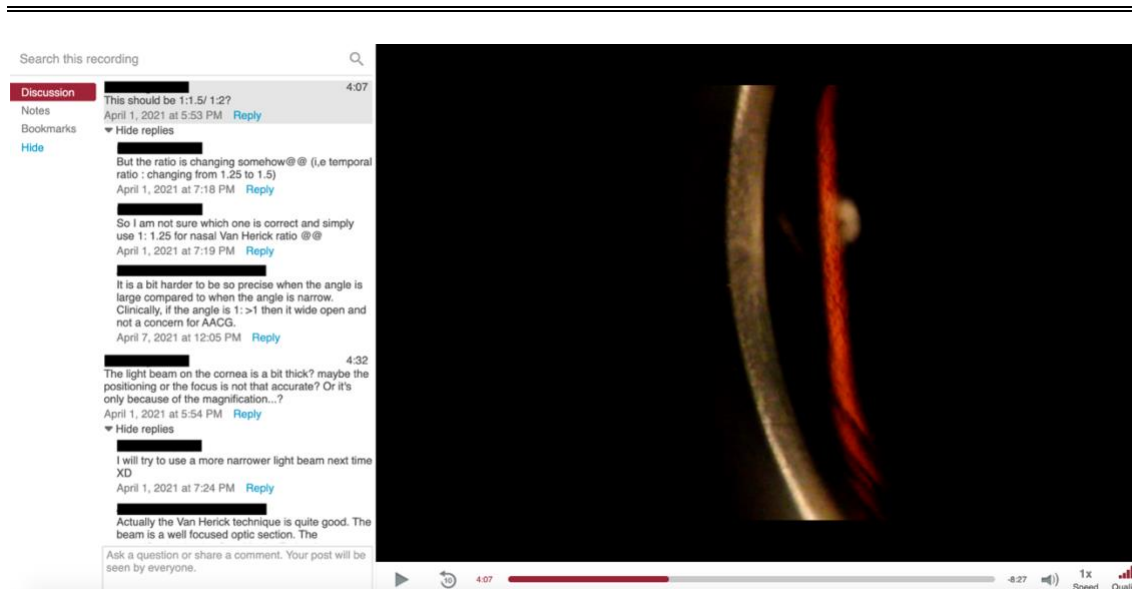
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et al., 2022; Li & Huang, 2023; Times Higher Education, 2021). The benefits of video-annotated peer feedback are explored later in this chapter and in Chapter 2.

Evi-Colombo et al. (2020) define video annotation tools as web-based systems that integrate video playback and time-based text commenting, and allow videos and comments to be shared, 'with the aim of analysing and reflecting on the content and fostering deeper engagement with [instruction]' (p. 197). Students interact with the tool by opening and viewing a video that has been shared with them in a secure online learning platform, pausing at critical points in the recording, and entering text comments which become synchronised with the chosen point in the video. Students, peers, or instructors may then click on the different time-stamped comments to navigate to the points in the recording that they refer to. It is also possible for users to comment by replying to a comment that has already been posted. In addition to time-stamped annotations, students may also choose to add 'general' annotations, summarising the entire video (Mirriahi et al., 2018). Figure 1.1 is a screenshot of the annotation tool available to students at The Hong Kong Polytechnic University (PolyU, the institutional setting for this research, discussed in section 4.3): the 'discussion' function within the uRewind video content management system, based on the underlying Panopto platform (Panopto, 2008), and the tool studied in the current project.

In introducing the novel video annotation tool to the research setting, my purpose was to facilitate video-annotated peer feedback, a process in which students use the annotation tool to author time-stamped comments on recordings of their peers' communicative practices. The process is detailed in Chapter 4 as part of the research design.



**Fig. 1.1.** Screenshot of the uRewind video content management system showing students' use of the 'discussion' function, the video annotation tool studied in the current project. On the left are two time-stamped student comments and other students' replies to each comment. Students' names have been hidden.

In this thesis, I investigate how the introduction of a novel video annotation tool into a real setting *re-mediates* peer feedback practices, in order to highlight sociocultural considerations. To do so, I draw upon a recent cross-faculty intervention project that I co-led at PolyU, in which I collaborated with instructors in a wide variety of disciplines to design and implement video-based formative assessment tasks, the goal of which was to enhance communication skills development and promote the skills of peer feedback and self-reflection.

Re-mediation is 'a shift in the way mediating devices regulate coordination with the environment' (Cole & Griffin, 1986, p. 113), an everyday example being the use of Microsoft Excel to create a data sheet, something that was once done using pen and paper (Säljö, 2013, cited in Stavholm et al., 2022). Citing Lektorsky (2009), Bligh and Coyle (2013) describe re-mediation as a process of transforming 'an existing, established form of activity' by 'replacing an old mediation with a new one'. It requires people to reflect on the activity, 'generating new actions individually and thereby contributing collectively to generating a new form of activity' (p. 337). Engeström (1996) states:

'Re-mediation leads to the composition of new tasks and goals. The mediating artefact not only amplifies, it opens up new possibilities that lead to surprises.' (p. 130)

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This concept has fundamental implications for educational projects around technology, including this research. Introducing a novel instrument such as the video annotation tool into an established activity does not simply mean ‘changing the tool’, because tools do not work in isolation. Instead, the tool will re-mediate the activity, leading to *contradictions*, tensions and conflicts, which might drive unexpected and systemic change to create an entirely new activity. Re-mediation is, therefore, not the same as technology ‘adoption’ or ‘acceptance’. It also helps appreciate the importance of the existing activity system as a sociocultural and historical configuration and starting point for change, rather than assuming a blank slate. Re-mediation is explored in depth in Chapter 3 as part of the theoretical framework for this study, within the concepts of Activity Theory and expansive learning.

I begin this chapter by setting out my personal motivation for undertaking the current study. I then outline the practice context for the research, underpinning concepts in peer feedback and video, the policy context, and the research context. I conclude by presenting an overview of the thesis.

## **1.2 Personal motivation**

Since I began my career in education in 2001, peer feedback has been integral to my practice. On postgraduate teacher training programmes such as the Diploma in Teaching English to Speakers of Other Languages, and as part of my continuing professional development as an English language teacher, I was required to engage regularly in peer observation. Whether teaching young learners, teenagers or adults, I frequently asked students to review their peers’ written work and oral performance, later introducing digital tools, including blogs, wikis, and mobile devices, to transform the peer feedback process. Later still, as an instructor and learning designer on Massive Open Online Courses, I designed and implemented peer feedback tasks at scale. In 2017, I was invited to design and facilitate an online professional development programme for primary school teachers, in which participants would use video and a video annotation tool to engage in peer review. This experience ignited my interest in both the practice and research of video-based peer feedback and, as with

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previous experiences of peer feedback, made me more aware of the need to consider the sociocultural context in which this process takes place. When I joined PolyU as an educational developer in 2018, I was convinced I wanted to pursue this interest further in the new sociocultural context of this large HE institution.

The work I report on in this thesis was driven by a desire to work with instructors to achieve transformational change in the design and implementation of peer feedback through the introduction of the annotation tool and to understand how video-annotated peer feedback works in the complex sociocultural contexts where it is used. Having studied this approach in other communication skills contexts in my institution, such as the development of interpersonal procedural skills in optometry and social worker-client relationship-building in service-learning (Gatrell, 2022; 2021), I was keen to investigate its design and implementation in new settings. In doing so, I sought to build on the interventionist, collaborative approach to change that I had used in my earlier studies as a postgraduate researcher on this programme and in my professional capacity as an educational developer in the institution. In both roles, I had experienced the value of developing and researching context-specific educational practices in partnership with the participants, rather than attempting to impose them using a top-down approach.

I have also refined my ontological and epistemological positions, which I set out in detail in Chapter 3. I do not believe that transformative change in learning and teaching takes place simply through the introduction of novel technologies into established activities; rather, it is in the way these tools *re-mediate* complex systems of interconnected sociocultural elements, generating contradictions that can drive unexpected, systemic change as participants seek to overcome them. In my research, I am therefore motivated by a desire to understand the sociocultural context of the whole system in order to transform it, working in partnership with practitioners to navigate and explore contradictions and possible sociocultural change.

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More broadly, I am passionate about academic professional development and promoting a culture of ideas-sharing among instructors around blended and online learning, communication skills development and formative assessment. I am convinced that many teachers in the institution are designing and implementing (or are at least interested in designing and implementing) creative, impactful, learning, teaching and assessment practices, but that these practices are not widely shared or implemented on a larger scale. One of these practices is video-annotated feedback, the focus of a staff development workshop which I facilitated in 2019, two empirical studies undertaken during Part 1 of the current PhD programme (Gatrell, 2021; 2022), and subsequently a Hong Kong University Grants Committee (UGC) Teaching Development Grant (TDG)-funded Virtual Teaching and Learning project. My hope for the current study was that through collaborating with interested colleagues at PolyU to explore the design, implementation, and consolidation of video-annotated peer feedback in diverse subject disciplines, this approach would become embedded.

My first underlying motivation, then, was to intervene in my local context to attempt to solve practice problems through students' use of a video annotation tool in peer feedback tasks. My second was to understand how video-annotated peer feedback works in the complex sociocultural contexts where it is used.

### **1.3 Underpinning concepts**

Before proceeding further, it is important to set out several concepts that underpin my thesis. These relate to *feedback*, *video* and *video annotation*, and *communication skills*.

*Internal and external feedback*, *feedback literacy* and *evaluative judgement* are critical to my thesis as they are emergent practices which are shaped by their sociocultural contexts and developed and changed over time within specific settings. I outline these first before discussing the role of *video* and *video annotation* in peer feedback. I then clarify how this thesis examines *presentation skills* as a subset of *communication skills*. I explain how peer

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feedback is important to the development of presentation skills, and thus communication skills.

It is widely accepted that feedback is essential for effective learning (Hattie & Timperley, 2007; Nicol & Macfarlane-Dick, 2006; Winstone & Carless, 2019). Carless and Boud (2018) have defined feedback as a process through which students make sense of information from different *external* sources, including not only teachers but also peers, friends, family members, and computer-based systems, and use it to enhance their work and learning strategies. Information is not simply *transmitted*; rather, it takes the form of *dialogue* (Boud & Molloy, 2013; Nicol & Macfarlane-Dick, 2006). Carless and Boud's (2018) linked concept of *feedback literacy* consists of four interrelated features that lead to the successful uptake of external feedback information: appreciating feedback, making judgements, managing affect and taking action.

By contrast, Nicol (2019) has conceptualised feedback as an *internal* process which involves students monitoring, evaluating and regulating their learning. In this, he builds on Butler and Winne's notion that 'internal feedback is an inherent catalyst for all self-regulated activities' (1995, p. 246). He maintains that engaging in *peer review*, defined as evaluating and commenting on the work of their peers, leads students to reflect, generating internal feedback on their own performance (Nicol, 2019). This subconscious process is one of real *reflection*, with the peer's work acting as 'a mirror or lens' against which students can compare and re-evaluate what they have produced (p. 75).

Central to peer feedback is the core concept of *evaluative judgement* (Ajjawi et al., 2018; Tai et al., 2017), which is defined as 'the capability to make decisions about the quality of work of self and others' (Tai et al., 2017, p. 5). In evaluating and commenting on peers' work, students need to be able to understand what constitutes quality and judge whether their work meets that standard (Ajjawi et al., 2018). Evaluative judgement can be developed through self- and peer assessment, using cognitive scaffolding such as rubrics and exemplars (Ajjawi et al., 2018). Indeed, it is because of the 'multiple acts' of evaluative judgement involved in peer feedback processes that Nicol et al. (2014) conclude that

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students benefit more from feedback *production* than from feedback *receipt*. In applying criteria to explain their judgements, the locus of control shifts toward students, reducing their need for external feedback (Nicol et al., 2014).

HE institutions worldwide acknowledge the importance of developing communication skills, among which oral presentation skills are seen as a critical component (Tailab & Marsh, 2020; Tsang, 2020; van Ginkel et al., 2015; van Ginkel et al., 2017). The ability to present information to an audience is also regarded by policymakers as an essential HE graduate skill, fundamental to professional competence (Murillo-Zamorano & Montanero, 2018; van Ginkel et al., 2017). Despite this, there has been little research into the exact factors that contribute to successful presentations, or how students' presentation skills can be enhanced (Tsang, 2018; 2020). Tsang (2018, 2020) identifies four broad categories focusing on delivery, each encompassing a range of micro-skills: *vocal and speech-related features* (e.g. volume), *body language-related features* (e.g. hand gestures), *psychological features* (e.g. confidence) and *miscellaneous features* (e.g. time management). To his 40-item list, he suggests context-specific features could be added, including content, audio-visuals, props, linguistic accuracy and fluency, and organisation (Tsang, 2020).

In the current study, communication skills are regarded as an overarching concept, which students develop by creating and engaging in video-annotated peer feedback on recorded presentations.

For over six decades, video technologies have been used to facilitate feedback on *communication skills* in a broad variety of disciplines (Fukkink et al., 2011; Hammoud et al., 2012). Traditionally, video-based peer feedback approaches have been instructor-led, with instructors in control of the video recording tools and directing the peer feedback process in an in-person environment (Fukkink et al., 2011). More recent innovations, including uRewind at PolyU, enable students to record themselves and then analyse their own or peers' recordings asynchronously online, using a video annotation tool to write time-stamped comments on specific parts of the recording (Evi-Colombo et al., 2020;

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Hulsman & van der Vloodt, 2015). Both approaches have been studied in the existing literature on video-based peer feedback, which I analyse in Chapter 2.

#### **1.4 Practice context**

PolyU is the practice context for the work reported in this thesis. Its suitability as a research setting is discussed in section 4.3. Here, I focus on how the issues of communication skills, assessment and learning technologies are dealt with in this site.

PolyU's mission emphasises students' whole-person development while fostering their leadership and critical thinking skills so they can find innovative solutions to problems. The University's programmes attach great importance to professional training and aim to ensure that students are competent and prepared to enter the workforce. Its overarching objective is to nurture socially responsible global citizens who 'learn and apply, for the benefit of mankind' (PolyU, 2023). 'Nurturing effective communicators' is also central to the University's mission. However, as other researchers have found elsewhere (Al-Yateem et al., 2021; Martin, 2020; Müller et al., 2021), this proved challenging during the Covid-19 pandemic when the majority of teaching and learning took place online. One of the aims of the current study is to address the challenge of developing communication skills in a changed environment.

Oral presentations are widely used to assess students in all subject disciplines at PolyU, reflecting the importance of this mode of assessment throughout the Hong Kong education system. Until the start of the pandemic, presentations were traditionally conducted in person. Once learning, teaching and assessment moved online, presentations tended to take place live in synchronous environments, rather than in asynchronous recorded format.

Policies on the use of learning technologies at PolyU have historically been developed and implemented in a top-down manner. One example of this is the University policy regarding lecture capture, introduced in 2019, which stipulated that all lectures must be recorded in uRewind, the video content management system. Use of this tool has therefore been overwhelmingly teacher-centred,



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with very few teachers encouraged to use it for more student-centred practices, such as those discussed in the current research. Institutional policies on online learning and hybrid teaching, both of which impacted students' use of video-annotated peer feedback during this study, were also introduced without much discussion with students or staff. Part of my motivation for this research was to promote more bottom-up, collaborative approaches to the design and implementation of technology enhanced learning at PolyU.

PolyU, together with other public universities in Hong Kong, is allocated funding by the regional University Grants Committee (UGC) in the form of Teaching Development Grants (TDGs). These aim to promote 'innovative and transformational' approaches to learning and teaching and teacher professional development through projects that 'enhance quality and hence effect changes at local and system levels, and identify good practices that could be replicated across the sector.' (PolyU, 2023). In 2019, I had been invited to take over the role of Principal Investigator on a TDG project on the use of learning analytics to measure participation in virtual tutorials. Having benefited from leading an existing project that enabled me to collaborate with academics from across PolyU and understand how change historically happens in the institution, I felt motivated to apply for special UGC funding in 2021, whose objective was to support 'the strategic move towards more intensive and systematic adoption of Virtual Teaching and Learning (VTL)' in the context of Covid-19 and beyond (PolyU, 2023). This work draws on the VTL project, as described in section 4.3. As with this research, in co-leading the institutional project I sought to foster collaboration and ideas-sharing around video-based peer feedback at PolyU.

### **1.5 Policy context**

In this section, I engage with policies on peer feedback and video from Hong Kong and the United Kingdom (UK). I am interested in these contexts because the former is heavily influenced by the latter, because I am indirectly involved in shaping the former through my role in educational development, and because the latter is most explicit and available to me in my practice context through membership of UK-based professional organisations such as Advance HE, the

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Association for Learning Technology (ALT) and the Staff and Educational Development Association (SEDA).

Peer feedback has been discussed and debated extensively at policy level as part of wider discussions around assessment. Students' experiences of and satisfaction with assessment and feedback are a central part of annual surveys such as PolyU's institutional Student Feedback Questionnaire (PolyU, 2023) and the UK National Student Survey (Office for Students, 2023), the results of which are used by institutions to inform changes to learning, teaching and assessment at programme, school or faculty level. In the most recent version of the NSS, questions around feedback focus on the clarity of assessment criteria, the promptness of instructor feedback and its usefulness in improving students' performance. These concerns are reflected in policy discourse.

In a document produced by PolyU's Educational Development Centre (2023), teachers are encouraged to incorporate peer approaches into both formative and summative assessments with the aim of promoting collaborative learning, community building, and authentic, lifelong learning. These themes are reflected in documentation produced elsewhere in the region, with Hong Kong University's Centre for Enhancement of Teaching and Learning emphasising the role of peer assessment in 'helping students to learn from each other by listening, analysing, and problem solving' (Hong Kong University, 2023). Their policy document cites additional benefits to students, including developing the skills of 'critique and judgement', critical reflection, and 'learning how to be responsible for their own learning'. It also highlights the opportunities it provides for students to receive more feedback and 'encounter diversity' through reviewing peers' work, while 'reducing the time and workload of marking' for teachers. Many of these potential gains from peer assessment feature prominently in guidance from UK-based bodies. Times Higher Education (THE), for example, comment on its 'great pedagogical value' in helping students 'better understand task requirements, encouraging critical reflection on their own progress' (2023, n/p), whilst Jisc stress its role in fostering 'skills of self-regulation that stand them in good stead throughout their lives as learners and

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employees' (2018, n/p). These discussions reflect the concepts of feedback literacy and evaluative judgement outlined in section 1.3.

Policymakers caution that practitioners may face challenges when implementing peer feedback in HE settings. Students might feel that it is not their responsibility to provide feedback on their classmates' work, regarding this as the teacher's paid role (THE, 2023, n/p). Peer comments and grades may be unreliable due to 'peer pressure', 'a tendency to give everyone the same mark in return for good grades' and students' lack of experience (Hong Kong University, 2023, n/p). While some may be 'reluctant to give negative comments to friends and classmates', others 'may rush in blindly and come across as brusque and uncaring, affecting the classroom dynamic' (THE, 2023, n/p). From my experience as a teacher and educational developer, the former scenario is far more common in Hong Kong.

To mitigate these potential barriers, practitioners are advised to train students in giving feedback, providing 'a suitably developed rubric that is written in an accessible way'. It is also recommended that feedback be given anonymously, and used only in formative rather than summative assessment. If students are to be graded for the activity, THE advocate 'a system wherein student assessors receive marks from the teacher for the quality of feedback they have provided to their peers', since their 'genuinely constructive feedback' demonstrates understanding of the learning outcomes and therefore deserves credit (2023, n/p). In peer feedback, they add, the role of the teacher is critical in 'monitoring and providing second opinions' (Ibid.).

Policies on video at Hong Kong institutions, much like those published by UK-based organisations, focus heavily on teacher-led practices such as lecture capture and the use of instructional video in assessment. While student-video-based assessment is advocated on the grounds that it may promote inclusive practices and authentic assessment and reduce plagiarism (Jisc, 2018; PolyU, 2023), it is clear in the documentation that this refers to summative, not formative, practices in which teachers, rather than students or their peers, are

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responsible for evaluation and feedback provision. There is also scant guidance around the design and implementation of these approaches to assessment.

Discussions on video-based *peer* assessment and feedback, meanwhile, are limited to sponsored articles advertising specific products (THE, 2021) and articles published directly by educational video companies themselves (Panopto, 2019; VEO, 2023). In most cases, video-based peer feedback is only one of a lengthy list of suggestions for how their product might be used. Only in the sponsored THE article do we see a detailed exploration of students' *experiences* of video annotation, and here again the focus is on teachers' use of the tool (THE, 2021). Writing in the then context of campus closures, universities' moves towards blended and online learning and sector-wide discussions of digital transformation, the authors emphasise themes of personalisation and humanisation, contextualisation, objectivity and evidence, efficiency, and interactivity. If policymakers can begin to address the lack of attention hitherto paid to video-based and video-annotated peer feedback approaches, their discussions would benefit from further exploration of these themes. The focus should remain on students' experiences of video-annotated feedback within specific contexts, with consideration to the broader issues in peer feedback reported above.

## **1.6 Research context**

I locate my thesis in two areas of scholarship, both to inform this project and to contribute to the literature, as I explain in detail in Chapter 2. The second area is a subset of the first. The first area of literature focuses on the use of video-based peer feedback approaches to develop communication skills, in which video recordings of students' practice are used as a tool to facilitate peer feedback. I draw out factors discussed in the literature that may impact students' experiences of these approaches, such as the configuration and sequencing of feedback sources in addition to peer input; the division of responsibilities between instructors and students in the learning environment; students' use of cognitive scaffolding; and the impact of grading and learning communities on motivation. The second area addresses the use of video

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annotation tools in peer feedback. Given that student experiences are central to my research objectives, I highlight themes in the literature that relate to students' experiences of using video annotation tools in this context. These include specificity, objectivity, efficiency and interactivity in peer commenting.

In Chapter 2, I argue that the main strengths of the literature on video-based and video-annotated peer feedback are that it highlights the impact of the approaches on student learning outcomes and satisfaction. Its shortcomings are that it is dominated by experimental and quasi-experimental studies that do not take account of the sociocultural factors that influence the design of video-based or video-annotated peer feedback tasks and students' experiences of their implementation. I intend to contribute to the literature by providing a systemic analysis of how video annotation tools *re-mediate* peer feedback activities in specific sociocultural contexts, and how the design and implementation of these activities can reshape students' experience.

### **1.7 Thesis overview**

In Chapter 2, I review the literature on the use of video more broadly and video annotation tools in particular to facilitate peer feedback. In Chapter 3, I set forth my ontological and epistemological positions and explain how these inform my choice of theoretical framework, before moving on to show how this framework guides my formative intervention research design in Chapter 4.

In Chapter 5, I report the findings of three formative interventions, tracing the expansive learning process and showing how this process worked. I also present a cross-intervention analysis, which suggests how the outcomes of these interventions might be generalised. In Chapter 6, I discuss the significance of my research findings, explain how my findings answer my research questions, and argue how they contribute to the areas of literature reviewed in Chapter 2.

I conclude the thesis in Chapter 7, by reflecting on my contribution to knowledge, acknowledging the limitations of the research, and discussing the implications of the study for theory, policy, practice and future research.

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## Chapter 2: Literature review

### 2.1 Introduction

The overarching objective of this thesis is to contribute to the literature on the use of video in peer feedback for communication skills development in HE. There is a substantial body of literature, discussed in section 2.4, which engages with this phenomenon. In this chapter, I seek to demonstrate that the study is grounded in the existing literature and then establish how I intend to contribute to that literature. In short, the principal strengths of the literature on video-based and video-annotated peer feedback are that it highlights the impact of the approaches on student learning outcomes and satisfaction. Its weaknesses are that it is dominated by experimental and quasi-experimental studies, which do not take account of the sociocultural factors that influence the design of video-based or video-annotated peer feedback tasks or students' experiences of their implementation. I aim to contribute to the literature by providing a systemic analysis of how video annotation tools *re-mediate* peer feedback activities in specific sociocultural contexts, and how the design and implementation of these activities can reshape students' experience.

I begin by outlining the process whereby these two areas of literature were selected. I then explain how I selected relevant studies within each area, and how I excluded certain studies from my final shortlist. Next, I present an overview of the works I evaluated, providing details regarding the sociocultural context of each study. This is followed by a summary of the themes I identified in the literature, reflections on the themes I chose to analyse further for the purposes of this chapter, and brief discussion of themes I ultimately decided *not* to focus on. I then move on to present my analysis of the two main areas of literature, discussing the relevant themes in turn to identify commonalities, tensions and gaps that I seek to address with my research. I conclude this chapter by presenting my research questions, highlighting how they address aspects of the literature, mentioned above, which are missing, underacknowledged, or worthy of further investigation.

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## 2.2 Process of literature selection

My initial research interests were around the design and implementation of peer feedback tasks to enhance communication skills. These arose from my professional experiences: using video-annotated peer feedback to help English teachers develop their classroom practice and, later, as an educational developer, helping optometry students practise clinical skills (Gatrell, 2022) and fostering students' interpersonal communication skills on a service-learning module (Gatrell, 2021). For the present study, I refined my interests into two areas to explore: first, the use of video-based peer feedback approaches to develop communication skills, to reveal sociocultural factors discussed in the literature that may impact students' experiences of these approaches; and second, the specific use of video annotation tools in peer feedback, to reveal themes related to students' experiences of using a video annotation tool in this context. The process of selecting these areas was complex and challenging. I wanted to choose studies which investigated video-based and video-annotated peer feedback in as wide a variety of disciplines, skills and settings as possible, allowing for the emergence of multiple themes, while also keeping the number of works manageable and ensuring their relevance.

My selection of these two related areas of literature is informed by the focus of my research, which is positioned where the areas intersect: it addresses the design and implementation of *video-annotated* peer feedback activities to develop communication skills in a *HE* context. The selection acknowledges that the use of *video* for peer feedback in HE predates the development of *video annotation* tools, or their use in HE. It also recognises that there may be themes that emerge from the literature on *non-annotated* video-based peer feedback that relate to the current study. In other words, the themes may relate to the use of video more broadly, rather than specifically video annotation.

The decision to broaden the two areas to encompass other contexts outside HE takes into account that *video-annotated* peer feedback is an emerging practice. In earlier works (Gatrell, 2021; 2022) I found that video-annotated approaches had not been implemented extensively in university settings but had been

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adopted more widely elsewhere: nursing and teaching colleges, other vocational education contexts, and continuing professional development in health and education. I anticipated that this expanded area would uncover a greater number of themes relevant to my research.

Lastly, though the current research context is the use of video-annotated peer feedback to develop students' *presentation skills*, this thesis centres on the design and implementation of video-annotated peer feedback activities and the processes students engage in when providing peer feedback using a video annotation tool. It is less concerned with the specific communication skill being developed. For this reason, both areas of the literature have been selected to encompass *all* communication skills, rather than solely presentation skills. These include interpersonal skills, procedural skills and classroom teaching. It is hoped that this expanded search will reveal more themes related to the design and implementation of video-annotated peer feedback. This will enable me to establish where and how I can contribute to the literature.

This literature review demarcates the areas of literature I am aiming to contribute to. There are, of course, many other areas of literature that I could have chosen to review. These include the use of peer feedback approaches or the development of presentation skills more broadly; the use of other digital technologies in peer feedback; and wider uses of video annotation tools in assessment and learning. However, these are not areas where I am claiming to make a contribution.

### **2.3 Literature search**

To select relevant studies, I searched OneSearch and Google Scholar using a profile that combined *video, peer and feedback/assessment/review/evaluation*. I hoped to find empirical studies in which video was used as a tool to facilitate peer feedback on students' communicative practice, in a wide variety of contexts and disciplines, in some cases using an annotation tool. I sought to understand how student experiences of video-based peer feedback might be shaped by other sources of feedback, such as self-reflection or instructor



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comments; by the role of the instructor; and by scaffolding and social-affective support. I also wanted to uncover deeper knowledge around the impact of video annotation tools on the specificity and objectivity of video-based peer feedback, or how students might perceive these tools as more efficient or interactive.

To limit the scope of my literature review, I excluded studies in which processes of video recording or peer feedback formed part of a broader training programme, where the focus of the research was the evaluation of the programme and video-based peer feedback was not addressed in the discussion section. From earlier research (Gatrell, 2021; 2022), I was also familiar with an alternative and entirely different use of the term ‘video feedback’, describing an approach in which feedback is given *in the form of a video*, typically a screencast with audio. Since it involves *instructors*, not peers, providing feedback on students’ *written work* rather than video recordings of their communicative practice, I excluded all 57 studies focusing on this approach.

Once I had arrived at a shortlist of 39 works, I used the ‘snowball’ method to search them for references to other studies that met my search criteria. This process was not linear but iterative. Occasionally, while analysing a paper, I uncovered references to new works which I added to my list.

## **2.4 Overview of the literature**

In this section I present an overview of the works I evaluated, including details regarding the context of each study: the use or non-use of video annotation tools, the discipline and level of education of the participants, and the learning objective or communication skill being addressed through video-based peer feedback. These details are critical given the importance of sociocultural context in my own research.

I evaluated a total of 48 papers, 46 of which were empirical studies. Of these, half (23) researched the use of video annotation tools for peer feedback, whereas the remaining 23 investigated video-based peer feedback without an annotation tool. Of the 46 empirical studies, a plurality (18) studied the use of

this approach in healthcare settings, including medicine (10), nursing (5), physiotherapy (1), speech pathology (1) and dentistry (1). Twelve studies were carried out in teacher education contexts, four in language learning, and two in faculty development. Other contexts included disciplines as diverse as biochemistry, business, dance, digital video production and property management. One paper analysed 12 case studies addressing a wide variety of disciplines. The majority of studies (30) were in HE settings, typically with undergraduates (25), but in some cases with students at postgraduate (4) or doctoral (1) level. Nine studies were conducted at further education colleges with pre-service teachers or nurses, whilst six involved in-service professionals in workplace settings. The studies were also diverse in the skills that participants were developing: interpersonal communication (14), presentation skills (13), procedural skills (11) and classroom teaching (8). The papers are summarised in Table 2.1.

Reference	VA	Discipline	Level	Skill focus
Admiraal (2014)	N	Italian language	Undergraduate	Presentation
Anderson et al. (2012)	Y	ICT education	Pre-service	Presentation
Andeweg et al. (2005)	Y	Engineering	Undergraduate	Presentation
Baran et al. (2023)	Y	Science education	Pre-service	Teaching
Boldrini et al. (2019)	Y	Vocational education	In-service	Teaching
Cattaneo et al. (2020)	Y	Medicine	Pre-service	Procedural
Cattaneo et al. (2022)*	Y	<i>Various</i>	<i>Various</i>	<i>Various</i>
Colasante (2011)	Y	Physical education	Pre-service	Teaching
Colasante and Douglas (2016)**	Y	Property management	In-service	Interpersonal
Davids et al. (2015)	Y	Faculty development	In-service	Teaching
Day et al. (2021)	Y	Child studies and education	Undergraduate	Presentation
Dohms et al. (2020)	N	Medicine	Undergraduate	Interpersonal
Donkin et al. (2019)	N	Medicine	Undergraduate	Procedural
Ellis et al. (2015)	Y	Education	In-service	Teaching

Evi-Colombo et al. (2020) <sup>***</sup>	Y	-	-	-
Fadde and Sullivan (2013)	Y	Education	Pre-service	Teaching
Herrmann-Werner et al. (2019)	N	Medicine	Undergraduate	Interpersonal
Ho et al. (2019)	Y	Rheumatology	In-service	Procedural
Hsia et al. (2016)	N	Dance	Undergraduate	Procedural
Hulsman and van der Vloodt (2015)	Y	Medicine	Postgraduate	Interpersonal
Hulsman et al. (2009)	Y	Medicine	Undergraduate	Interpersonal
Hunukumbure et al. (2017)	N	Medicine	Undergraduate	Procedural
Johnston (2008)	N	Music education	Pre-service	Procedural
Jordan (2012)	N	Faculty development	In-service	Teaching
Krause et al. (2022)	N	Dentistry	Undergraduate	Interpersonal
Lai (2016)	N	Nursing	Pre-service	Interpersonal
Lai et al. (2020)	Y	Nursing	Pre-service	Interpersonal
Leger et al. (2017)	N	Postgraduate research	Postgraduate	Presentation
Leung and Shek (2021)	Y	Education	Undergraduate	Interpersonal
Lewis et al. (2020)	N	Speech pathology	Undergraduate	Interpersonal
Li and Huang (2023)	Y	Digital video editing	Undergraduate	Procedural
Murillo-Zamorano and Montanero (2018)	N	Economics and business	Undergraduate	Presentation
Nagel and Engeness (2020)	Y	Education	Postgraduate	Presentation
Naykki et al. (2022)	Y	Education	Postgraduate	Teaching
Nikolic et al. (2018)	N	Engineering	Undergraduate	Presentation
Paul et al. (1998)	N	Medicine	Undergraduate	Interpersonal
Pless et al. (2021)	Y	Medicine	Undergraduate	Interpersonal
Rich and Hannafin (2009) <sup>****</sup>	Y	Education	-	-
Ritchie (2016)	N	Biology	Undergraduate	Presentation

Seif et al. (2013)	N	Physiotherapy	Doctoral	Procedural
Shek et al. (2021)	Y	Education	Undergraduate	Interpersonal
Simpson et al. (2019)	N	Biochemistry	Undergraduate	Presentation
Smallheer et al. (2017)	N	Nursing	Pre-service	Procedural
Smith et al. (2020)	N	Business communication	Undergraduate	Presentation
Toland et al. (2016)	N	English language	Undergraduate	Presentation
Yoong et al. (2023a)	N	Nursing	Undergraduate	Procedural
Yoong et al. (2023b)	N	Nursing	Undergraduate	Procedural
Zheng et al. (2021)	N	English language	Undergraduate	Presentation

**Table 2.1:** Selected studies of video-based peer feedback, including participants' use or non-use of video annotation (VA) tools, discipline, level of study, and the main skill part participants were developing. \*This paper analyses 12 case studies. \*\*This paper analyses four case studies, only one of which utilised video-based peer feedback. \*\*\*This paper reviews the literature on video annotation. \*\*\*\*This paper is a comparison of video annotation tools and their applications in teacher reflection.

I present my literature review in two sections, addressing the nine themes I identified. The first section, on video-based peer feedback approaches, includes five subsections on the following themes:

1. Multiple sources
2. Sequencing
3. Instructor-facilitated and student-centred approaches
4. Cognitive scaffolding
5. Motivation

The second section, on the use of video annotation tools in peer feedback, comprises four subsections. These address four themes specific to video-annotated peer feedback:

1. Specificity and feedforward
2. Perceptions of objectivity
3. Efficiency
4. Interactivity

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I identified various other themes which I ultimately decided not to address in my analysis, because they felt disconnected from the focus of my research. Examples are the use of peer *grading*, rather than comments, or in addition to comments, in peer feedback; the effect of *anonymous* as opposed to named comments; and specific features of the different *video annotation tools* used. In the current study, all participants will use the same annotation tool. It does not support anonymous commenting or peer grading.

## **2.5 Area A: Video-based approaches to peer feedback in HE**

In this section, I review the literature on video-based approaches to peer feedback in HE. I present five themes in turn.

### **2.5.1 Multiple sources**

One common theme that emerges from the literature on peer feedback is the importance of *multiple sources*: the argument is that peer feedback is more effective if purposefully combined with instructor feedback, self-reflection, or both (Hulsman & van der Vloodt, 2015; Leger et al., 2017; Ritchie, 2016; Simpson et al., 2019; Smith et al., 2020; Yoong et al., 2023a; Zheng et al., 2021). In her study addressing presentation skills, Ritchie (2016) concluded that blending peer assessment with self- and instructor assessment yielded greater benefits in terms of content explanation, timing and speech skills than when these feedback sources were used in isolation. There is also evidence that combining peer feedback with self-evaluation can help develop the skill of evaluative judgement. In a grounded analysis of student reflections, Smith et al. (2020) observed that formative peer and self-evaluation helped students become both more effective presenters and more effective *evaluators* of oral communication. By engaging in peer *and* self-assessment, students could broaden the range of criteria they used for feedback and demonstrated a significant improvement in their ability to identify strengths in their own and peers' presentations (Smith et al., 2020). However, these examples of *evaluative judgement* and *internal feedback* are not explored in sufficient depth. The concepts are only understood in terms of the *effectiveness* of video-based

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feedback approaches, not how students engage with video to develop each skill, or how this process may be shaped by their sociocultural context.

Other studies of video-based approaches have concluded that instructor feedback may be less valuable than peer feedback and self-reflection. For example, Leger et al. (2017) explored if, in a context of higher enrolment and limited teaching resources, students could achieve the same learning outcomes through a more 'efficient' feedback regime where in-person tutor feedback was reduced and complemented with video-based peer feedback and self-reflection. While students still valued immediate tutor feedback on their oral presentations, the study found that this could be limited to very brief comments without any significant negative impact on academic outcomes or overall satisfaction, provided this was combined with other video-based sources of feedback. However, these findings rely on self-reported survey data and grades, and do not provide any insight into how students engage in or benefit from peer feedback in a specific sociocultural context. By contrast, Murillo-Zamorano and Montanero (2018) have argued that instructor feedback, far from being fundamental to students' learning, may be of limited benefit when compared with video-based peer feedback. The authors conclude that students are more likely to critically reflect on their own work if it has been assessed by a peer, as opposed to an instructor-expert. They reflect:

Expert knowledge can be a curse, a 'poisoned gift' which does not always help others who have less competence to improve. Teachers assess and correct problems using abilities that beginners often lack, or using information not yet available in students' memory. Teachers therefore tend to underestimate the difficulties that their less competent students have. Consequently, some students pay no attention to the evaluation comments they are given, apart from the mark they get. This situation is exacerbated when the teacher tends to overly centre their feedback on what is wrong or what needs to be corrected [or...] when feedback is very extensive. In contrast, many undergraduates have a more precise understanding of the difficulties their peers face, and verbalise this in brief, easy-to-grasp messages (p. 146).

Given this lack of the consensus in the literature, the role of instructor comments as an additional feedback source would merit further exploration.

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## 2.5.2 Sequencing

Several papers investigating combinations of peer feedback with other feedback sources have also paid attention to the way feedback is *sequenced*. In terms of self- and peer assessment, Zheng et al. (2021) found that students who completed self-assessment activities before engaging in peer feedback became less anxious about both presentations and peer assessment, while those who engaged in peer feedback first became more highly motivated to improve their presentation skills. Hulsman and van der Vloodt (2015), meanwhile, argue that ‘a feedback sequence [...] initiated by students’ self-evaluation gives them more control over the peer review process, gaining ownership of learning.’ (p. 361) By evaluating themselves first, students decide which topics will be discussed, and have the opportunity to highlight their own poor performance, allowing peers to respond. The authors also found that students valued feedback on self-selected aspects more than those identified by others (p. 361).

Yoong et al. (2023a, 2023b) conclude that although peer feedback can feel detailed and personalised for feedback recipients, as well as empowering for students who provide it, it must take place after more general comments from instructors in order for these benefits to be realised. Simpson et al. (2019) also highlight the value of peer feedback in helping students ‘make sense of’ instructor comments (p. 276). The role of the instructor is certainly worthy of further exploration, regarding not only if, how and when they provide comments on students’ performance, but also how the peer feedback activity is designed and facilitated.

## 2.5.3 Instructor-facilitated and student-centred approaches

In the literature, a distinction is made between instructor-facilitated and more student-centred approaches to video-based peer feedback, with studies suggesting that one is more effective than the other in terms of learning outcomes or student satisfaction. The findings are inconclusive. The first approach involves the instructor facilitating a whole-class activity in which

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students comment on peers' recordings, synchronously and typically orally. In the second, students engage in peer feedback individually or in pairs or groups, usually using an online platform to write comments, with the activity taking place asynchronously over a longer period of time (Gatrell, 2022).

One strand of work emphasises the constructive and supportive nature of instructor-facilitated approaches. In their study of instructor-facilitated video-based peer feedback with medical students, Paul et al. (1998) found a narrow majority were 'comfortable' with in-person peer feedback sessions led by two instructors. Despite their initial 'lack of confidence and self-consciousness', this approach was perceived to be so 'useful and constructive' that several participants sought out further opportunities to engage in peer review and requested that more time be dedicated to feedback sessions (Paul et al., 1998, p. 334-5). The study suggests that students benefited from opportunities for self-review prior to each feedback session, as well as the informal nature of the live peer feedback session. In a more recent study of this approach to video-based peer feedback, Hunukumbure et al. (2017) reported students' feelings of distress in response to the difference between 'their expected self-image and their actual image on video' (p. 4). Nevertheless, the authors concluded that peer feedback in this setting had been successful, leading to 'open discussion' in a 'supportive environment', and that guidance from the instructor had been critical to this outcome.

Others argue that more student-centred approaches allow students to benefit from richer forms of interaction, in a variety of ways. In Chen et al.'s (2019) study, the custom-designed peer feedback platform promoted active, collaborative learning. This enabled students to improve in a wide variety of skill areas, including gathering information, contemplating and solving problems, and communication and cooperation. The student-centred approach was empowering, in that students had unlimited opportunities to upload and review recordings. It also had a significant, positive impact on students' performance in both physical and paper exams (Chen et al., 2019). The college dance students in Hsia et al.'s (2016) study perceived the online environment as 'safe', with anonymous commenting allowing for more 'genuine' feedback than might have



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occurred in a live, instructor-led context. However, the absence of explicit instructor guidance meant that some peer feedback lacked specificity and depth (Hsia et al., 2016). Meanwhile, Nikolic et al. (2018) reported limited engagement in a peer feedback activity designed with minimal instructor involvement. Peer comments were seen as only marginally beneficial to future performance, or were ignored.

More research is needed to explore how student-centred and instructor-facilitated approaches can shape the learning experience. It is also worth investigating how the two approaches could be combined, with instructors taking on a more active role, guiding students to engage in peer feedback in an online environment. In this, the focus must be on contextual factors and feedback processes, not learning outcomes and satisfaction.

#### **2.5.4 Cognitive scaffolding**

Several papers have highlighted the importance of cognitive scaffolding in video-based peer feedback, with a majority of these discussing the use of rubrics in guiding peer assessment (Anderson et al., 2012; Hsia et al., 2016; Lai et al., 2020; Nagel & Engeness, 2021; Ritchie, 2016; Yoong et al., 2023a, 2023b). Interestingly, however, there is considerable variety in the design and function of rubrics and the perceived success of the tools used. In Ritchie's (2016) study, rubrics were critical during the self-assessment phase in helping students internalise the standards of the presentation task, which then supported them in both providing and acting upon peer feedback in the next phase. Similarly, Anderson et al. (2012) found that rubrics helped to scaffold pre-service teachers' peer comments, enabling them to focus on specific aspects of presentation skills. For Yoong et al. (2023a), it was the absence of detailed rubrics that most inhibited nursing students' ability to evaluate their peers' performance, while in a related study, 'mixed reactions' to video-based peer feedback were attributed to students' lack of familiarity with the rubrics used (Yoong et al., 2023b, p. 6). Other studies have sought to explain the reasons for students' inability to apply rubrics in peer feedback, proposing solutions for future initiatives. For example, Nagel and Engeness (2020)

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recommend providing ‘instructions on how to formulate feedback or how to offer advice for improvements’ (p. 8), whereas Hsia et al. (2016) advocate ‘database[s] with categorised comments’, which could ‘facilitate students’ provision of quality comments... as well as make the process more efficient’ (p. 69).

Other works emphasise the benefit of combining rubrics with additional cognitive scaffolds. In Lai et al.’s (2020) study, participants completed a 50-minute course to understand the peer assessment process and detailed feedback criteria before using a rubric to evaluate their peers. Similarly, those in Li and Huang (2023) and Zheng et al. (2021) were trained in providing feedback using detailed rubrics, Zheng et al.’s (2021) students applying theirs to self-introduction videos. Murillo-Zamorano and Montanero (2018), meanwhile, describe the use of exemplar videos and student clips purposefully selected by the instructor for analysis. When these were used together with rubrics, peer feedback was found to be twice as effective as instructor feedback in improving students’ presentation skills. Others still stress the benefit of alternative scaffolds. In a context of faculty development, participants in Davids et al.’s (2015) study used a ‘peer review form’ rather than a rubric. It found that inviting freeform comments, as opposed to prescribing set evaluation criteria, promoted the ‘open and honest exchange’ of specific formative feedback and nurtured collaboration. Italian language students in Admiraal’s (2014) study, meanwhile, received additional cognitive support in in-class discussions in which instructors guided them through tasks to develop their analytical and reflective skills, which ensured that feedback was highly focused. In Hunukumbure et al.’s (2017) study, where peer feedback took place in person, scaffolding took the form of instructor prompts; as in Davids et al. (2015), scoring checklists were not provided, so as to encourage ‘reflection and open spontaneous discussion’ (Hunukumbure et al., 2017, p. 3).

It would be valuable to investigate how different cognitive scaffolds interact with the broader sociocultural context. In addition, the hybrid nature of peer feedback, recounted in Admiraal (2014), in which students interacted in both in-

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person and online environments, is worthy of further exploration, particularly in the context of the current research.

### **2.5.5 Motivation**

Student motivation to engage in formative peer feedback activities is a recurring theme in the literature. One strand of research has explored the impact of *grading*, or the absence of grading, on motivation. Krause et al. (2022) found that dental students were intrinsically motivated to take part in successive ungraded peer feedback rounds by perceived gains in communication skills. These perceptions were formed not only through peer feedback, but also a natural process of self-reflection that occurred as students reviewed videos of their practice alongside comments they received. For Hsia et al. (2016), students' motivation was also internal, derived from 'satisfaction, pleasure and challenge, rather than from external rewards, such as grade or praise' (p. 64). Yoong et al. (2023b) concluded that not being graded had a motivating effect because it reduced stress. Others maintain that students' participation in formative tasks is likely to be driven by their desire to perform well in subsequent instructor-graded summative assessments (Toland et al., 2016), particularly if there are opportunities to apply feedback and make improvements before the graded assessment (Simpson et al., 2019). However, Nikolic et al. (2018) found that not grading video-based peer feedback tasks had contradictory effects on motivation. Whereas stronger students were more motivated to participate in the activities and perceived them to be effective, lower-ability students reported that they lacked incentives to engage and improve. Further research is needed to understand the impact of grading on motivation.

Several studies have explored the impact of *social-affective factors* on motivation, noting that engaging in video-based peer review can be a source of anxiety and stress (Lewis et al., 2020; Zheng et al., 2021; Smallheer et al., 2017), vulnerability (Colasante, 2011), distress (Hunukumbure et al., 2017), fear and intimidation (Näykki et al., 2022) or even shame (Herrmann-Werner et al., 2019). While there is broad agreement that these can all negatively affect

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motivation, there is less consensus on the exact cause of these feelings or the strategies most likely to mitigate them. For Lewis et al. (2020), Hunukumbure et al. (2017) and Herrmann-Werner et al. (2019), anxiety, (di)stress and shame are provoked when students 'confront' images of themselves on video for the first time; in addition, their studies found that the process of receiving peer feedback was not perceived as anxiety-inducing or stressful. In fact, Hunukumbure et al. (2017) and Lewis et al. (2020) argue that it was the presence of supportive, respectful peers and instructors in an in-person setting that helped students to overcome negative affective factors. Meanwhile, Herrmann-Werner et al. (2019) found that the experience of receiving video-based feedback in whole-class settings was perceived to be at least no more 'shameful' than if students viewed their performances alone, or individually with the instructor. The authors conclude that negative affective responses can be mitigated by 'appropriate preparation and reassurance before the event', while debriefing after a shameful experience could help students to 'achieve personal growth through critical reflection' (p. 6). Admiraal (2014) also highlights the motivating role of informal dialogue between students in class, in the presence of the instructor. Interestingly, this initial 'pep-talk' encouraged students to engage in more critical and valuable peer commenting online (p. 491).

By contrast, Smallheer et al.'s (2017) study comparing video-based peer feedback with instructor-led feedback found that peer review in the absence of an instructor was perceived as less stressful and intimidating. Under less pressure to perform in front of faculty members, students were motivated to conduct more thorough assessments of their peers and highlight areas where improvement was needed. Colasante's (2011) conclusions are different still: promoting a safe learning environment for video-based feedback may require instructors to 'close the network tighter', reducing the number of peers or even making feedback private between teacher and student (p. 84). The impact of instructor presence and peer group size on social-affective factors and motivation is worthy of further investigation, particularly within an online or hybrid setting.

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### **2.5.6 Summary: Area A**

It is evident that a variety of sociocultural factors are acknowledged in the literature on video-based approaches to peer feedback in HE. In terms of multiple sources of feedback (discussed in section 2.5.1) and the order in which these are sequenced (2.5.2), there is little agreement around whether instructor feedback should be provided, and if so, at what stage. It is suggested that while self-reflection is beneficial, it will yield different benefits depending on when students engage in it in relation to video-based peer feedback. There is also little clarity around the relative merits of instructor-facilitated and student-centred approaches (2.5.3). The former is associated with openness, guidance and support; the latter with feelings of safety, interactivity and genuine discussion. In contrast, there is broad consensus on the value of cognitive scaffolding (2.5.4) and factors that could affect students' motivation (2.5.5). Differences are around the specific nature of scaffolding required and the impact of instructor presence and group size on mitigating social-affective factors. I believe my study can contribute to ongoing discussions in each theme.

One shortcoming of the literature is that while it acknowledges sociocultural factors, it tends to treat them as separate variables that can be controlled, rather than analysing them through the lens of an activity system where the factors are interrelated. What is also missed is that the introduction of a new tool—video or video annotation—*re-mediate*s an existing activity system. Systemic analysis of students' experience is needed to take all of the above sociocultural factors into consideration, recognising that they are interrelated, and to examine the re-mediating impact of the video annotation tool.

### **2.6 Area B: Uses of video annotation tools in peer feedback**

In this section, I review the literature on the use of video annotation tools as part of peer feedback approaches in education. I present four themes in turn.

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### 2.6.1 Specificity and feedforward

Many studies have attempted to compare the quality of peer feedback provided using video annotation tools with that provided using traditional video-based approaches, in which annotation is not used. To assess feedback quality, these studies have sought to analyse the *specificity* of peer comments and, as a subset of this, the extent to which peer comments provide *feedforward* in addition to feedback on students' current practice.

Scholars of video-annotated peer feedback argue that specificity is fundamental to peer commenting as it enables students 'to reflect upon the rationale or intention behind a specific action, which facilitates making changes in future practice' (Shek et al., 2021, p. 4346). More specific, detailed feedback is also likely to promote authentic ideas exchange among peers (Leung & Shek, 2021). In a study of undergraduate child studies and education students, Day et al. (2021) found that time-stamped, annotated comments and non-annotated, summary feedback were broadly similar in nature. Regardless of the tool or approach used, peer comments were overwhelmingly evaluative and lacked recommendations for future improvement, and as such had little impact on students' future improvement in presentation skills. It is not clear from the study if students' improvement derived from opportunities for repeated practice, opportunities to observe multiple peers, self-reflection, or a combination of all three. Nagel and Engeness's (2020) design-based study used thematic analysis to evaluate undergraduate education students' time-stamped peer comments, finding that while these were specific and concise, they tended to affirm or praise content delivery skills and content rather than provide feedforward. Part of this, the authors suggest, was due to the nature of the annotation tool. In encouraging students to focus on individual events in recordings, the tool caused them to lose sight of the overall impact of peers' presentations on their intended audience, making it much more challenging for students to offer advice for future improvement. However, students' tendency towards affirmative peer comments also stemmed from a deep sense of anxiety and discomfort around giving feedback. Offering encouragement and praise was a means of overcoming these affective factors. To develop the skill of

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feedforward, Nagel and Engeness (2020) advocate the use of cognitive scaffolding, such as rubrics, within an assessment for learning approach. Both studies highlight the need for further research on how students can use video annotation to develop this skill.

In an experimental study, Lai et al. (2020) compared nursing students' use of video annotation and non-video annotation tools to develop their communication skills. Using specificity criteria based on Hulsman and van der Vloedt's (2015) study, they found that over two rounds of peer feedback activities using the video annotation tool, students provided a significantly greater number of suggestion- and goal-oriented comments associated with feedforward than students who did not provide video-annotated feedback. As in Lai's earlier (2016) study, multiple rounds of peer feedback resulted in closer alignment between peer and expert ratings of students' communication. Though this pattern was observed in both groups, it was more pronounced among those students who had used video annotation, and had a correspondingly greater impact on students' communication performance.

It is by no means certain that simply using a video annotation tool will prompt students to provide specific, forward-facing comments on their peers' performance, particularly in contexts such as the current study, where formal self-evaluation may not be part of the activity design, and where peer feedback takes place in a single round. Several researchers have concluded that developing specificity with video annotation tools requires scaffolding (Anderson et al., 2012; Ellis et al., 2015; Rich & Hannafin, 2009). This includes the use of rubrics; the observation or assessment of sample videos, either in person or using the online tool; or the use of cognitive supports built into the tool (Rich & Hannafin, 2009), such as the system of customisable tags used by participants in Baran et al. (2023). The current study provides an opportunity not only to study the mediating impact of each of these forms of scaffolding, but also to understand why some instructors may decide not to use them in a particular context.

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## 2.6.2 Perceptions of objectivity

Several studies have highlighted the enhanced objectivity afforded by the use of video annotation tools. This is often associated with the potential of these tools to provide greater contextualisation and evidence for comments by linking feedback to specific events in the recording (Evi-Colombo et al., 2020). For the participants in Leung and Shek (2021) and Shek et al.'s (2021) studies, time-stamped comments provided much greater concreteness and clarity than in-class video-based feedback, which they had experienced as ambiguous and superficial. As one student reflected:

In the absence of the video annotation tool, I may not know what my peer comments actually refer to, [which] means he/she is probably giving me some general comments. In contrast, if a specific segment is embedded with a sentence of comment, then I can know when the problems occur exactly. Simply speaking, 'real evidence' is provided. (Kevin, pseudonym, quoted in Shek et al., 2021, p. 4343)

Being able to link specific segments with comments also made the process of receiving and engaging with peer feedback more effective. This removed barriers to knowledge exchange. When comparing a novel, video-annotated approach to in-person feedback, participants in Ho et al.'s (2021) study also reported that it yielded more 'accurate, detailed information' on their professional practice (p. 6). It was also perceived as more convenient.

In their study of pre-service teachers, Shek et al. (2021) also attributed participants' perceptions of increased objectivity in video-annotated peer feedback to the greater number of peers that viewed each video. Receiving multiple peer comments via the video annotation platform provided participants with a far broader range of perspectives than had been possible with traditional video-based approaches. This minimised the effect of peer subjectivity and biases while commenting, resulting in a more balanced picture of students' performance. For Rich and Hannafin (2009), greater objectivity is the product of peer collaboration, which can take new forms in the context of video annotation. The exact nature of collaboration depends to some extent on the design of the tool, but also on the activity design.



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For Cattaneo et al. (2020), it is the ‘evidence- and situation-based’ and ‘student-driven’ quality of video-annotated feedback that leads students to perceive it as more dialogical, resulting in greater student acceptance (p. 6). In other words, objectivity and contextualisation promote collaboration using the tool. Similarly, the annotation tool used by pre-service teachers in Baran et al.’s (2023) study enabled them to capture specific moments of teaching, allowing for evidence-based, collaborative peer feedback within an online platform.

Further research is needed to understand the relationship between the more contextualised, objective and evidence-based nature of video-annotated peer feedback and peer collaboration. If objective, evidence-based commenting is a prerequisite for successful collaboration, then it is important to understand the contextual factors that may shape students’ ability to comment using such tools. If collaboration between multiple peers is a precondition for enhanced objectivity and contextualisation, then further work must explore the dynamics of this collaboration.

### **2.6.3 Efficiency**

Several papers have highlighted issues of *efficiency* associated with the use of video annotation in peer assessment. In their study comparing annotated and non-annotated feedback, Lai et al. (2020) reflected that the need for students to provide evidence to support annotated comments resulted in more deliberate, solutions-focused commenting, and more feedback overall when compared with students using a non-annotated approach. Since it also required repeated viewing, pausing and navigating within each video, students who engaged in the annotated approach spent more time completing feedback tasks. However, the authors maintained that this additional time was focused on learning, rather than on the technology (Lai et al., 2020).

In their recent studies of Hong Kong teacher education students, Shek et al. (2021) and Leung and Shek (2021) have used cognitive load theory (Sweller et al., cited in Shek et al., 2021) to investigate this phenomenon in greater depth. They found that video annotation tools decrease cognitive load because, in

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encouraging more specific, contextualised commenting, they can reduce the time students would otherwise spend in traditional, non-annotated approaches, searching recordings for events that correspond to the peer feedback provided (Leung & Shek, 2021; Shek et al., 2021). In particular, the tools minimised the ‘primacy’ and ‘recency’ effects associated with traditional ‘linear’ video viewing (Mayer & Moreno, in Shek et al., 2021, p. 4345), where viewers tend to recall events near the beginning and end of a recording but find it more cognitively challenging to recall those in between. In this sense, then, video-annotated peer feedback approaches may be regarded as more efficient, despite the additional student workload involved.

Nevertheless, Li and Huang (2023) contend that any efficiency gains derived from the use of video annotation tools depend primarily on students’ ability level. Their analysis of peer feedback on an undergraduate video-editing module found that low-ability students experienced higher cognitive load when using video annotation technology due to the additional time it took them to analyse the content of peers’ recordings, which caused them to provide fewer comments or even abandon the activity altogether. However, the authors also imply that high cognitive load resulted from the use of video and the challenging nature of the content, not the use of video annotation *per se*. By contrast, Fadde and Sullivan (2013) maintain that it is precisely the more complex nature of video annotation tools that makes them more beneficial for late-stage pre-service teachers than those in the early stages of their training. Less experienced trainees, the authors argue, benefit more from simplified, instructor-guided video viewing, though this experience can prepare them for video-annotated peer review in later stages of their development.

It is by no means conclusive how video annotation tools affect the cognitive load students experience when engaged in peer feedback, or how this impacts on efficiency, or indeed students’ motivation to complete the task. It is, perhaps, unhelpful to imagine that there is a deterministic, causal link between novel technology and students’ learning experience. Future studies must take account of the myriad sociocultural factors that shape peer feedback activities,

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including the learning community, the activity design, and other tools such as scaffolding.

#### **2.6.4 Interactivity**

Many studies emphasise the interactive, participatory and collaborative nature of video-annotated peer feedback. In their study of pre-service teachers' engagement in video-annotated peer feedback in a life coaching module, Leung and Shek (2021) found that being able to link comments to specific time segments in peer recordings facilitated more open, 'authentic' communication between students and the exchange of far more critical, constructive feedback than had been possible in an in-class context. In earlier instructor-led microteaching sessions, students' practices had reflected a tendency among Chinese learners to 'avoid direct confrontations' and refrain from '[noting] others' weaknesses or problems to prevent others from losing face or dignity in public' (Sun, 2013, in Leung & Shek, 2021, p. 158). In establishing a 'less face-threatening' environment, as described in Evi-Colombo et al. (2020), the annotation tool helped to reduce culturally entrenched barriers to feedback exchange and enhanced students' interactivity with peers. This phenomenon is worthy of further exploration in the sociocultural context of the current project.

In their related study focusing on parent-teacher consultation practices, Shek et al. (2021) conclude that whilst video annotation tools can help to scaffold online communication, authentic, constructive peer collaboration does not simply emerge through students' use of the technology. Rather, it requires the active engagement of course instructors in facilitating and contributing to critical dialogue. Ellis et al. (2015) reached similar conclusions in their study of beginning teachers. Though there was evidence of reflective and analytic tool-mediated discussion around recordings of classroom practice, the authors argued that additional supports were needed to increase reflective commentary. These would consist of 'guidelines for beginning teachers to consult as they provide feedback on their peers' videos... [to] formally guide them as they practise providing substantive feedback to their peers and receiving it in kind' (p. 417). This echoes Colasante's (2011) call for guidance on what constitutes

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‘good quality, constructive feedback’ (p. 84), while also emphasising the skill of engaging with constructive peer comments. The role of instructors and additional rules in video-annotated peer feedback is clearly an important part of the broader sociocultural context, yet one which has been underexplored. In particular, the impact of different guidelines and instructor approaches on student interactivity and tool-mediated discussion would certainly merit further exploration.

Other studies have explored the role that video-annotated peer feedback can play in stimulating in-class discussions around peer performance. In Näykki et al. (2022), student teachers used an annotation tool to engage in a process of ‘collaborative reflection’, in which they, their peers and their instructors focused on socioemotional interactions during their classroom practice where they felt ‘successful and empowered’. This was followed by a one-hour synchronous ‘collaborative reflective feedback discussion’, held either face-to-face or online, facilitated by the instructor, involving the peer reviewer and reviewed student (p. 1). The authors found that by ‘making socioemotional experiences concrete’, the video annotation tool fostered meaningful peer discussion, resulting in more ‘holistic’ evaluations of their teaching (p. 2). The medical students in Pless et al. (2021) also engaged in a combination of online video-annotated peer feedback and in-class discussion. While the in-person discussions were perceived as useful, teachers and students felt that they could have benefited from greater structure, as well as more guidance during the annotation stage. In the context of the current study, the themes of guidance and structure in hybrid models of video-annotated peer feedback deserve further attention.

### **2.6.5 Summary: Area B**

Literature on the use of video annotation tools in peer feedback recognises that students’ experiences are characterised by specificity, objectivity, efficiency and interactivity, and that these experiences are influenced by the sociocultural factors outlined in Area A (section 2.5). Existing works are divided regarding the factors that generate specificity and feedforward (2.6.1) in video-annotated approaches, ascribing these either to particular characteristics of the annotation

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tools used or to additional cognitive scaffolding. While there is agreement on the potential of annotation tools to facilitate contextualised, evidence-based and thus objective commenting (2.6.2), there is less certainty around how perceived objectivity affects, or is affected by, peer collaboration. There are two strands of opinion on the efficiency of video-annotated approaches (2.6.3), one arguing that the specificity and contextualisation they afford makes them inherently more efficient, and the other claiming that they require simplified, instructor-guided viewing. While scholars agree on the interactive, participatory and collaborative nature of video-annotated approaches (2.6.4), there is less clarity regarding the specific guidance and structure required to ensure this interactivity is realised. I am confident the current research can contribute to the ongoing discussions on each theme.

One shortcoming of the literature is that although it does recognise the impact of sociocultural factors on particular aspects of students' experiences of video-annotated peer feedback, this is typically analysed as a direct relationship rather than as the annotation tool re-mediating a wider practice system. More research is required to investigate the complex relationships between each of the above aspects. This must move beyond experimental and quasi-experimental comparisons of annotated and non-annotated approaches which frame sociocultural factors as individual variables. Instead, it must incorporate systemic analysis of the design and implementation of video-annotated approaches that takes into consideration the complexities of the activity system and the role of the tool in re-mediating this system. This can create a fuller picture of how students experience video-annotated peer feedback in a specific setting.

## **2.7 Research questions**

The literature on the use of video and video annotation tools for peer feedback is dominated by experimental and quasi-experimental studies. These cannot take account of the rich variety of interconnected sociocultural factors, discussed in section 2.5, which combine to shape the design of video-based peer feedback activities and students' experiences of their implementation. In

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understanding the complex nature of students' experiences, it is also important to move beyond measures of evaluation based on satisfaction, acceptance and effectiveness in improving performance, and instead examine how students *use* the technology to engage in peer feedback. As discussed in section 2.6, the themes of specificity, objectivity, efficiency and interactivity in video-annotated peer feedback are worthy of further exploration. However, instead of seeking deterministic, causal links between these themes and students' use or non-use of video annotation tools, future studies should systemically analyse the relationships between these themes, taking into account the broader sociocultural context to understand how student experiences of peer feedback may be *re-mediated* through their use of the tool. It is only through analysing the role of the tool in re-mediating the activity system that we can understand students' complex experiences of video-annotated peer feedback in a specific setting.

My first research question is therefore:

RQ1: How does the use of a video annotation tool in peer feedback activities *re-mediate* culturally entrenched activity systems?

Change within activity systems is driven by systemic contradictions, experienced as conflicts and tensions, which participants strive to overcome by changing their activity systems (Virkkunen & Newnham, 2013) through a cyclical process of *expansive learning* (Engeström, 1987; Engeström & Sannino, 2010). This is discussed at length in Chapter 3. My analysis of the literature has highlighted multiple conflicts and tensions in understandings of students' use of video-based peer feedback, each of which merits further investigation. Firstly, as discussed in section 2.5, there are tensions in the roles of students, peers and instructors as sources of video-based feedback, with contradictory findings around how these should be sequenced, or how the responsibilities of different participants ought to be divided. It is equally uncertain how students' experiences may be shaped by in-person and online learning environments, or by different combinations of these; by different forms of cognitive scaffolding; or by motivation, which may in turn be influenced by

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institutional rules, such as grading, or by the support provided by the learning community. What is clear is that these sociocultural factors are highly complex and interrelated, and cannot be studied in isolation. To uncover the contradictions within and between them and explore how these might be overcome in practice, systemic analysis is needed. In my discussion of themes specific to video annotation in section 2.6, I have sought to highlight that the concepts of specificity, objectivity, efficiency, and interactivity are also intertwined. Far from being technologically determined by students' adoption of an annotation tool, these concepts emerge through the nuanced interplay of the novel tool with the other sociocultural factors outlined above and all the systemic contradictions that may be generated. My second and third research questions are therefore:

RQ2: What systemic *contradictions* may be generated through the design and implementation of video-annotated peer feedback activities?

RQ3: How might these contradictions be *overcome* in future versions of the activities, in practice by practitioners?

## **2.8 Conclusion**

In this chapter, I have analysed the literature on video-based and video-annotated peer feedback. I have highlighted themes around the sociocultural factors that shape students' experiences of video-annotated peer feedback and identified where I can contribute to ongoing discussions. I have also exposed shortcomings in the literature, arguing that these must be addressed through systemic analyses focusing on the role of the annotation tool in re-mediating complex systems, where sociocultural factors are seen as interlinked. I have used this to frame my three research questions. I now move on to set out the theoretical framework for my research.

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## Chapter 3: Theoretical framework

### 3.1 Introduction

My thesis is informed by a number of ontological and epistemological assumptions. These guide my choice of theoretical framework and research design. In this chapter I first set out my ontological position, my understanding of the nature of reality, and the epistemological assumptions that frame my approach to investigating that reality. Next, I explain my choice of Activity Theory (Engeström, 1987) as a framework to analyse the design and implementation of video-annotated peer feedback tasks, and explain how my thesis is underpinned by Engeström's (1987) notion of expansive learning. I then set out the Activity Theory-derived criteria (Scanlon & Issroff, 2005) I use to analyse peer feedback implementation. Lastly, I explain the specificity criteria (Hulsman & van der Vloodt, 2015) used to assess the quality of students' feedback in each intervention.

### 3.2 Ontological position

My understanding of the nature of reality aligns with *dialectical ontology* (Hegel, 1830/1968, cited in Virkkunen & Newnham, 2013; Marx, 1973). I believe that the world does not consist of isolated, immutable ideas and objects, but, on the contrary, dynamic and interconnected phenomena which can have transformative causal impacts on one another (Tolman, 1981, cited in Virkkunen & Newnham, 2013). In a fundamentally unstable and ever-changing world, it is *contradictions* both within and between social organisations, and our ability to overcome these contradictions, which drive change and development. I believe that these processes and relationships of interaction are often hidden, and my role as a *researcher-interventionist* is to attempt to expose and influence them.

This has important implications for my project. For example, I do not believe that transformative change in learning and teaching within HE institutions takes place simply through the introduction of novel tools into a course or programme.



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Rather, it involves the complex interplay of sociocultural elements within a learning community. These include students with diverse learning experiences and often contradictory learning objectives; instructors with divergent beliefs around learning and teaching and distinct approaches to activity design and facilitation; existing tools and instruments; and institutional policies or wider social and cultural norms that shape interactions. In this thesis, I am motivated by a desire to better understand these sociocultural aspects of learning technology use which, as I argued in Chapter 2, are insufficiently addressed in the literature. More than this, I am driven by an interest in exploring the contradictions between these sociocultural aspects, and the ways in which instructors, students, and educational developers can overcome them in practice, resulting in change and development.

### **3.3 Epistemological position**

My approach to investigating the reality I have outlined above can be described as *interventionist*. I believe that many of the hidden connections I refer to are only exposed when they are disrupted. In this project, then, I draw inspiration from Marx's maxim: I wish to use theory not simply to 'analyse and explain the world', but also intervene and disrupt, in order to 'generate new practices and promote change' (Sannino, 2011, p. 580). In analysing teaching and learning as part of this interventionist approach, I am heavily influenced by Vygotsky's (1978) *sociocultural* epistemology, in that I view human development as socially mediated. In the context of my interventionist research project, this means I am interested in change that takes place because of learners' interactions with other members of a learning community, as part of an interconnected system, including peers and teachers, mediated by tools, rules, and the division of labour within the community. It is critical to understand the sociocultural context of the whole *activity system* in order to transform it.

In order to intervene in an activity system to realise transformative change, I believe it is essential for researcher-interventionists not only to analyse current challenges and contradictions as experienced by practitioners in practice, but also understand the historical development of the system and how practitioners

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might seek to transform it (cf. Engeström, 1987). Interventionist research must then involve evaluating how the emergent system, or teaching and learning innovation, is implemented in practice; and, through a process of critical reflection, identifying improvements as well as novel challenges inherent in the new system. Crucially, it also requires an analysis of how emergent contradictions might be overcome, so that positive changes may become embedded. In this epistemological approach, practitioners (in this case, instructors and students) must be active participants in the research, collaborating with the researcher (me) to the greatest extent possible in analysing and reflecting on their practice.

### **3.4 Choice of Activity Theory as an analytical tool**

I believe Activity Theory (Engeström, 1987) is consistent with my ontological and epistemological positions because it is highly effective in enabling researchers to grasp complex sociocultural situations (Bligh & Flood, 2017). It is also activist and interventionist (Sannino, 2011). It is particularly well suited to researching educational development and technology enhanced learning. For Scanlon and Issroff, Activity Theory can provide developers and researchers with a 'more focused' perspective on learning contexts. It exposes underlying interactions and contradictions to promote a 'complex, comprehensive understanding' of technology use (2005, p. 438).

In this subsection, I discuss key concepts in Activity Theory, the *activity system* as a unit of analysis, and the role of *contradictions* in the re-mediation of activity systems. I also briefly discuss some of the alternative theories I considered and ultimately rejected.

#### **3.4.1 Key concepts in Activity Theory**

In Activity Theory, there is an important distinction between *activity*, *actions* and *operations*. *Activity* refers to the interaction of a *subject* with an *object*, where the object is a  *motive* that can meet the needs of the subject, something the subject needs to attain, or something that gives meaning to what they do (Kaptelinin & Nardi, 2006). An activity may comprise a sequence of steps,

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referred to as *actions*, which are oriented toward *goals* and are not immediately related to the motive. These in turn can be broken down into *operations*: lower-level, routine processes that are oriented toward the conditions for goals to be realised (Leontiev, 1974, cited in Kaptelinin & Nardi, 2006). In this study, I focus on activity, the highest level of subject-object interaction, as I am interested in subjects' use of tools to realise an object within a complex sociocultural context.

Central to Activity Theory is the principle of *tool mediation*: tools shape the way subjects interact with objects within a social environment. Tools are cultural artefacts that reflect the experience of the human beings that invented and modified them when trying to address historical problems, and this social knowledge shapes how they are used. During the development of an activity, tools can be transformed, and new ones created (Kaptelinin & Nardi, 2006). In my research, tools include not only the video annotation software but also language, student-generated video, rubrics and other cognitive scaffolding.

### 3.4.2 The activity system

The *activity system*, depicted in Figure 3.1, is a unit of analysis for object-oriented activity and is itself a sociocultural construct. It consists of six interconnected components:

- *subject*: the individual or group whose position is chosen as the perspective of the activity-theoretical analysis
- *object*: the motive or problem at which the activity is directed
- *tools*: the artefacts or instruments that mediate subject-object interaction, turning the object into an *outcome*
- *community*: the individuals and subgroups who share the same general object
- *division of labour*: the horizontal division of tasks and responsibilities and vertical division of status and power
- *rules*: the explicit or implicit 'regulations, norms, conventions and standards that constrain actions' within the activity system (Engeström & Sannino, 2010, p. 6).

In the context of my study, in a traditional, *culturally-entrenched* activity system, the subject might be the student, working towards the *object* of developing presentation skills. Their activity would be *mediated* by traditional *tools*, such as rubrics, exemplars, and language. Their interactions with the *community* of peers, facilitated by instructors, would be mediated by *rules* covering how feedback is given or when. The actions of the community would be mediated by the *division of labour*, where instructor feedback might be considered more authoritative than that of a student, or where students might not be required to give peer feedback at all.

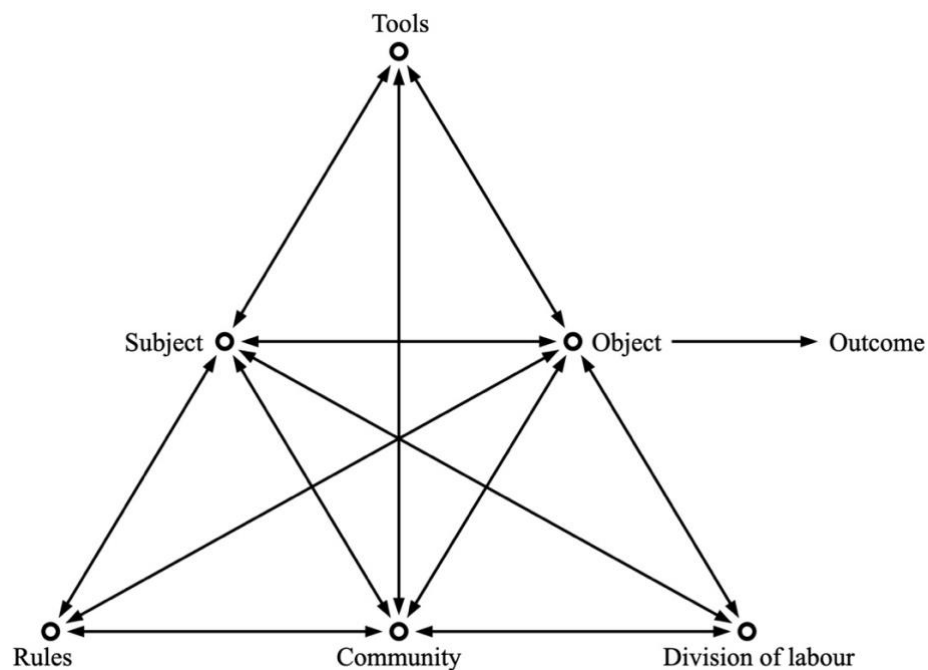


Fig. 3.1. Representation of an activity system

### 3.4.3 Contradictions and re-mediation

Introducing a novel tool, such as the video annotation software, generates new *contradictions* that encourage subjects to *re-mediate* the activity system. In other words, it changes the way the subject works towards the object of improved presentation skills, establishing new rules, different forms of interaction with the community, or a new division of labour, which may not have been possible in the historical system.

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In Activity Theory, contradictions within the activity system are fundamental to explaining sociocultural change and learning. As Engeström and Sannino (2011) explain, *contradiction* is a philosophical concept entirely distinct from notions such as *tension*, *conflict* or *double bind*; indeed, these terms are more appropriately used to describe how contradictions are manifested .

Contradictions develop over time. They are inherent in the relationship between *use value* and *exchange value* in capitalism (Ilyenkov, cited in Engeström & Sannino, 2011) and are shaped by the specific conditions of the activity or institution (Giddens, cited in Engeström & Sannino, 2011). As such, contradictions can only be addressed by analysing the activity system: the concrete historical system within which they are formed. For contradictions to be overcome, the object of the activity must be reinterpreted and reconstructed, creating the perspective and motivation for change. This requires a process of *re-mediation*: the generation of new tools, a new division of labour and new forms of cooperation to realise the new way of working (Virkkunen & Kuutti, 2000).

For Engeström and Sannino (2010), contradictions may appear as:

- *primary*: within nodes of the activity system
- *secondary*: between two or more nodes (e.g. a new object and an old tool)
- *tertiary*: between a newly established mode of activity and remnants of the previous mode of activity, or
- *quaternary*: between the newly reorganised activity and neighbouring systems (Engeström & Sannino, 2010, p. 6).

Focusing on contradictions and re-mediation is critical to my research, as these are sociocultural constructs which enable me to analyse the impact of the video annotation tool within the complex learning situations studied.

#### **3.4.4 Consideration of theoretical alternatives**

Two alternative theoretical frameworks I considered but ultimately rejected were situated learning theory (Lave & Wenger, 1991) and Actor-Network Theory

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(Latour, 2005). Having drawn on aspects of situated learning theory to investigate the development of a Community of Practice among academics at PolyU to facilitate video-based peer coaching (Gatrell, 2023), I initially felt that this could offer a suitable framework for the current study due to its emphasis on joint enterprise, mutual engagement, and the development of communal resources (Wenger, 1998). Yet while situated learning theory does acknowledge that human activity is tool-mediated and context-specific, it cannot provide an analysis of the whole activity system, including the rules and division of labour that structure activity in the community (Arnseth, 2008). Moreover, it does not afford an analysis of how transformation takes place over time due to contradictions in the activity system (Nardi, 1996), so would not have enabled me to address my research questions. Actor-Network Theory, meanwhile, in considering relations between human and non-human actors, also appeared appropriate for my study. However, on closer inspection, I found it to be unsuited to interventionist research, as I judged it to be overly descriptive.

### **3.5 Expansive learning**

As with the two earlier studies derived from my institutional project (Gatrell, 2021; 2022), my thesis is underpinned by Engeström's (1987) notion of *expansive learning*. I believe it aligns well with my ontological and epistemological positions since it affords an understanding of how contradictions in social organisations, and our ability to overcome these contradictions, can drive change and development. Engeström states:

‘The essence of expansive learning activity is production of objectively, societally new activity structures (new objects, instruments, etc.) out of actions manifesting the inner contradictions of the preceding form of the activity in question.’ (Engeström, 1987, p. 125)

In its focus on the production of new activities as a result of contradictions, expansive learning enables me to study how contradictions in the historical activity systems of each module may be addressed using the novel tool. It also helps identify how any contradictions in the new, re-mediated systems might be overcome by practitioners in future versions of each activity structure.

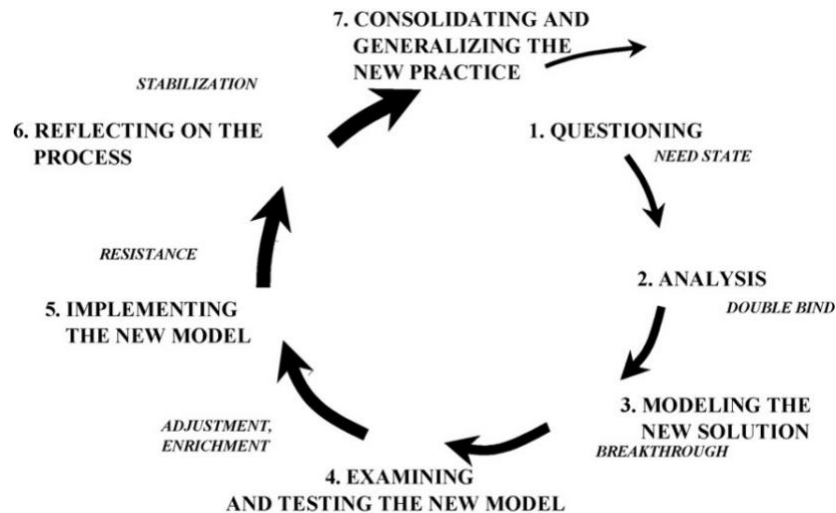
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For Engeström and Sannino (2010), contradictions are ‘the necessary but not sufficient engine of expansive learning’ (p. 5). Contradictions may drive expansive learning if used as opportunities to identify and develop a new expanded object *and* new activity oriented to the object. Moving from the ‘abstract’ theoretical concept of the new object to the ‘concrete’ new activity is realised through a cycle of specific expansive learning *actions* (Engeström, 2001). In their ideal form, these actions take place as follows:

1. Questioning: challenging, criticising or rejecting some aspects of the accepted practice and existing wisdom;
2. Analysis: *historical*, to explain the situation by tracing its origins and evolution, and *actual-empirical*, to explain by constructing a picture of its inner systemic relations;
3. Modelling: constructing an explicit, simplified and transmittable model of the new explanatory relationship that offers a solution to the problematic situation;
4. Examination: running, operating, and experimenting on the model in order to grasp its dynamics, potential and limitations;
5. Implementation: applying the model in practice, enriching and extending it;
6. Process reflection: reflecting on and evaluating the process;
7. Consolidation and generalisation: consolidating the outcomes into a new and stable form of practice (Engeström & Sannino, 2010, p. 7).

Figure 3.2, Engeström’s (1999) diagrammatical representation of the ideal-typical expansive learning cycle, uses progressively thicker arrows to indicate the expanded scope of and participation in the learning actions (Engeström & Sannino, 2010, p. 8). It also highlights how successively evolving contradictions are constructed and resolved.



**Fig. 3.2.** Sequence of actions in an expansive learning cycle (Engeström, 1999, p. 384)

Engeström's cycle of expansive learning does not purport to be a 'universal formula of phases or stages'. Rather, it is a 'heuristic conceptual device derived from the logic of ascending from the abstract to the concrete' (Engeström & Sannino, 2010, p. 8). In using it, I intended to work with academic colleagues to develop changes in the object of each collective activity, resulting in a qualitative transformation of all components of each activity system. This, in turn, would enable me to provoke their reflections on the process, allowing new peer feedback practices to be consolidated and generalised.

### **3.6 Activity Theory-derived criteria for evaluating learning technology use**

To analyse the re-mediation of existing *activity systems* of presentation skills development in each module and highlight contradictions in the implementation of video-annotated peer feedback, I used Scanlon and Issroff's (2005) five Activity Theory-derived criteria for evaluating learning technology use (pp. 434–436). Like Activity Theory itself, the evaluation criteria align with my ontological and epistemological positions. They focus on exposing hidden connections and relationships in complex activity systems, paying close attention to sociocultural factors, in order to change teaching and learning practices:



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- Interactivity: How does the *tool* meet *subjects'* expectations regarding interactions between students and teachers (*rules*) and the division of responsibilities between students and teachers (*division of labour*)?
  - Efficiency: How can participants use the *tool* to achieve (usually contradictory) desired *outcomes* without wasting time or effort?
  - Cost: How do perceived costs of using the *tool* change the *rules* of practice?
  - Failure: How do unforeseen problems with the *tool* affect *subjects*, the *community*, the *rules* of engagement or the *division of labour*?
  - Serendipity: How do *subjects'* expectations (*rules*) affect their perceptions of any accidental discoveries made using the *tool*, and how might this influence the dynamics of control (*division of labour*)?

Their framework is intrinsically linked to Engeström's (1987) notion of *expansive learning*, which underpins the methodology for this research, since it also involves 'preliminary *analysis* of interactions within an activity system as a prerequisite for the *instructional design* phase, and detailed *planning* of an evaluation' (Scanlon & Issroff, 2005, p. 438, italics my own). Central to the framework is building an understanding of the sociocultural context.

In my choice of Scanlon and Issroff's (2005) criteria, I was influenced by Bligh and Coyle's (2013) study of architecture students' use of a novel presentation tool. Their study uses the framework to analyse pre- and post-implementation student survey responses, teacher interviews, in-room and video observations of students' activity, and tool system data. Through systemic analysis, the authors show how the tool re-mediate the activity system; highlight contradictions in the re-mediated system; and examine how the contradictions may be resolved in a future, more culturally advanced form of the system. In two studies (Gatrell, 2021; 2022) I have also used Scanlon and Issroff's criteria to analyse how video annotation software re-mediate peer feedback tasks and explore their future development. In a field dominated by studies focusing on student satisfaction or learning outcomes, I have found this framework a useful alternative approach to analysing learning technology use in HE. In addressing

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the whole activity system, its novel impact measures account for the full range of sociocultural factors that are insufficiently addressed in the literature.

### **3.7 Choice of framework for evaluating the quality of peer feedback**

To evaluate the *efficiency* of students' tool-mediated peer feedback activity, I sought an objective measure of how far they had achieved their desired outcomes: giving and receiving high-quality peer comments on their recorded presentations. This would allow me to compare different approaches to peer feedback across the three interventions, as described in the research design chapter below, in terms of what students *do* using the tool. It would also enable me to present *mirror data*, objective evidence of students' tool-mediated activity, to instructors in the second interview to facilitate *process reflection* and *generalisation and consolidation*.

In their study of video-annotated self and peer feedback on medical communication, Hulsman and van der Vloodt (2015) built on an earlier discourse analysis approach (Hulsman et al., 2009), categorising participants' annotations as either *retrospective*, related to 'describing the key event', or *prospective*, focused on 'finding new solutions' (Hulsman & van der Vloodt, 2015, p. 357). The two categories, broadly corresponding to *feedback* and *feedforward*, are further broken down into the retrospective subcategories of *behaviour*, *motive* and *effect*, and the prospective subcategories of *suggesting* alternative behaviour and describing *goals*, the proposed consequence of the alternative behaviour (p. 358). The greater the number of categories within an annotation or series of annotations, the more *specific* the feedback. The more high-quality, specific feedback provided within the time-limited peer feedback task, then, the more *efficient* the novel tool-mediated practice.

Hulsman and van der Vloodt's categories were designed to facilitate medical students' analysis of doctor-patient interactions. For my study, I adapted the definition of several categories to reflect the fact that participants were presenting content to an audience. The categories and definitions are shown in Table 3.1.

<b>Retrospective</b>	<i>Behaviour</i>	Reference is made to a specific action by <b>the student giving the presentation.</b>
	<i>Effect</i>	The consequence of the behaviour is described. Consequences can refer to <b>the audience, or to people or phenomena mentioned in the presentation.</b>
	<i>Motive</i>	A reason is provided for the behaviour. This can refer to <b>the student's personal intentions or to people or phenomena mentioned in the presentation.</b>
<b>Prospective</b>	<i>Suggestion</i>	A specific suggestion for an alternative behaviour is provided.
	<i>Goal</i>	The proposed consequence of the alternative behaviour is described. Goals can refer to <b>personal goals or to people or phenomena mentioned in the presentation.</b>

Table 3.1: Hulsman and van der Vloodt's (2015) categories with my adapted definitions in red

### 3.8 Conclusion

In this chapter, I have set out the theoretical framework that underpins my thesis. I have explained how my ontological and epistemological positions inform my selection of Engeström's (1987) Activity Theory and the related notion of expansive learning as tools for analysing the design and implementation of video-annotated peer feedback tasks. I have also explained my choice of Scanlon and Issroff's (2005) Activity Theory-derived criteria to analyse peer feedback implementation, and my use of Hulsman and van der Vloodt's (2015) specificity categories to assess the quality of student feedback.

In the following chapter, I explain how this framework informs my research design.

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## **Chapter 4: Research design**

### **4.1 Introduction**

This research has a *formative intervention* design, in which the participants expansively transform the object of their activity to face historically formed contradictions (Engeström & Sannino, 2010; Sannino et al., 2016). I intervened in the activity systems of three academic modules to facilitate expansive learning.

In this chapter I set out my formative intervention research design. I start by explaining the overall logic of this design. Next, I move on to describe the site and context of my research, before introducing the research participants and setting and reflecting on my own role as the researcher. I then outline the research instruments, data collection methods, and procedure, before explaining how I analysed the data. Following a section on ethical considerations, the chapter concludes with my reflections on the trustworthiness and limitations of my research design.

### **4.2 Overall logic of my formative intervention design**

In this project, I wanted to work with instructors as part of a structured process to achieve transformational change in their design and implementation of peer feedback, paying attention to sociocultural factors. This involved meeting them to discuss and analyse their historical and future approaches to peer feedback; supporting them in implementing novel approaches using a video annotation tool; and meeting them a second time to engage them in critical reflection on the process. It also involved consulting their students to learn about their prior experiences of peer feedback, and their expectations of using the novel tool; and then, after they had used it, consulting them a second time about their experiences of video-annotated peer feedback and how they had used the tool.

In my research design, I sought to analyse the processes through which instructors in three diverse academic modules designed and implemented video-annotated peer feedback, and ways in which students experienced peer

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learning and feedback using the novel annotation tool. To accomplish this, I attempted to capture the instructors' perceptions of their learning and teaching context, and specifically the use of peer feedback, before and after implementation; students' expectations and perceptions of peer feedback, mediated by the tool; and objective measures of how the students used the tool in practice. My design builds on the theoretical principles set out in the previous chapter by placing students at the heart of each existing and re-mediated activity system and paying attention to the sociocultural context.

The formative intervention tradition differs from other interventionist approaches in three critical ways. First, formative interventions are based on designs created by the participants themselves. Second, the collective design effort is seen as part of an expansive learning process, including participatory analyses and implementation phases. Third, instead of seeking solutions that are transferable and scalable, formative interventions aim for generative solutions which develop over a longer timeframe (Sannino et al., 2016). It is, then, an activist, interventionist approach (Sannino, 2011a) that combines practical transformation efforts and rigorous research, where participants have agency, and where interventions are not seen as 'complete' or 'closed' once the research is finished (Engeström, 2011).

My research design deviates from the formative intervention tradition in several respects. First, it does not use *double stimulation*, as defined by Engeström and Sannino (2010), where an interventionist researcher introduces conceptual models of activity systems to facilitate analysis and problem-solving and then engages participants in developing their own conceptualisations. Instead, as I outline in this chapter, the participants in my research questioned, analysed, modelled and examined their historical, current and planned practices and reported these processes to me; I then used this data to create conceptual models. Second, while instructors did have some *agency* in creating their designs, I typically worked with them and exercised a degree of influence; the students' role was even more limited. In another departure from tradition, for the most part, instructors and students did not engage in participatory analysis of data. This only took place after the new model of video-annotated peer

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feedback had been implemented, at which point I shared student survey and annotation data with instructors to stimulate reflection and generalisation and consolidation.

### **4.3 Research site and context**

PolyU is a large, public institution which achieved university status in 1994. Its nine faculties and schools offer degree programmes covering applied science, business, construction, environmental science, engineering, social science, healthcare, humanities, design, fashion and hotel and tourism management. It is an ideal site to address my research aims because of the variety of programmes; the importance of presentations in assessment on these programmes, and the use of peer feedback in assessment; and my *insider researcher* status as an educational developer at the institution during the period when I carried out the research. In this role, I worked closely with academics from all faculties on a variety of institutional initiatives, so I was able to collaborate with some of them on this project. I discuss my role in section 4.5.

My current research is part of a Hong Kong University Grants Committee (UGC) Teaching Development Grant (TDG)-funded Virtual Teaching and Learning project, which ran from 1 July 2021 to 30 April 2023. Co-led by myself and a colleague from PolyU's Educational Development Centre, the project investigated the design and implementation of video-based formative assessment in 12 undergraduate-, postgraduate- and doctoral-level modules. In each case, we explored students' and instructors' use of video-annotated feedback to develop procedural, presentation and interpersonal communication skills. My PhD research involves selecting cases from the project for deeper analysis. The three modules I selected are listed in Table 4.1.

Intervention	Semester	Module	Level	Instructors	Students
1	1	Innovations in Healthcare Education	Postgraduate	T1, T2	30
2	1	Greenhouse Gases and Life	Undergraduate	T3	97
	2				94
3	2	Presentation Skills for Research Students	Doctoral	T4, T5, T6, T7	480

**Table 4.1:** Participating modules, 2021-22

My selection of modules from the wider project for deeper analysis was purposeful. Analysing the three modules would enable me to achieve my research aims: investigating how the design and implementation of video-annotated peer feedback tasks to develop presentation skills re-mediate culturally entrenched activity systems, and exploring how contradictions in new activity systems can be overcome by practitioners in practice. In each of the three modules, presentation skills and the use of peer feedback to develop these skills were critical to students' achievement of the intended learning outcomes. While the principal objective of *Presentation Skills for Research Students* was for students to develop their academic presentation skills, in both *Innovations in Healthcare Education* and *Greenhouse Gases and Life* students were required to present their research and engage in peer feedback. The modules were therefore closely aligned with my research focus.

Crucially for this project, there were significant sociocultural differences among the three modules. Together, they encompassed a broad variety of subject disciplines with distinct demographics of students, at different levels of study: Hong Kong Chinese undergraduates taking a general education science course aimed at students from non-science backgrounds; Hong Kong Chinese in-service healthcare professionals engaged in postgraduate study; and mainland Chinese doctoral students drawn from each of the nine faculties at PolyU. The

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modules varied greatly in size. While *Innovations in Healthcare Education* comprised 30 students, almost 100 studied *Greenhouse Gases and Life* and *Presentation Skills for Research Students* attracted almost 500, divided into groups of 20. This allowed for multiple group dynamics, with students engaging in peer feedback on both individual and group presentations. In selecting *Greenhouse Gases and Life*, I was able to study two different groups, across two semesters; through *Presentation Skills for Research Students*, I had the opportunity to work with several instructors, each teaching the same module. These differences were critical in helping me achieve my broader aim of analysing the sociocultural factors that influence the design and implementation of video-annotated peer feedback.

My choice was impacted too by the wider sociocultural context of the University's response to the changing public health situation. In Semester 1 of 2021-22, PolyU adopted hybrid or mixed-mode synchronous teaching, with learning and teaching activities taking place in person. Yet in the third week of Semester 2, faced with a dramatic rise in local Covid cases, the University re-introduced fully online teaching. Selecting this combination of modules enabled me to investigate the design and implementation of video-annotated peer feedback in two distinct learning and teaching environments: hybrid, in the case of *Innovations in Healthcare Education*; entirely online, with *Presentation Skills for Research Students*; and both environments, for *Greenhouse Gases and Life*, which I studied in both Semesters 1 and 2.

#### **4.4 Participants and setting**

The participants in this study were instructors and students engaged in the modules listed in Table 4.1 above. I engaged with them in different ways in my research, bearing in mind ethical considerations discussed in section 4.8.

The seven academics teaching or co-teaching the three modules should be considered valid participants because prior to engaging in my research, they all had experience of facilitating activities in which students give peer feedback on presentations, and they all joined my project with an interest in collaborating



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with me to transform the activities using the video annotation tool. I engaged with them through interviews, as outlined in section 4.6. The 701 students enrolled in the modules were valid participants for sociocultural reasons: they were expected to record, share and give peer feedback on individual and group video presentations as a course requirement, and they were likely to have experience of creating and delivering presentations and engaging in peer feedback, either from other university-level courses or from secondary school. I engaged with them through survey responses, video annotations created using the annotation tool, and learning analytics collected by the platform, as outlined in section 4.6. To recruit students to complete the surveys outlined in section 4.6, I obtained permission from each of the module instructors to spend 15 minutes of their class time introducing the video annotation tool and my project, after which they were invited to take part.

In total, nine instructors taught *Presentation Skills for Research Students* to 27 groups of 20 students. One instructor declined to participate in the research, so her three groups of students did not complete either survey, and their annotation and system data were not collected. Of the remaining eight, four instructors were selected to take part, in part due to their greater experience in facilitating peer assessment on earlier iterations of the module, but also due to differences in their historical approaches to teaching the module and potential differences in implementing a new approach. However, the other four instructors agreed to promote the surveys to their students, and these students' responses were included in the analysis outlined in section 4.6. For the analysis of annotation and system data, also outlined below, I selected one group of 20 students at random from each participating instructor, making 80 in total.

T1, T2, T3 and the majority of students on *Greenhouse Gases and Life* and *Innovations in Learning and Teaching for Healthcare Education* were Hong Kong Chinese. In contrast, the vast majority of students taking *Presentation Skills for Research Students* were from mainland China. Of the four participating instructors teaching the module, T4 and T6 were from the UK and T5 and T7 were Hong Kong Chinese.

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#### 4.5 Role of the researcher-interventionist

My role in this project was multifaceted. As a *researcher-interventionist*, I was not simply analysing cases, but, rather, *intervening* in teaching and learning practices *in order to change them*. While I did not consider myself an actual participant in the research, I actively sought opportunities to work *with* participants to realise educational change. In doing so I was guided by the theoretical principles set out in the previous chapter: *questioning* and *analysing* existing practices and challenging participants to identify problems with these practices; inspiring participants to *model* and critically *examine* new practices; supporting participants in *implementing* these new practices and gathering evidence to evaluate them using holistic criteria; provoking meaningful *reflection* on the process; and *consolidating* positive outcomes from each intervention into stable forms of practice to facilitate future attempts at *generalisation*. Instead of attempting to ‘control all the variables’, in this role, as a formative interventionist, I aimed to ‘[provoke] and [sustain] an expansive transformation process, led and owned by the practitioners’ (Engeström & Sannino, 2010, p. 15).

Due to my background in English language teaching and my status as a doctoral candidate in technology enhanced learning, I felt a sense of *insiderness*, or understanding of the sociocultural context, when working with English language teachers, PhD students, and postgraduates studying innovations in health education. I experienced this less with students taking the undergraduate general education module, although I had collaborated with the instructor, T3, on another educational research project.

In the role of researcher-interventionist, I was also able to draw on aspects of my professional role and experience that require me to understand the sociocultural context of a given learning situation. For instance, *questioning* and *analysing* existing approaches to teaching and learning is part of my everyday role as an educational developer. Being able to help practitioners identify systemic problems with their existing practice also required a degree of sensitivity, empathy, and rapport. In supporting participants in *modelling* and

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*examining* new practices, I needed to be ready to deploy my skills as a learning designer, listening to participants' needs and producing worked examples or prototypes that can be demonstrated and tested. *Implementation* called for additional professional attributes, such as the skills of a learning technologist in troubleshooting, practical problem-solving, and providing just-in-time advice, and knowing when to step back and allow participants to navigate challenges. Like questioning and analysing, facilitating *process reflection* was also a delicate balancing act, in which I had to use many of the above skills to guide participants toward identifying aspects of their novel approaches that have been successful, and supporting these with evidence, while also engaging in honest, critical reflection. Without this, *consolidation and generalisation* would not have been possible.

#### **4.6 Research instruments, data collection and procedure**

Research instruments included instructor interviews, student surveys, video annotations and video system data. Each of these helped facilitate expansive learning, as shown in Table 4.2. The sequence of data collection is shown in Figure 4.1.

First, teachers took part in pre-implementation interviews and students were invited to complete pre-implementation surveys. The purpose of the instruments was to identify problems or challenges with existing approaches to peer assessment (questioning), investigate and represent the structure and history of current approaches (historical and actual-empirical analysis), develop new approaches (modelling), and understand their dynamics, potential and limitations (examination). Instructors and students then implemented the new activity system (implementation), allowing video annotations and system data to be captured. Lastly, students completed a second post-implementation survey and instructors were interviewed a second time. The purpose of these instruments was to evaluate the process and identify further requirements (process reflection) so stable forms of the new practice could become embedded (consolidation and generalisation).

<b>Expansive learning action</b>	<b>Purpose</b>	<b>Instruments used</b>
<b>1. Questioning</b>	Identify practice-problems being described	Interview 1, Survey 1
<b>2a. Analysis: historical</b>	Investigate and represent the structure and history of the present situation	
<b>2b. Analysis: actual-empirical</b>	Further develop representations of the existing system	
<b>3. Modelling</b>	Construct a new activity system	
<b>4. Examination</b>	Better understand the dynamics, potential and limitations of the new system	
<b>5. Implementation</b>	Render the model more concrete by applying it practically and conceptually, enriching it	Video annotations, system data
<b>6. Process reflection</b>	Evaluate the current process, identifying further requirements	Survey 2, Interview 2
<b>7. Consolidation and generalisation</b>	Attempt to embed stable forms of new practice	

**Table 4.2:** Summary of expansive learning actions, purpose and instruments used

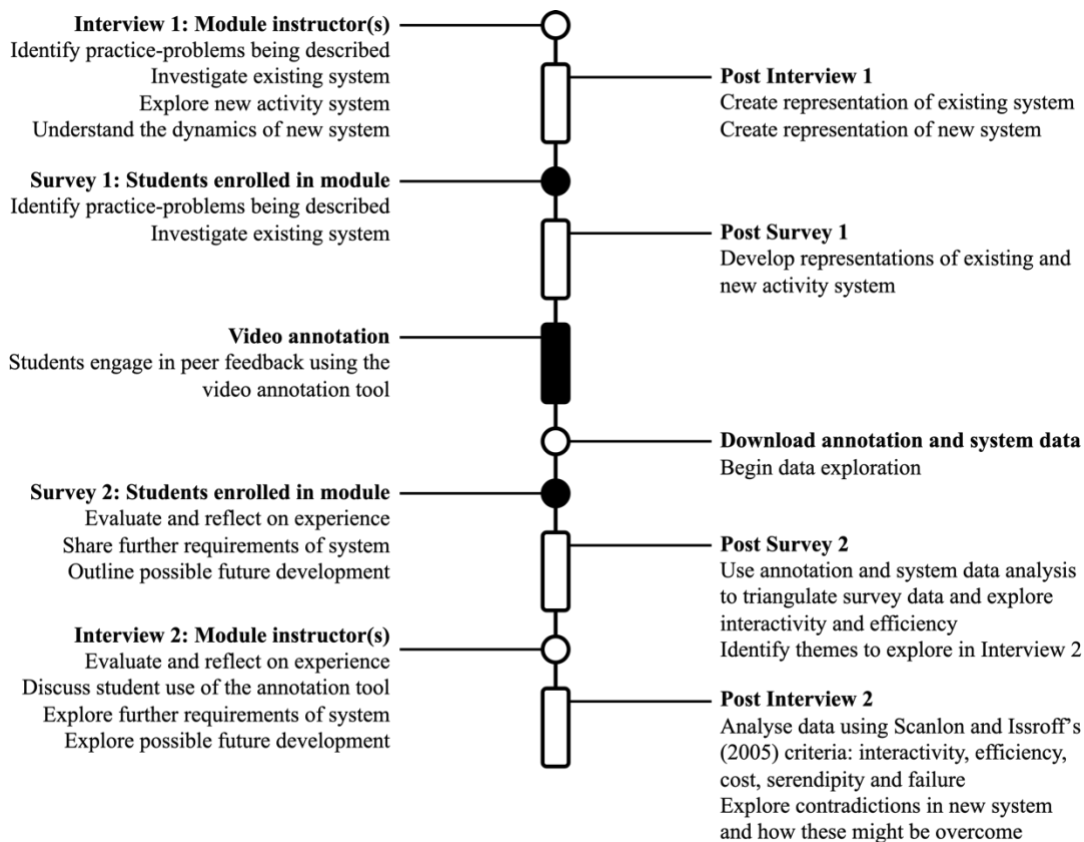


Fig. 4.1. Timeline showing data collection and analysis for a typical module

#### 4.6.1 Interviews

The first of two instructor *interviews* addressed the stages of *questioning*, *analysis*, *modelling* and *examination*. Using a semi-structured interview protocol, I explored existing approaches to facilitating peer feedback on student presentations, and the possible problems or challenges involved in these approaches. Next, in the same interviews, I modelled and examined new activity systems in which students' peer feedback was *re-mediated* by the video annotation tool. The questions were each linked to expansive learning actions and included the following:

- *Questioning*: How do students currently develop their presentation skills in your module? What challenges do they currently experience?
- *Historical analysis*: How did this approach to learning develop?
- *Modelling*: How will the video-based approach change the learning experience?

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- *Examination*: How will it work in practice? What challenges might students face in giving peer feedback using uRewind?

Following *implementation*, I interviewed instructors a second time, focusing on *process reflection* and *consolidation and generalisation*. Questions included:

- *Process reflection*: What were your overall impressions of how the students used uRewind for peer feedback? What worked well? What did not work so well?
- *Consolidation and generalisation*: Would you like to use uRewind again in this module? If so, what would you do differently to ensure the activity was successful?

Both sets of interview questions are listed in full in Appendix 1.

Each interview lasted approximately 30 minutes and was conducted in Zoom. Interviews were recorded in Zoom and transcribed, using Microsoft Word, for analysis as outlined in section 4.7.

For the first intervention, due to instructor availability, T1 took part in the first interview and T2 in the second. In Intervention 2, T3 completed two expansive learning cycles, so was interviewed four times across Semesters 1 and 2, 2021-22. For Intervention 3, T4, T5, T6 and T7 were interviewed separately, twice.

#### **4.6.2 Surveys**

The first of two student surveys supported *questioning* and *analysis* by exploring the problems and challenges that students might have been experiencing in engaging in peer feedback on presentations, and in developing their presentation skills. Since students had been given an opportunity to try out the tool beforehand, the survey also addressed *modelling* and *examination*, by asking them to think about how the tool might work in practice as part of their peer feedback process and consider its potential and limitations. Questions included:

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- *Questioning*: What challenges are you currently experiencing in developing your presentation skills?
  - *Examination*: What do you think you could gain from using uRewind to give peer feedback on other students' presentations?

The survey data was then incorporated into models of the planned re-mediated activity systems to further support *modelling* and *examination*.

I used a second survey to gather data on students' perceptions of using the novel annotation tool to engage in peer feedback, to support *process reflection* and *consolidation and generalisation*. Questions included:

- *Process reflection*: How did using uRewind to engage in peer feedback help you to develop your presentation skills? How else did it benefit you?
- *Consolidation and generalisation*: If you did the video-based peer feedback activity again, what aspects of the activity design would you change?

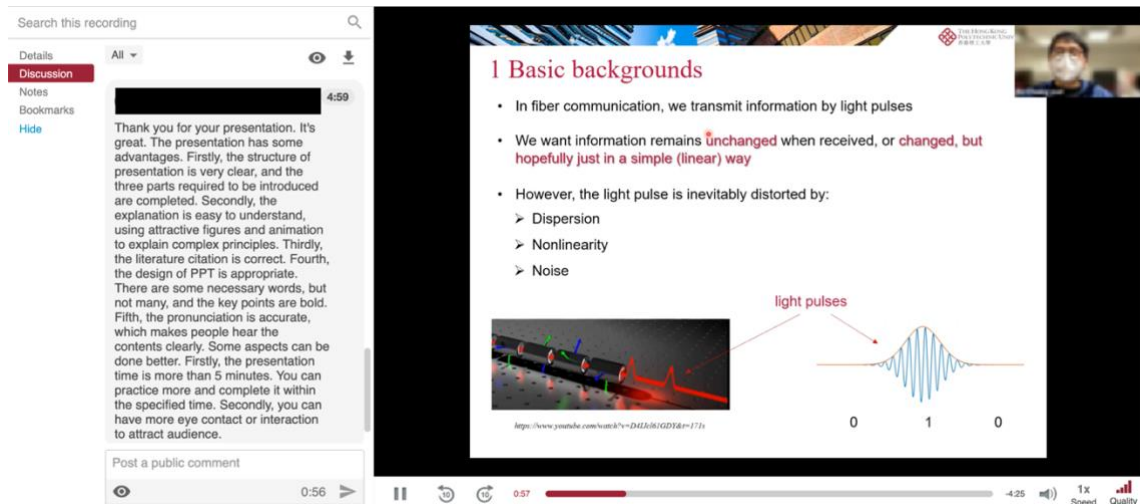
Both sets of survey questions are listed in full in Appendix 2.

I created the surveys using Qualtrics. To deliver the first survey, I sought permission from instructors to spend 15 minutes of class time, either in person or online (Semester 1) or online (Semester 2), introducing my research and allowing students to try out the annotation tool. I then invited students to complete the first survey on their mobile phones, accessing the link by scanning a QR code. In *Greenhouse Gases and Life* and *Presentation Skills for Research Students*, the instructors permitted students to fill in the survey during class, but in *Innovations in Learning and Teaching for Healthcare Education*, students were required to complete it after class, resulting in a lower response rate. The second survey was delivered by instructors via the course platform.

#### **4.6.3 Video annotations**

During the implementation of video-annotated peer feedback, students posted time-stamped comments on their peers' videos, as shown in Figure 4.2, a

screenshot of the interface from the students' perspective. Following the peer feedback task, these posts were downloaded and analysed, as detailed in section 4.7. Where applicable, student replies to peer comments and the instructors' comments were also downloaded and analysed.



**Fig. 4.2.** Screenshot of the platform interface from the student perspective. One time-stamped comment is shown on the left. I have blurred the student's face.

Figure 4.3 is an example of a text file, taken from *Presentation Skills for Research Students*, which contains all annotations made on a student's video. By collating the annotations for each group of students, I was able to create a spreadsheet displaying all annotations each student had made. Figure 4.4 is an extract from the spreadsheet showing annotations made by the four students in one subgroup, 6b, where each student was required to comment on two peer recordings. Only the students' comments are included in Figure 4.4. Comments were marked up for further analysis, as detailed in section 4.7.



Time: 00:00  
 User: T6  
 Date: 3/5/2022 2:25:35 PM  
 Comment: Some good presentation elements. Think about how you can relate this to some aspect of everyday life that non-specialists will understand easily.  
 Time: 00:08  
 User: 6b2  
 Date: 3/3/2022 7:58:42 PM  
 Comment: Hi 6b1, great to watch your presentation. You gave a clear overview of introduction structure which is easy-understood for audience. Then I can see citations below each figures and you also made good oral citations, by the way, the animation for illustration used in slides was great. And I think you can try to have more eye contacts, and the presentation was overtime a little bit.  
 Time: 00:11  
 User: T6  
 Date: 3/5/2022 2:14:15 PM  
 Comment: Remember research is uncountable - so you cannot refer to 'a research'.  
 Time: 00:33  
 User: T6  
 Date: 3/5/2022 2:17:13 PM  
 Comment: It's great that you acknowledge that many in your audience are non-specialists. You should include a hook that is easily relatable for them to draw them in and engage them with the topic.  
 Time: 00:59  
 User: T6  
 Date: 3/5/2022 2:19:01 PM  
 Comment: Be careful with your pronunciation here - you are pronouncing 'light pulse' as 'night pus'.  
 Time: 02:02  
 User: T6  
 Date: 3/5/2022 2:20:21 PM  
 Comment: Avoid writing full sentences and reading them. Your eyes are on the screen or to the side rather than looking at the camera.  
 Time: 02:16  
 User: T6  
 Date: 3/5/2022 2:20:42 PM  
 Comment: Nice signposting!  
 Time: 03:26  
 User: T6  
 Date: 3/5/2022 2:22:20 PM  
 Comment: Nice use of written & oral citations  
 Time: 04:59  
 User: 6b3  
 Date: 2/24/2022 9:02:03 AM  
 Comment: Thank you for your presentation. It's great. The presentation has some advantages. Firstly, the structure of presentation is very clear, and the three parts required to be introduced are completed. Secondly, the explanation is easy to understand, using attractive figures and animation to explain complex principles. Thirdly, the literature citation is correct. Fourth, the design of PPT is appropriate. There are some necessary words, but not many, and the key points are bold. Fifth, the pronunciation is accurate, which makes people hear the contents clearly. Some aspects can be done better. Firstly, the presentation time is more than 5 minutes. You can practice more and complete it within the specified time. Secondly, you can have more eye contact or interaction to attract audience.

**Fig. 4.3.** Text file downloaded from Student 6b1's recording in *Presentation Skills for Research Students*, showing comments from two peers, 6b2 and 6b3, with time-stamp, date and time. Instructor T6's comments are also shown.

6b1	<p>Commented on: 6b2  Time: 00:00  Date: 3/5/2022 8:06:41 PM  Comment: Hi 6b2, thanks for your presentation, you have used language appropriate for academic presentations and done well in oral citations. You spoke fluently without many pauses, but maybe you need to add some appropriate pauses. You delivered the research gaps through your speech successfully and logically. I guess it may be even better to add some subtitles in the slides to help the audience to keep up :)</p>	<p>Commented on: 6b2  Time: 00:34  Date: 3/5/2022 7:31:48 PM  Comment: This's a good hook at the beginning of the presentation :)</p>
6b2	<p>Commented on: 6b1  Time: 00:08  Date: 3/3/2022 7:58:42 PM  Comment: Hi 6b1, great to watch your presentation. You gave a clear overview of introduction structure which is easy-understood for audience. Then I can see citations below each figures and you also made good oral citations, by the way, the animation for illustration used in slides was great. And I think you can try to have more eye contacts, and the presentation was overtime a little bit.</p>	<p>Commented on: 6b3  Time: 02:29  Date: 3/3/2022 7:37:13 PM  Comment: Hi 6b3, great to watch your presentation. You gave a clear introduction on your research topic with illustration by figures and diagrams, and I believe that it would be better with a hook for audience. Then you make good citations on each pictures in slides also cited good orally. Moreover, you kept making eye contacts all time while talking which is great. Overall I think it is quite a good introduction presentation.</p>
6b3	<p>Commented on: 6b1  Time: 04:59  Date: 2/24/2022 9:02:03 AM  Comment: Thank you for your presentation. It's great. The presentation has some advantages. Firstly, the structure of presentation is very clear, and the three parts required to be introduced are completed. Secondly, the explanation is easy to understand, using attractive figures and animation to explain complex principles. Thirdly, the literature citation is correct. Fourth, the design of PPT is appropriate. There are some necessary words, but not many, and the key points are bold. Fifth, the pronunciation is accurate, which makes people hear the contents clearly. Some aspects can be done better. Firstly, the presentation time is more than 5 minutes. You can practice more and complete it within the specified time. Secondly, you can have more eye contact or interaction to attract audience.</p>	<p>Commented on: 6b4  Time: 00:39  Date: 2/24/2022 9:02:40 AM  Comment: Thank you for your presentation. I have learned new knowledge through your presentation. The presentation has some advantages. First of all, the structure is very clear, and the main content is indicated in the upper left corner of the PPT. Second, the literature citation is correct. Third, the figures can well let the audience understand some complex contents. Fourth, the pronunciation is very standard, and everyone can keep up with what the presenter says. Some places could do better. First of all, adding self-introduction at the beginning can let everyone know the presenter. Second, you can practice more to make your presentation more fluent.</p>
6b4	<p>Commented on: 6b2  Time: 04:54  Date: 3/7/2022 8:31:14 AM  Comment: Hi, 6b2, thanks for your good presentation. I think the hook at the beginning made the audience have more interest in this study. You spoke fluently and clearly. You also did well in citations. Because I'm not familiar with this area, I feel hard to understand when the slides only have formulas. I suggest you can add some key words or a sentence to described. You also can add subtitles to make your PowerPoint much logical.</p>	<p>Commented on: 6b3  Time: 04:45  Date: 3/7/2022 7:57:43 AM  Comment: Thanks for your great presentation. I think you prepared a clear and logical PowerPoint. Using figures and key words to show the content made audience easy to understand. Your speak is fluent, but some pauses in long sentences can be done better. In the literature review part, you showed the findings of different studies in appropriate ways. You also did well in citations.</p>

**Fig. 4.4.** Extract from spreadsheet for T6's group, showing comments posted by the four members of sub-group 6b. The two comments from 6b1's text file are highlighted in blue. Within this sub-group, 6b1 was unique in making multiple comments on peers' videos. For reasons of space, only two of these comments are shown in this extract.

#### 4.6.4 System data

Each time students interact with the video platform, system data is generated. This includes which videos students have viewed, the number of times they have viewed them, and the amount of time they have spent viewing them. Once students had finished engaging in peer feedback, their system data was downloaded and analysed, as detailed in section 4.7. Figure 4.5 is an example of the raw system data for the same students' recordings. The .csv file indicates who viewed which video, how many times and for how many minutes each time. I added the data to the group spreadsheet to build a picture of how each student engaged with peers' videos and their own video, shown in Figure 4.6.

Name	Session Name	Views and Downloads	Minutes Delivered
6b1	6b1 - Presentation	4	7.11973941666667
6b1	6b2 - Presentation	4	13.04254076666667
6b1	6b4 - Presentation	5	7.4744981
6b2	6b1 - Presentation	6	16.01035681666667
6b2	6b2 - Presentation	3	0.6325215666666667
6b2	6b3 - Presentation	4	8.40606951666667
6b3	6b1 - Presentation	6	9.33016240000001
6b3	6b3 - Presentation	21	8.84446487088389
6b3	6b4 - Presentation	4	6.13769325
6b4	6b2 - Presentation	2	7.68276851666667
6b4	6b3 - Presentation	3	7.99480876666667
6b4	6b4 - Presentation	2	2.71633055

**Fig. 4.5.** Extract from system data .csv file for T6's group. The edited and anonymised data indicates who viewed which video (session), how many times, and for how many minutes each time. In this extract, Student 6b1's viewing behaviour is highlighted, showing views of their peers' videos in yellow and views of their own recording in green.

	Peer videos viewed	Peer video views	Peer minutes watched	Own video views	Own minutes watched	Total number of views	Total minutes watched
6b1	2	9	20.5	4	7.12	13	27.6
6b2	2	10	24.4	3	0.63	13	25.0
6b3	2	10	15.5	21	8.84	31	24.3
6b4	2	5	15.7	2	2.72	7	18.4

**Fig. 4.6.** Extract from the spreadsheet for T6's group, combining system data from the .csv file to summarise the viewing behaviour of the four members of sub-group 6b. 6b1's viewing behaviour is highlighted, showing that they viewed two peer videos a total of nine times and for a total of 20.5 minutes; they watched their own video four times for a total of 7.12 minutes.

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## 4.7 Data analysis

Data analysis was guided by my theoretical framework and served specific purposes at each stage of my research, as shown in Figure 4.1. In each intervention, I used my analysis of data from the first survey and interview to understand the sociocultural context for the intervention: practice-problems that the instructors sought to overcome (questioning), and the structure and history of the present situation (historical analysis). I then used this to produce a representation of the existing activity system (actual-empirical analysis). My other priority in analysing the pre-implementation data was to understand how the instructors and students sought to use the novel tool to facilitate and engage in peer feedback, and to use this to represent the new activity system (modelling). I also wanted to understand what participants saw as the dynamics, potential and limitations of the new system (examination). I refer to these stages as *pre-implementation data analysis* in section 4.7.1.

Having a grasp of each new activity system allowed me to gather data on how instructors and students applied it in practice (implementation). For example, knowing whether students would give feedback individually or in groups, to specific peers or to students of their choice, helped me categorise and organise the annotation and system data, understand when the feedback process had finished and judge if expectations had been met. Knowing the extent of each instructor's planned engagement in the process, either through the platform or using an additional tool, was also critical.

In each intervention, before asking instructors and students to evaluate the process of engaging in video-annotated peer feedback via the second interview and survey (process reflection), I ensured that I had analysed data gathered during implementation. This enabled me to interpret and analyse the survey responses and prepare examples of students' use of the tool to discuss with the instructors during the interviews. It was also critical to analyse the students' survey responses before the interviews took place, since I wanted to ensure that their reflections on their experiences of video-annotated peer feedback could also inform the discussions. Through these informed discussions, I

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sought to maximise the potential for embedding stable forms of the new practices in each module (consolidation and generalisation). I refer to these stages as *post-implementation data analysis* in section 4.7.2.

#### **4.7.1 Pre-implementation data analysis: Questioning, analysis, modelling and examination**

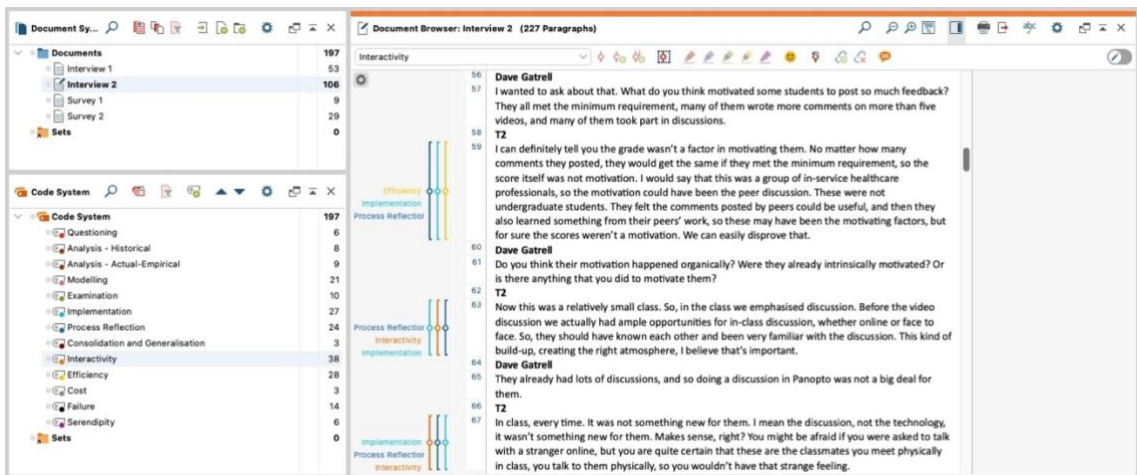
Each pre-implementation instructor interview was recorded in Zoom and transcribed using Microsoft Word online. The interview transcripts were then analysed together with students' pre-implementation survey responses in MAXQDA, with codes used to identify problems or challenges with existing approaches to peer assessment (questioning); the structure and history of current approaches (historical and actual-empirical analysis); the development of new approaches (modelling); and participants' understandings of the dynamics, potential and limitations of these new approaches (examination). Data relating to *questioning* and historical and actual-empirical *analysis* was then used to represent each existing activity system diagrammatically, with problems and challenges expressed in the form of contradictions between parts of the system. Next, the data relating to *modelling* and *examination* was used to create diagrammatical representations of new, more culturally advanced activity systems, as constructed by participants, with a synthesis of participants' beliefs regarding the dynamics, potential and limitations of the new system.

#### **4.7.2 Post-implementation data analysis: Implementation, process reflection, and generalisation and consolidation**

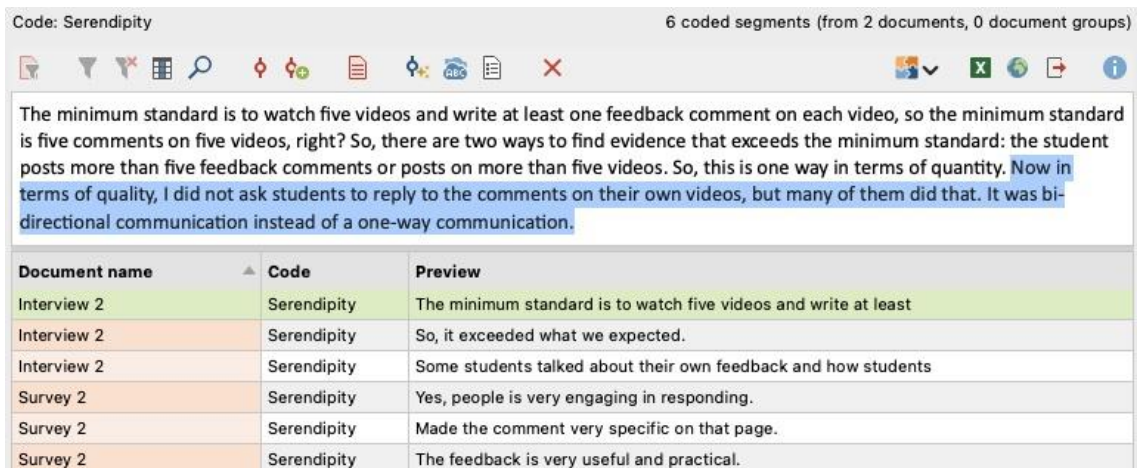
Post-implementation instructor interview transcripts and student survey responses were also analysed in MAXQDA, with codes used to identify participants' descriptions of how they had implemented the new model (implementation), their evaluation of the process (process reflection) and their perceived requirements to ensure that stable forms of the new practice could become embedded (consolidation and generalisation). Data relating to *implementation* and *process reflection* was analysed further using subcodes for Scanlon and Issroff's (2005) criteria: *interactivity*, *efficiency*, *cost*, *serendipity*

and *failure*. These themes were then used to report how the model was implemented by participants, and to identify the contradictions that emerged.

Figure 4.7, a screenshot from MAXQDA, shows how I used the software to code and sub-code the post-implementation interview and survey data for analysis. I then downloaded the segments, shown in Figure 4.8, for use in each intervention report. In some instances, during the writing process, additional themes emerged within Scanlon and Issroff's (2005) criteria. I used these themes to organise my findings and lend greater structure to the report.



**Fig. 4.7.** Screenshot from the MAXQDA project file for *Innovations in Learning and Teaching for Healthcare Education*, showing how I used the software to code and sub-code the post-implementation interview data. In this extract I used the primary codes of *implementation* and *process reflection*, and sub-codes *interactivity* and *efficiency*. The full code system is on the left.



**Fig. 4.8.** Screenshot from the MAXQDA project file for *Innovations in Learning and Teaching for Healthcare Education*, showing the six segments coded for *serendipity* from across the interview and survey data. One segment is shown in full, with the key points highlighted in blue for use in the intervention report.

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In addition, findings around implementation were triangulated using analysis of students' annotation and system data in Microsoft Excel. This yielded an objective measure of what students actually did using the tool. To calculate the degree of *interactivity* between students in each module, I counted the number of students who posted at least one comment, the number of comments posted and the number of comments per active student. Data on the number of feedback posts given and received was then used to generate a relationship map for each cohort or, for Intervention 3, each group of 20; a visual representation of interactivity within the group showing which students were more active. This made it possible for the three interventions to be compared; for both implementations of Intervention 2 to be compared; and for contrasts to be made between the four instructors' groups in Intervention 3. Student replies and instructor comments were also counted.

To measure the *efficiency* of students' tool-mediated activity, further qualitative analysis was performed on each comment, and students' system data was analysed. This yielded a measure of how far students achieved their 'desired outcomes' (giving and receiving high-quality peer feedback on their presentations) and how much 'time and effort' they had spent in working towards these outcomes. In this calculation, spending time on task was itself seen as a desirable outcome, provided the time and effort resulted in the exchange of high-quality feedback that students were motivated to read. This measure could then be compared with the efficiency of students' practices under historical systems, where the tool had not been used.

To evaluate the quality of students' peer feedback, each comment was coded for specificity using Hulsman and van der Vloodt's (2015) *retrospective* categories of *behaviour*, *motive* and *effect*, and the *prospective* categories of *suggesting* alternative behaviour and describing *goals*, the proposed consequence of the alternative behaviour (p. 358). I then shared my codes for each group with the two project associates, who checked them separately, noting down any discrepancies in the spreadsheet. These discrepancies were discussed until we reached agreement.

Example post	Specificity level
Thank you for your presentation. [-]	0
It is good to match the educational component with learning outcome. [B]	1
More suggestions for tackling the GHGs in China [S] could enhance the completeness of the content [G].	2
I like the use of data and stats from an authority, in this case an organisation, [B] but adding a citation underneath the slide could help [S] for quick reference. [G]	3
The image of Taiwan is green and environmental friendly. [B] I think your presentation can raise our awareness of Taiwan's air pollution problem [E]. I think some charts [S] may help you to present the increase of Taiwan's electricity usage in a better manner [G].	4
Thanks for your presentation. I think the hook at the beginning [B] made the audience more interested in this study. [E] You spoke fluently and clearly. [B] You did well in citations. [B] Because I'm not familiar with this area, [M] I found it hard to understand when the slides only have formulas. [B] I suggest you can add some key words or a sentence to describe. [S] You also can add subtitles [S] to make your PowerPoint much logical. [G]	5

**Table 4.3:** Examples of how Hulsman and van der Vloodt's (2015) five specificity categories were applied

Four measures of feedback quality for each group were derived from the coded comments. First, I counted the number of *feedback units* students had generated during the peer feedback process, in which each reference to one of Hulsman and van der Vloodt's five categories counted as one feedback unit. Second, I gave each student a *specificity score* of 0 to 5, based on how many of the five categories they had addressed across all of the feedback posts they had made. I used this to calculate a mean specificity score for the group as a whole. Third, I assigned each *post* a *specificity rating*, again from 0 to 5, to reflect the number of feedback categories it addressed. This generated an average score per student and a mean specificity rating per post for the group. Lastly, I scored each student on *specificity balance*, which measured the variety of feedback categories that student had used across all posts. This was calculated by first counting the number of times each category had been



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addressed, and then dividing the standard deviation for the student by the average. This generated a mean specificity balance for the group. The closer this number was to zero, the more balanced was the group's feedback overall. Examples of students' comments and assigned codes are shown in Table 4.3.

One final measure, *word count*, was used to analyse how students used the tool. It was felt that students who used the time-stamp function to write contextualised comments would be more likely to write a greater number of shorter posts, with fewer *words per comment*, whereas those who wrote summary comments would write a smaller number of long posts, with more words per comment.

Each student's system data was analysed to generate measures of the time and effort spent giving and receiving peer feedback. To measure the time and effort students spent *giving* feedback, I calculated the number of peer videos *viewed*, the number of individual peer video *views* and the number of peer video *minutes watched*. This would indicate, on the one hand, how far students had met the minimum requirement of peers and, on the other, how thoroughly they had engaged in the process. In terms of *receiving* peer feedback, I calculated how many times each student had watched their own video, if at all, and how many minutes of their own video they had watched. This would indicate the extent to which students had engaged with the feedback they received.

Together, this analysis addresses my first research question: How does the design and implementation of video-annotated peer feedback activities to develop presentation skills *re-mediate* culturally entrenched activity systems? It also addresses the second: What contradictions are there in the design and implementation of video-annotated peer feedback activities?

Lastly, data from the post-implementation interview and survey was coded for *consolidation and generalisation*. This final stage of the expansive learning cycle was analysed in two parts. *Consolidation* is addressed in the closing section of each intervention report, with the focus on participants' plans for how

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the innovation might become embedded in subsequent iterations of the module, provided that contradictions identified in the report are overcome.

*Generalisation* is addressed in the final part of Chapter 5, the *cross-intervention analysis*. Here, common themes from the three interventions are identified and analysed, to investigate how the innovation might spread to other activity systems within PolyU. Together, this answers my third research question: How can contradictions in the design and implementation of video-annotated peer feedback tasks be overcome in future versions of the activities, in practice by practitioners?

#### **4.8 Ethical considerations**

I received ethics approval from the Lancaster FASS-LUMS Ethics Committee on 15 February 2022. I designed and conducted my research in accordance with the University's Research Ethics and Research Governance Code of Practice: upholding moral principles, protecting participants' rights, and seeking to contribute to the community in which it was situated. To maintain these standards, I ensured that all potential participants were informed of the purpose of the research, the design of the study and their rights as research participants. I met each of the instructors I had invited to take part, and once they had agreed to participate I visited their classes to share project information with their students. To support this, I created participant information sheets and consent forms. These assured instructors and students that they could voluntarily leave the study and their data would be anonymised. I also took care to store all interview recordings and transcripts, survey data, and video annotation and system data on an encrypted device. When using screenshots of student videos and annotations to illustrate my findings, I ensured participants' anonymity by blurring their faces and hiding names.

Two ethical dilemmas I had were related to imbalances of power: between instructors and students in each intervention and between the different instructors in Interventions 1 and 3. In completing the surveys, students were reassured by the voluntary, anonymised nature of the research instruments. I also emphasised that the survey questions were in no way asking them to

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evaluate the instructors' performance, and the focus was on their own expectations and experiences of using the video annotation tool. In Intervention 1, T1 was the module director, while T2 was an educational developer, seeking to gain experience in teaching the course. In Intervention 3, T4, T5 and T6 were each senior members of the English Language Centre, whereas T7 was a part-time lecturer who had recently joined. I was therefore concerned that T2 and T7 might not speak openly in interviews about the use of video-annotated peer feedback in each module, for fear of appearing critical of a senior colleague. To navigate this, I assured instructors that their recordings and transcripts would not be shared with colleagues, and invited each interviewee to review the transcript before I analysed it for inclusion in the report. I also made sure that the questions focused on students' use of the tool and did not ask instructors to compare their approaches with those of their colleagues.

#### **4.9 Trustworthiness and limitations of research design**

Before moving on to present my findings in Chapter 5, it is important to reflect on the trustworthiness of my research design and acknowledge several limitations at the project design stage. I discuss other limitations of my work overall in the Conclusion chapter in section 7.4.

To ensure trustworthiness in my project, I sought to adhere to Guba's four principles of *credibility*, *transferability*, *dependability* and *confirmability* (cited in Shenton, 2004). I discuss each of these in turn, in relation to my study. To maximise *credibility*, I was able to use my *insiderness* as an educational developer to achieve familiarity with the culture of both the institution and each participating module, establishing trust with participants in each intervention. In my use of interviews, surveys, and annotation and system data, I felt confident that I had selected research methods that were appropriate, well recognised and used in earlier studies I had analysed. By engaging with both students and instructors in a variety of higher education contexts, using these data collection methods, I succeeded in achieving triangulation. Using semi-structured interviews enabled me to use iterative questioning when collecting data from instructors. Through sharing the research data with colleagues I had worked

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with on the wider institutional project, I ensured considerable peer scrutiny and involved these colleagues in member-checking not only the data I had collected but also my interpretations of it.

I sought to maximise *transferability* through the provision of background data to establish the context of the whole study and each intervention, to enable comparisons to be drawn across the interventions and with findings from subsequent research, while acknowledging that my findings are contextualised and not intended to be generalisable. I believe that the in-depth methodological description I provide in this chapter not only allows this study to be repeated in a similar context, promoting *dependability*, but also ensures *confirmability*, as it permits the integrity of my findings to be scrutinised. My widespread use of diagrams and tables demonstrates an ‘audit trail’ (Shenton, 2004, p. 72). In the previous chapter, I am open about the beliefs and assumptions that underpin my research. Lastly, I recognise the shortcomings in my study’s methods and their potential effects, to which I now turn.

One shortcoming is that while I was attempting to engage instructors and students in questioning and analysing their historical activity systems through interviews and surveys, I was aware that the processes of modelling and examination might not take place via these research instruments. It was possible that instructors would think carefully about the design and implementation of video-annotated peer feedback before the first interview, developing and ‘examining’ their own conceptual models without consciously engaging in expansive learning. Rather than being an instrument for me to guide them through these processes, the interview might simply be an opportunity to learn about a model that had already been developed. I was also aware that other instructors might not be able to model and examine new activity systems immediately after questioning and analysing their current practice, during the same interview. Given that some of them might require more time and input from me in order to achieve this, I realised that their agency might be limited.

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I was conscious that students would not have the opportunity to model or examine a new activity system. For them, these processes would be limited to responding to survey questions about the potential benefits and limitations of tool-mediated peer feedback. Their responses would help me analyse the historical and planned future activity systems in each intervention, but without agency or control over the future system. Here, a further limitation was that the response rate, particularly in *Innovations in Learning and Teaching for Healthcare Education*, might be too low to generate a clear picture of students' experiences, either historically or during implementation of the new model.

My research design also has potential weaknesses when it comes to analysing participants' implementation of each new activity system. I realised that it would be challenging to draw precise comparisons between re-mediated and historical systems. While I was aiming to collect objective annotation and system data to provide evidence of students' engagement in tool-mediated peer feedback, I was aware that I would be unable to collect equivalent data from the historical activity system. Instead, comparisons would need to be based on participants' perceptions of the historical system. There are considerable limitations associated with the use of system data. For example, if a student opens and closes a video without viewing the contents, the system records this as one 'view'. I was also aware that the number of minutes watched should be treated with caution, since this only measures how much of a video is played. It does not measure the time students spend analysing its contents and writing, reading or responding to feedback.

I felt confident about instructors' and students' ability to engage in process reflection. However, I was less sure about the scope for consolidation and generalisation within the same survey or interview. I was aware that embedding stable forms of new practices might take time, and that these research instruments would, at best, gather participants' initial thoughts around this final stage of the expansive learning cycle.

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## **4.10 Conclusion**

In this chapter, I have set out my formative intervention research design and explained its overall logic. I have outlined the site and context of the research, described the participants and setting, and reflected on my own role as the researcher-interventionist. I have detailed the research instruments, data collection methods, procedure, and my approach to analysing the data. I have also discussed important ethical considerations. Lastly, I have addressed the trustworthiness and potential limitations of my research design.

In the next chapter, I report each intervention in turn. I then carry out a cross-intervention analysis to highlight points of commonality and difference.

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## **Chapter 5: Findings**

### **5.1 Introduction**

In this chapter, I report the findings of each intervention longitudinally, in turn. I trace the expansive learning process and show how the process worked. In doing so, I reveal how students' use of the video annotation tool re-mediated peer feedback practices, in order to highlight sociocultural considerations. The structure of each report is signposted in its introduction section.

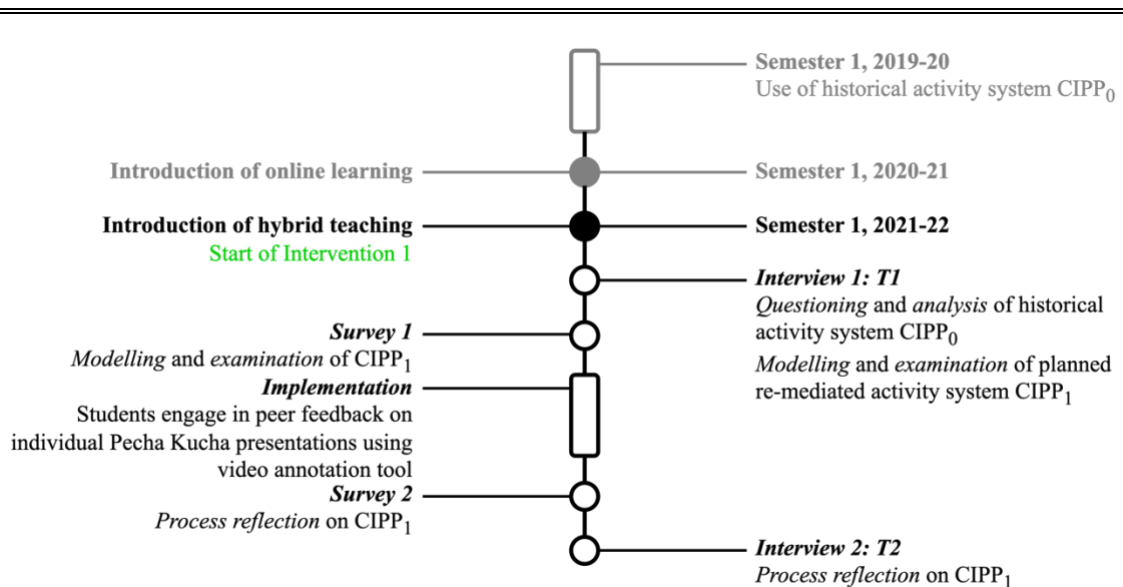
In section 5.5, I conclude the chapter, using a cross-intervention analysis to illuminate points of commonality and difference.

### **5.2 Intervention 1: Postgraduate health education module**

#### **5.2.1 Introduction**

Students taking this module, which forms part of PolyU's Master of Science in Nursing, are all in-service healthcare professionals. They are expected to carry out independent research into an innovation in learning and teaching and share their findings in a Pecha Kucha presentation. In the previous iteration of the course in 2019-20, students completed the task in person, asking and answering questions about their research in real time. In the re-mediated activity in Semester 1, 2021-22, students used the video annotation tool to give feedback on their peers' presentations online, outside class time.

In this section I present the questioning and analysis (5.2.2) of the historical activity system of creating an individual Pecha Kucha presentation (CIPP<sub>0</sub>), followed by modelling and examination (5.2.3) of the re-mediated system (CIPP<sub>1</sub>). I then analyse students' experiences of CIPP<sub>1</sub> implementation (5.2.4), identifying how their practices have been re-mediated by the introduction of the video annotation tool. The report concludes with student and teacher reflections on the process and suggestions on how CIPP<sub>1</sub> could be further enhanced (5.2.5). Figure 5.1 is a timeline of expansive learning actions carried out.

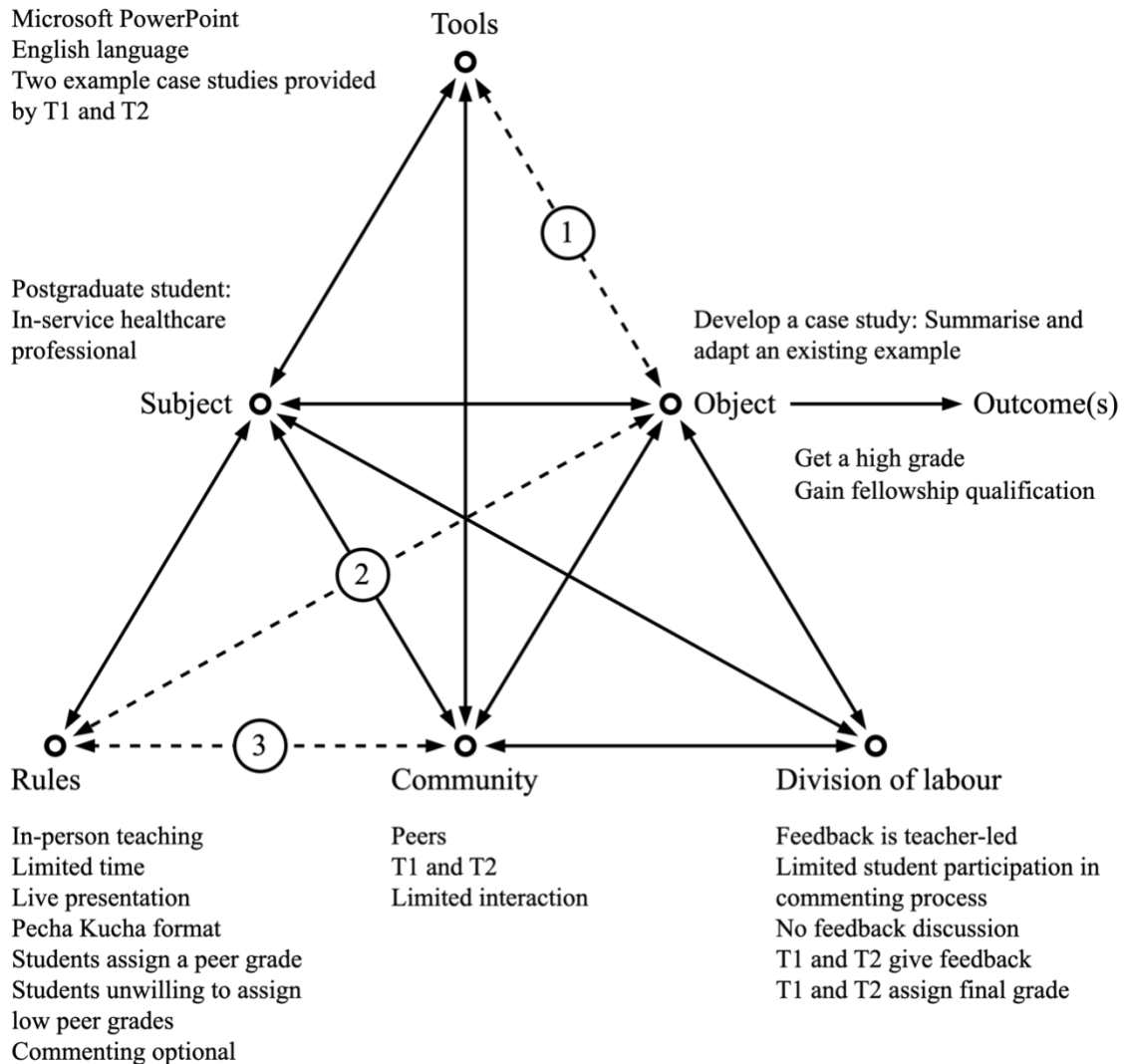


**Fig. 5.1.** Timeline showing major institutional events, key points in Intervention 1, and expansive learning actions that took place during the intervention.

### 5.2.2 Questioning and analysis

In our first interview in Semester 1, 2021-22, T1 reflected on the process of questioning which had led him to introduce the video annotation tool. This made it possible for me to analyse the historical activity system, CIPP<sub>0</sub>, and identify three contradictions. I will refer to these as *limited opportunities for student innovation*, *instrumental student attitudes to peer assessment*, and *unexpected time pressures for teachers and students*. These are shown in Figure 5.2.





**Fig. 5.2.** Representation of CIPP<sub>0</sub>, the historical activity system. Three contradictions are shown:

1. Limited opportunities for student innovation: Secondary contradiction between *tools* and *object*,
2. Instrumental attitudes to peer assessment: Secondary contradiction between *rules* and *object*.
3. Unexpected time pressures for teachers and students: Secondary contradiction between *community* and *rules*

### 5.2.2.1 Limited opportunities for student innovation

T1 explained he had designed the course to support healthcare practitioners in achieving a fellowship qualification from the Hong Kong Academy of Nursing, which would qualify them to offer educational training and programmes to patients or colleagues. The course therefore followed advanced clinical

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standards set by the Academy. In designing the course, T1 consciously adopted a student-centred approach:

We aim to promote student-centred education. We also want to be good role models, so we allow them their say in the design. (T1, Interview 1)

Specifically, the aim of the course had been to teach students innovative learning and teaching pedagogy, and how to develop teaching and learning approaches for their workplace that reflect educational needs. It emphasised peer learning:

They're sharing their knowledge, not just acquiring knowledge from us. In the lectures, we only talk very briefly about the key concepts. It's up to students to tailor these to their own needs, focus on what they're required to learn. (T1, Interview 1)

The mechanism for this, and a core component of assessment, was an individual case study of educational innovation in students' practice context. Critical to its development was a presentation in Pecha Kucha format and peer feedback on this presentation.

T1 explained that when he first delivered the course in 2019-20, he and his teaching colleague had provided examples to support students in developing their own case studies. However, this had not had the desired outcome:

Our feeling was that students were just following our cases, not making a lot of changes, so basically copying. (T1, Interview 1)

Students were therefore not exposed to a wide variety of educational innovations, and did not have the resources or opportunities to design their own. This was a *secondary* contradiction between the *object*, developing their own case study, and *tools*, the example case studies provided.

#### **5.2.2.2 Instrumental student attitudes to peer assessment**

One key form of questioning that T1 reported in the first interview addressed the issue of students' instrumental attitude to grading when engaging in historical approaches to peer assessment. When asked to award a score and write feedback on a peer assessment form, immediately after watching their

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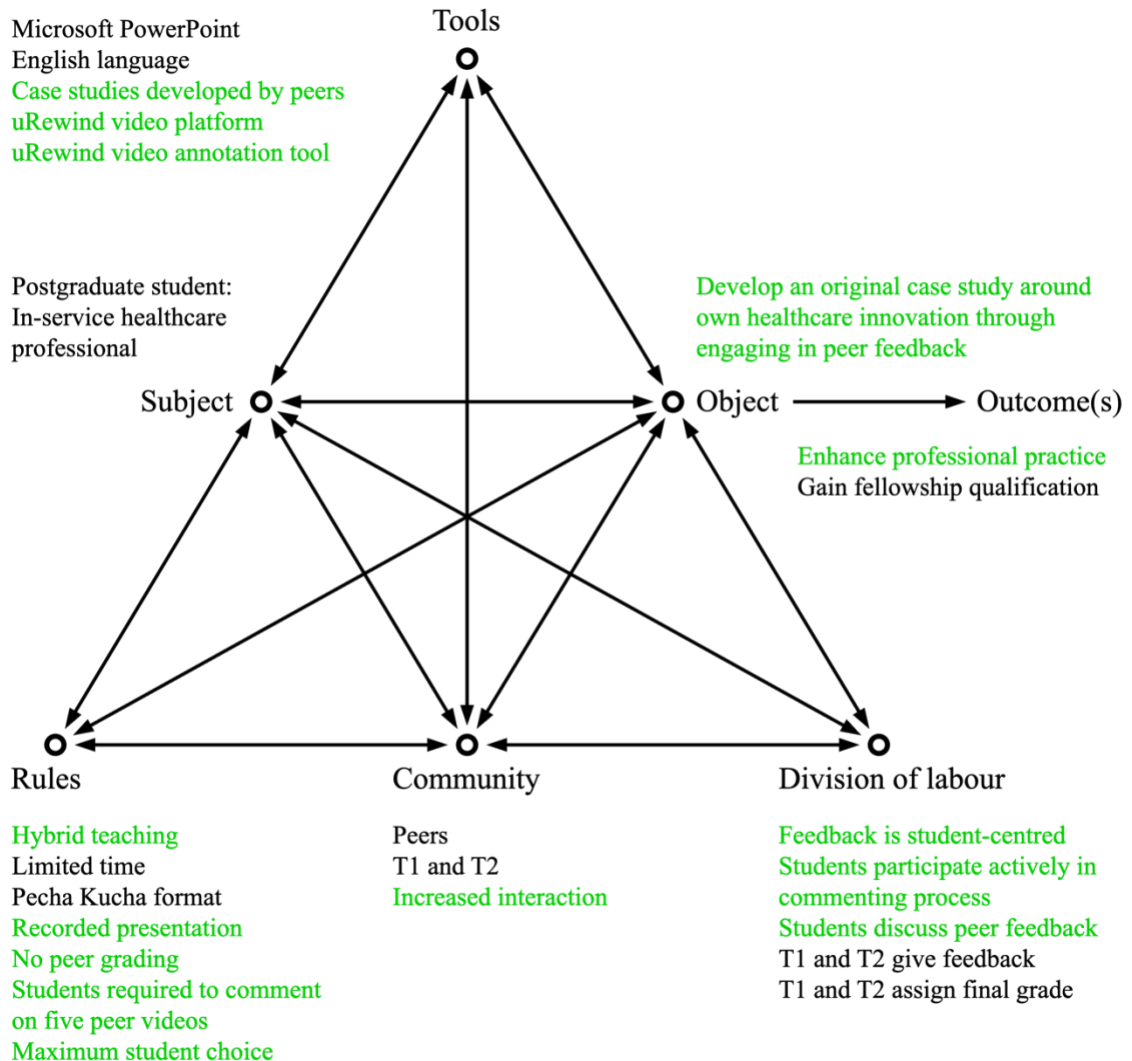
classmates present live, the 2019-20 cohort ‘focused on the score, rather than commenting... and the scores tended to be high, because everyone wanted to get a high score’. It was a ‘box-ticking exercise’, and few students commented. Most students were not motivated to critically evaluate their peers’ performance. Overall, the process was perceived as inefficient and did not achieve the outcomes T1 desired. This was a *secondary* contradiction between grading *rules* and the *object*.

### **5.2.2.3 Unexpected time pressures for teachers and students**

One final practice-problem was the additional time pressure faced by T1 and his students. In 2019-20, fewer than 20 students had registered for the course, yet by the beginning of Semester 1, 2021-22, enrolment had reached 30. This made it impossible for each student to deliver a six-minute, 40-second presentation within one three-hour lesson. T1 had hoped to schedule presentations over two weeks, but the timing of a local festival made this unworkable. In addition, students had increased workload due to the pandemic and could not always attend class in person. There was, then, much less time available for traditional peer assessment. This created a *secondary* contradiction between *rules* and *community*.

### **5.2.3 Modelling and examination**

In our interview, T1 explained the process by which contradictions in the historical activity system of creating individual Pecha Kucha presentations, CIPP<sub>0</sub>, led him to construct the more culturally advanced system, CIPP<sub>1</sub>, where students’ activity was re-mediated by the video annotation tool and the object was expanded. My representation of the model is shown in Figure 5.3.



**Fig. 5.3.** Representation of CIPP<sub>1</sub>, the proposed activity system for Semester 1, 2021-22. Changes from CIPP<sub>0</sub> are in green.

### 5.2.3.1 Scaffolding original educational innovation

For T1, a critical change in CIPP<sub>1</sub> was the replacement of his former teaching colleague with T2, an educational developer and technology enhanced learning specialist. This enabled T1 to strengthen the digital learning component of the course, providing students with more exposure to innovative teaching and learning practices and opportunities to design their own tailored solutions, as opposed to using his ready-made examples. Students could then discuss their ideas with T1 and T2, before creating their presentations. The purpose of the presentation therefore changed from summarising an example case to developing an original educational innovation for the students' own context. It

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would, T1 hoped, foster deeper reflection among healthcare practitioners on the needs of their colleagues or clients, with peer feedback scaffolding this reflection and development. In Activity Theory terms, then, this would overcome the *secondary* contradiction between *tools* and *object*.

### **5.2.3.2 Creating intrinsic motivation and more meaningful forms of peer assessment**

Giving students the resources and guidance to design original, context-specific innovations helped cultivate intrinsic motivation or, in Activity Theory terms, enabled them to focus on the *use value* of the object rather than its *exchange value*. In this way, they would overcome the *secondary* contradiction between *rules* and *object*.

T1 reflected on the differences between his current students and the 2019-20 cohort:

I don't see them as very grade-oriented. But in class they are very engaged. They think actively about their own case studies, and they are active in discussions. (T1, Interview 1)

Intrinsic motivation was also the product of specific changes to the design of peer assessment. Instead of receiving a grade based on *the scores their peers had assigned*, students would be graded on *their participation in the feedback process*. Ten per cent of their overall grade would depend on their use of the annotation tool to comment on at least five peer presentations. Since the remaining marks would reflect the quality of their case studies and reflections, T1 felt the students would be more motivated than before to support peers in developing the case studies, particularly if the tick-box assessment form was replaced with comment-based feedback, given using the novel tool.

In examining the model, T1 was reluctant to provide further guidelines on peer assessment beyond the minimum number of videos. Students would be free to choose which peers they reviewed and which aspects of the peer presentations they commented on. They could write as much or as little feedback as they liked, in the format of multiple time-stamped comments or a single overall

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comment. No rubrics would be provided, since T1 associated their use with grade-oriented behaviour; he wanted to reduce the emphasis on marks and focus on participation. By experiencing formative assessment, students might be inspired to use it in their own case studies. This would provide further motivation to engage in peer feedback during the course.

T1 accepted that given the chance to decide who they commented on, some students could receive fewer comments than others. However, this would be mitigated by the in-class summary feedback and individual feedback he and T2 provided, once peer commenting had finished.

### **5.2.3.3 From synchronous to asynchronous peer assessment**

By using the asynchronous video annotation tool, rather than immediate, live feedback, T1 aimed to overcome the contradiction caused by the time pressures he and the students faced; between the *rules* and *community*. Rather than using two three-hour sessions to watch 30 Pecha Kucha presentations in real time, students would review five recorded presentations, commenting at times convenient for them. Students would have four weeks to do this:

I understand a lot of them have patients in hospital or they need to work. That's why we're giving them almost a month. It's more than enough time. (T1, Interview 1)

Providing additional time for students to complete the planned activity asynchronously would enable them to achieve an expanded object: engaging in peer review to develop case studies, instead of simply assigning a grade.

### **5.2.4 Implementation and process reflection**

Having *questioned* and *analysed* the historical system and *modelled* and *examined* the planned re-mediated activity system, CIPP<sub>1</sub>, this section uses Scanlon and Issroff's (2005) criteria to analyse the instructors and students' experiences of its *implementation*. Through *process reflection*, based on a second interview, this time with T2, and a student survey, it identifies how

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feedback practices were re-mediated through students' use of the annotation tool and highlights contradictions in the re-mediated system.

#### **5.2.4.1 Interactivity: How does the tool meet expectations about interactions between students and teachers and the division of responsibilities between students and teachers?**

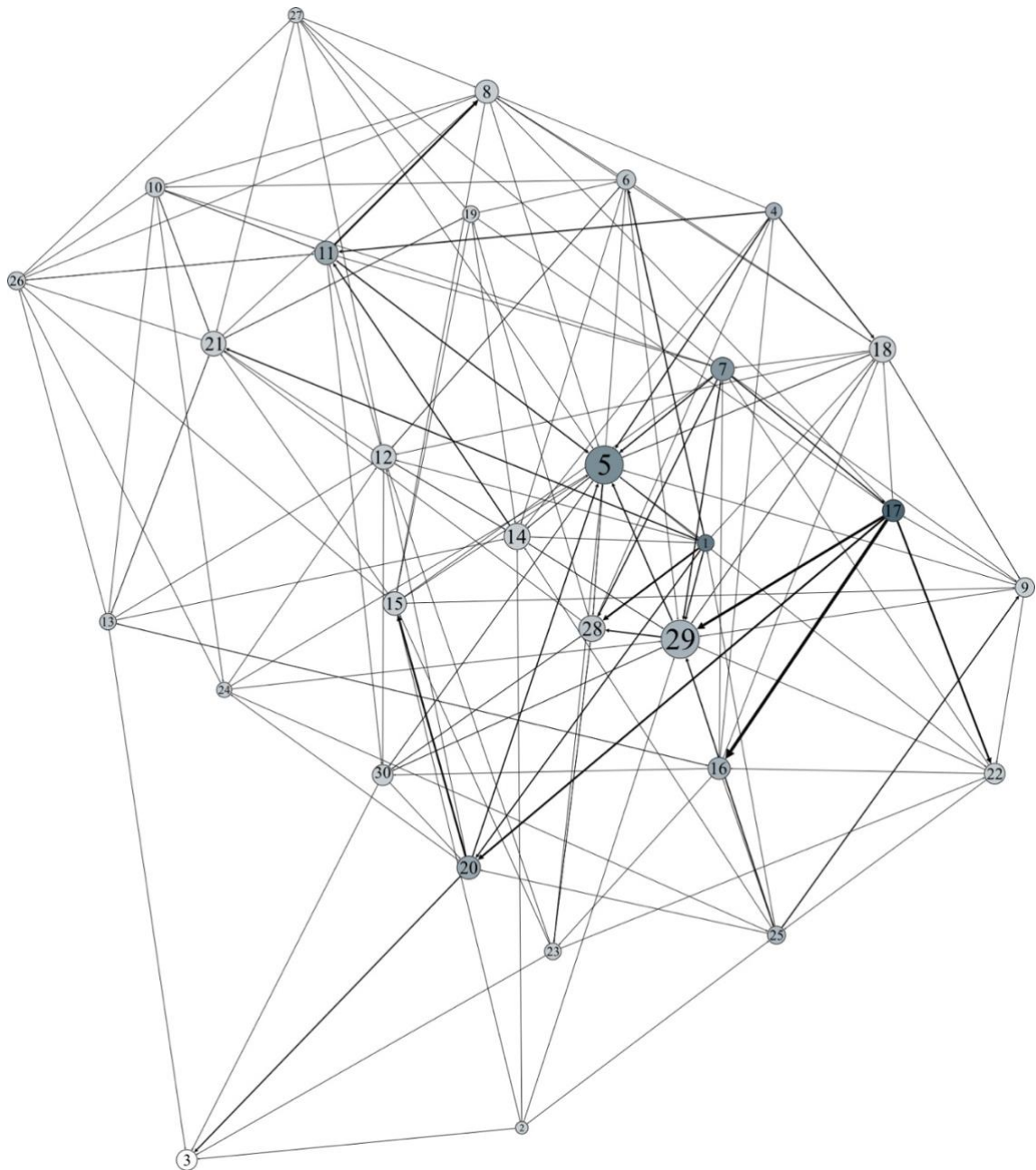
In implementing the model, expectations about interactions between students and teachers and the division of responsibilities were broadly met. In our second interview, T2 reported that all but one of the 30 students had achieved the minimum requirement of posting feedback comments on five peer videos within the allotted timeframe. System and student annotation data indicate that the 29 active students posted 200 feedback comments in total. Thirteen students added six or more comments, while four wrote 11 or more. All but one of the students received peer comments, with the number of comments received ranging from two to 19 ( $\sigma=4.36$ ). Table 5.1 summarises student commenting, while Figure 5.4 illustrates interactions among the group.

Students enrolled	30
Students who posted at least one comment	29 <sup>1</sup>
Total comments posted	200
Comments per active student	6.90
Total replies posted	50

**Table 5.1.** Overview of student commenting in Intervention 1

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<sup>1</sup>One student used the personal 'notes' tool in uRewind, rather than the discussion tool, to add feedback. This meant that their annotation data could not be captured and analysed in the same way alongside that of other members of the group.



**Fig. 5.4.** Relationship map illustrating the interactions between all students numbered 1 to 30. Larger circles show that more comments were received by the student, whereas darker colours indicate that more comments were given by the student. Thicker lines are used to highlight where more comments were given to the student.

T2 attributed much of this interactivity to the cognitive and social-affective support he and T1 had provided:

In class we emphasised discussion. Before their video discussions, students had had ample opportunities for in-class discussions, whether online or face-to-face. So, they would have known each other and been comfortable discussing their case studies with their peers. I believe this build-up, creating the right atmosphere, is important. (T2, Interview 2)



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Rather than being a self-contained online task, the peer review process was an integrated, 'hybrid' activity that bridged online and in-person learning environments. It was built on the strong learning community T1 and T2 had established at the start of the course, in which students felt supported in sharing what they intended to present, asking questions and raising concerns about the annotation tool or course content while presenting and reviewing and, later, discussing peer feedback they had exchanged. The process was therefore 'ongoing' (T2), not bounded by a specific timeframe or setting, and ensured students were comfortable posting.

For T2, specific affordances of the video annotation tool promoted greater interaction. Being able to post time-stamped comments rather than overall feedback not only invited *more* feedback, but it ensured students' comments were meaningful and actionable. This was reflected in the large number of replies students posted ( $n=50$ ), evidence of how the tool could 'open up' discussion (T2). It allowed students to question and challenge peer feedback they had received, or elaborate on comments they had made. These processes took place in class as well as in the online learning environment. In survey responses, the students also remarked on the 'very good asynchronous interactive learning' afforded by the tool, which enabled them to 'understand other presentations and provide thoughtful feedback, with more thinking time':

It helped me learn from others' strengths and integrate these with my own learning. It permitted more open discussion compared with face-to-face sharing. (Student comment, Survey 2)

Students felt comments and replies posted using the tool were 'easy to see', making it easy to join discussions and 'exchange knowledge and opinions', a process perceived as useful.

High levels of interactivity were also the product of the subjects' background. Their maturity and shared characteristics, as experienced, in-service, Hong Kong healthcare practitioners, meant that the students approached the activity expecting to interact through discussions around their professional practice, engaging in peer learning. This learning approach was perceived as motivating.

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T1 and T2 interacted with students individually, sharing feedback on their presentations with them using a form, which was sent by email. Feedback was agreed between T1 and T2 and accompanied by a score. It was felt that the teacher feedback document should be kept private. T2 felt that having access to students' recordings, time-stamped peer comments and in-class discussions provided them with more information on each student's presentation than would have been available using a traditional, in-person approach. It made their feedback more contextualised, detailed and objective.

Reflecting on the unequal distribution of comments and variations in the quality of students' feedback, T2 argued that these were inevitable, and not necessarily negative, outcomes of the decision to provide students with greater autonomy. The imbalance of comments did not adversely impact students, since feedback came from multiple sources:

We couldn't control how many comments students posted, but as instructors, we provided the same level of feedback on each student. (T2, Interview 2)

In relatively few cases, students commented on superficial aspects, such as minor deviations from the Pecha Kucha format. This led one student to reflect that 'not all comments helped me improve my assignment'. Students' divergent expectations of the nature and purpose of peer feedback, and the resulting impact on feedback quality, may be seen as a *secondary* contradiction between community and object.

#### **5.2.4.2 Efficiency: How can participants use the tool to achieve desired outcomes without wasting time or effort?**

T2 felt that the students had been able to use the annotation tool to achieve desired outcomes without wasting time or effort. Like T1, he was convinced that that lack of wasted time and effort had been regulated by the new assessment mechanism. Students were not motivated by the activity participation grade:

No matter how many comments they posted, students knew they'd get the same score, provided they met the minimum requirement. They didn't have to do it. Those who exceeded our requirements posted meaningful comments. There was

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no incentive to write lots of superficial comments; our assessment mechanism filtered them out. (T2, Interview 2)

Instead, this group of in-service healthcare professionals were perceived as intrinsically motivated by opportunities for peer discussion and learning using the tool:

They felt comments posted by peers could be useful, and then they also learned something from their peers' work. (T2, Interview 2)

For T2, the large number of replies posted by students in response to peer comments was evidence that they perceived the peer feedback to be of generally high quality, regardless of the exact quantity of comments received. Students were motivated to engage with it and respond.

T2 explained how students' motivation had been nurtured through purposeful assessment design:

Students needed to propose the topics, so there was a sense of ownership. The topics had to be relevant to their work as health professionals. (T2, Interview 2)

Each activity was strategically aligned, with the in-class discussions mentioned above helping students to develop initial ideas for their video presentation, and feedback on the presentation feeding into the final case study assignment:

The case study counted for 60% whereas the video presentation was only 20%. The presentation was a chance for students to learn from each other, so it could prepare them for the individual assignment. We wanted to give them freedom to make mistakes and propose innovative ideas, and for the remaining 60% they would still have the opportunity to change it. It was formative. (T2, Interview 2)

In addition to the 10 per cent participation grade for engaging in peer feedback, students were also given up to ten marks for their contributions to in-class discussions. While this was designed as an added source of motivation, there was also an implicit understanding that not engaging in these formative activities would negatively affect students' final assignment performance, since their ideas would not be sufficiently developed.

Many students perceived the tool as efficient. Its asynchronicity 'increased flexibility', while being able to post time-stamped comments was 'convenient':

Leaving comments at a specific point is good. Being able to stop at the slides where I want to comment helps me be clearer when reviewing others.  
(Student comment, Survey 2)

Student annotation data (Table 5.2) shows that the 29 students who engaged in peer feedback wrote an average of 215 words each ( $\sigma=108$ ). To do this, students viewed their peers' videos an average of 22.4 times ( $\sigma=17.1$ ), watching an average of 47.0 minutes of peer video in total ( $\sigma=31.2$ ). Given that students posted an average of 6.90 comments each within this time ( $\sigma=3.19$ ), this process can be viewed as efficient when compared to the historical system, in which students watched several hours of presentations without commenting.

<b><i>Peer commenting: word count</i></b>	
Total words posted	6245
Mean number of words posted	215
<b><i>Specificity of peer comments posted</i></b>	
Total units of specific feedback posted	547
Mean specificity score across all posts	4.31
Mean specificity rating per post	2.16
Mean specificity balance	0.72
<b><i>Student viewing behaviour: peer video</i></b>	
Students who viewed at least one video	30
Mean views by active commenters	22.4
Mean number of minutes watched	47.0
<b><i>Student viewing behaviour: own video</i></b>	
Students who viewed own video	25
Mean views by all viewers	7.16
Mean number of minutes watched	8.42

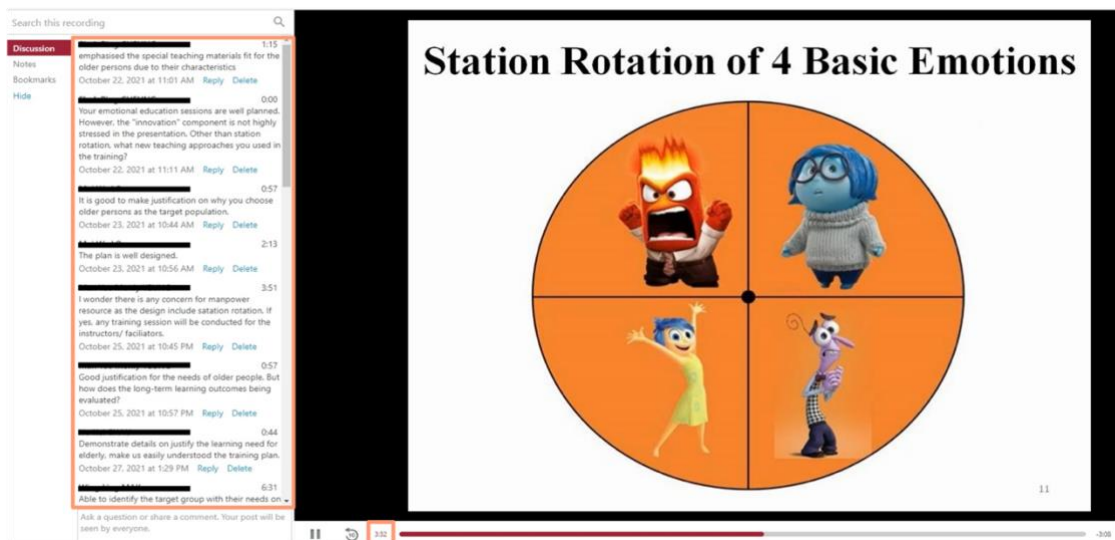
**Table 5.2.** Length and specificity of student comments and student viewing behaviour using the video annotation tool in Intervention 1

Qualitative analysis of annotations suggests that the students who were active in giving peer feedback were also highly specific in their comments. In 200

comments, the students included 547 specific units of feedback, achieving an average specificity score of 4.31 across all posts and an average specificity rating of 2.16 per post. Feedback was highly balanced between the specificity categories, achieving a mean balance score of 0.72. Given the students' self-reported desired outcome to develop their case studies through analysing and commenting on peers' videos, this can be seen as efficient use of the tool.

The tool was also efficient in helping students access and interpret any feedback they received. In an average of just 8.42 minutes, over an average of 7.16 views, the 25 students who were motivated to do so read their peers' comments on their video. Bearing in mind the specificity of the feedback comments, this represents highly efficient use of students' time. Rather than reviewing their video in one sitting, students reviewed it multiple times, focusing on different sections where peers had commented.

Students also made efficient use of the time-stamp function, using it to write relatively short, contextualised comments, addressing specific aspects of their peers' presentations. The large number of replies, views and minutes spent watching their own recordings suggests that students found the contextualised comments efficient and useful. Figure 5.5 shows an example of contextualised time-stamped commenting.



**Fig. 5.5.** Screenshot from the video platform showing a student's video on the right and a series of short time-stamped student comments on the left.

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**5.2.4.3 Serendipity: How do subjects' expectations affect perceptions of any accidental discoveries made using the tool, and how might this influence the dynamics of control?**

Despite having attended the in-class briefing session with hands-on practice in using the tool, several students expressed surprise at how the time-stamp function facilitated meaningful interaction with peers and the subject content. This discovery made these students more willing to participate in a feedback process which had traditionally been instructor-led.

T2 was pleased to discover that 13 students had exceeded the minimum requirement of posting at least one feedback comment on five peer videos, and that the overall quality of students' posts had motivated many students to reply and engage in discussions, without being asked.

It was bi-directional communication instead of one-way communication. It exceeded what we expected. (T2, Interview 2)

It was also serendipitous that many students were willing to spend class time discussing feedback they had given and received, often expanding on comments posted:

They would add to their feedback and discuss it with particular students, so they were more aware of the direction of their work and what the problems were. I could see the value of this process that extended from the online platform to the classroom. (T2, Interview 2)

In 'opening up' the discussion, the tool altered the dynamics of control. Feedback was transformed from something unidirectional, *done to* students by peers, into a dialogue.

Further analysis of the annotation data indicates that a majority of students ( $n=22$ ) were willing to provide affective support to their peers through the use of social language. Seventy-five of the 200 feedback comments included emoticons or messages acknowledging students' efforts and encouraging them in the development of their case studies. This was spontaneous, and wholly

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unplanned by T1 and T2. It is likely that this contributed to the sense of community and dialogue.

System data analysis also reveals that students tended to watch a large number of peer videos ( $\bar{x}= 11.3$ ,  $\sigma=5.44$ ) before deciding which ones to comment on. As T2 noted, assigning videos for each student to review might have limited them; this freer approach enabled students to make purposeful choices, reviewing cases that interested them or where they felt qualified to comment.

#### **5.2.4.4 Cost: How do perceived costs of using the tool change the rules of practice?**

T1's historical approach to peer feedback, CIPP<sub>0</sub>, had involved students presenting and providing feedback live, in-person, during lecture time. By requiring them to create a video presentation and engage in peer feedback *outside* class time, the more culturally advanced activity, CIPP<sub>1</sub>, imposed a cost in terms of students' time. As one student reflected:

It's quite time-consuming; you keep trying to record a perfect video. (Survey 1)

During the activity, students viewed an average of 54 minutes of video ( $\sigma=37.1$ ) created by themselves and their peers, with many watching over two hours of content. Given that these figures do not account for time spent thinking or writing comments while the video was paused, it is possible that some students spent significantly more than two hours on the activity. However, the data indicates that many students were able to achieve the minimum requirement of five comments without incurring a significant time cost. Six participants completed the activity in less than 30 minutes of viewing. For those who contributed more posts and replies, spending longer using the tool was an active choice. It suggests they willingly devoted more time to the activity, convinced that this cost would be outweighed by the benefits of their interactions using the tool.

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For all students, the cost of recording and reviewing presentation videos outside class time ensured that two three-hour sessions could be freed up for interaction, feedback and discussion. Instead of passively watching 29 peer presentations in succession, the time cost of the activity enabled them to explore their case studies in depth and engage in active peer learning.

T1 and T2 also incurred time costs as part of CIPP<sub>1</sub>. Rather than providing brief oral feedback following each live presentation, as in the historical approach, the instructors needed to dedicate considerable time to providing written feedback, particularly if they disagreed over the grade.

Some of this 'cost' was offset by the instructors' decision not to allow peer comments to influence their grading, which removed the need for them read through students' posts. This also eliminated a potential social cost for students. It is possible that if students had felt their comments could impact instructors' grades, they might have been less willing to provide honest feedback, as had been the case in the historical activity system. By encouraging more open discussion, this change in the rules expanded the object.

#### **5.2.4.5 Failure: How do unforeseen problems with the tool affect subjects, the community, the rules of engagement or the division of labour?**

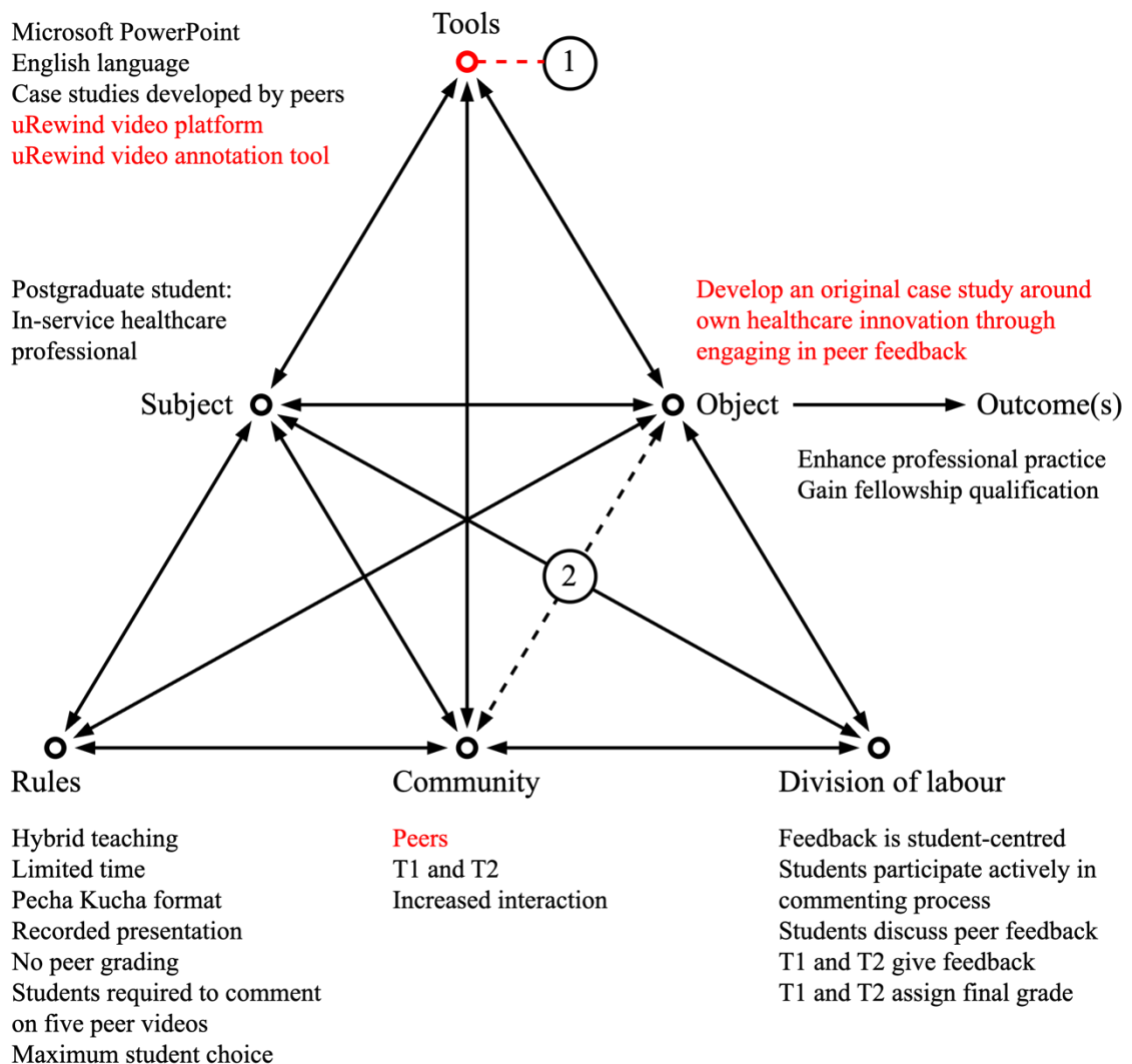
In what was otherwise a successful intervention, there were few unforeseen problems with the tool itself. In the post-activity survey, students reported shortcomings in the design of the tool. First, it was suggested that it ought to allow users to post audio and video comments as well as text-based feedback. This might reflect students' preferences for discussing their time-stamped comments in class in real-time, and for including more social language and cues in their feedback. Second, and of greater concern, was the lack of notifications when peers had commented. This *primary* contradiction manifested itself in some students' tendency to review their own videos multiple times for short periods; it is likely that this was to check whether new feedback



had been added. It can also explain why five students did not revisit their own video to read peers' comments. Far from being unmotivated to read them, they may simply have been unaware that anyone had commented.

### 5.2.5 Consolidation

Exploring the contradictions inherent in CIPP<sub>1</sub> makes it possible to plan how the outcomes of the intervention may be consolidated into future peer feedback practices in the module, provided these contradictions, numbered 1-2 in Figure 5.6, are resolved.



**Fig. 5.6.** Representation of two key contradictions inherent in CIPP<sub>1</sub>:

1. Shortcomings of the tool: Primary contradictions within the *tool*;
2. Students had divergent expectations of nature and purpose of peer feedback: Secondary contradiction between *community* and *object*.

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### **5.2.5.1 Investigate or overcome the shortcomings of the tool**

It has not yet been possible to address the primary contradiction (1) in the tool, the lack of a notification function. In July 2021, Panopto released an update which allows users to choose to be notified if another user comments on their video. However, at the time of this research, this feature had not been enabled at Hong Kong PolyU. Video and audio comments are not currently planned. Nevertheless, this intervention suggests that motivated students should be able to supplement text-based communication using the tool with in-class discussions, if they seek out opportunities to do so. In this way, shortcomings of the tool can be mitigated if a strong community is cultivated.

### **5.2.5.2 Develop cognitive supports to further enhance student engagement**

Overall, the annotation data supported the instructors' decision not to provide this group of in-service healthcare professionals with a rubric. Comments were generally highly specific, constructive and contextualised, and the absence of rules or restrictions may have motivated students to exceed expectations around both quantity and quality. Nevertheless, T2 did feel that there might be a role for further cognitive supports to aid students who were less skilled in commenting, and thereby address the secondary contradiction between community and object (2):

If you're serious about the feedback process, you need to emphasise it. Examples of good comments might help, or guidelines: 'Don't focus on length, focus on content.' (T2, Interview 2)

Other suggestions included the use of sample or exemplar videos. These could not only show students the expected standard, but could also be used to provide students with opportunities to practise commenting using the tool. In supporting students with the feedback process and establishing clear expectations, the object of the activity would be further expanded.

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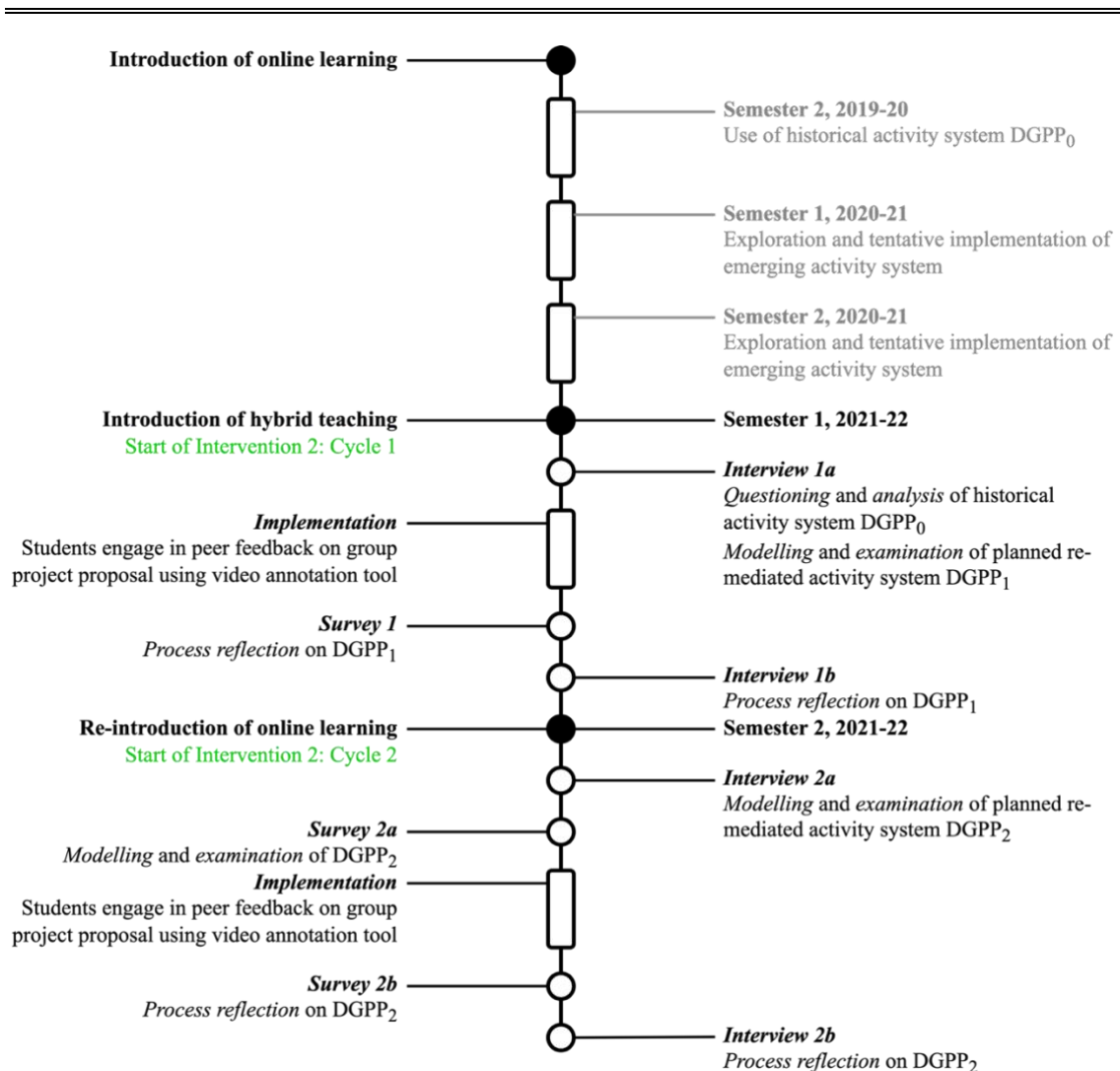
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## 5.3 Intervention 2: Undergraduate general education module

### 5.3.1 Introduction

This undergraduate module, taught to separate cohorts in Semesters 1 and 2, is a general education subject which ‘aims to nurture students’ intellectual capacity, global outlook, communication and critical thinking skills from a multidisciplinary perspective’ (PolyU, 2022). While the majority of students are Year 1, it is open to all undergraduate students from any subject background. Part of students’ final grade is based on a group project. Students are required to form groups and research a topic related to climate change. This involves developing a group project proposal and giving a group presentation.

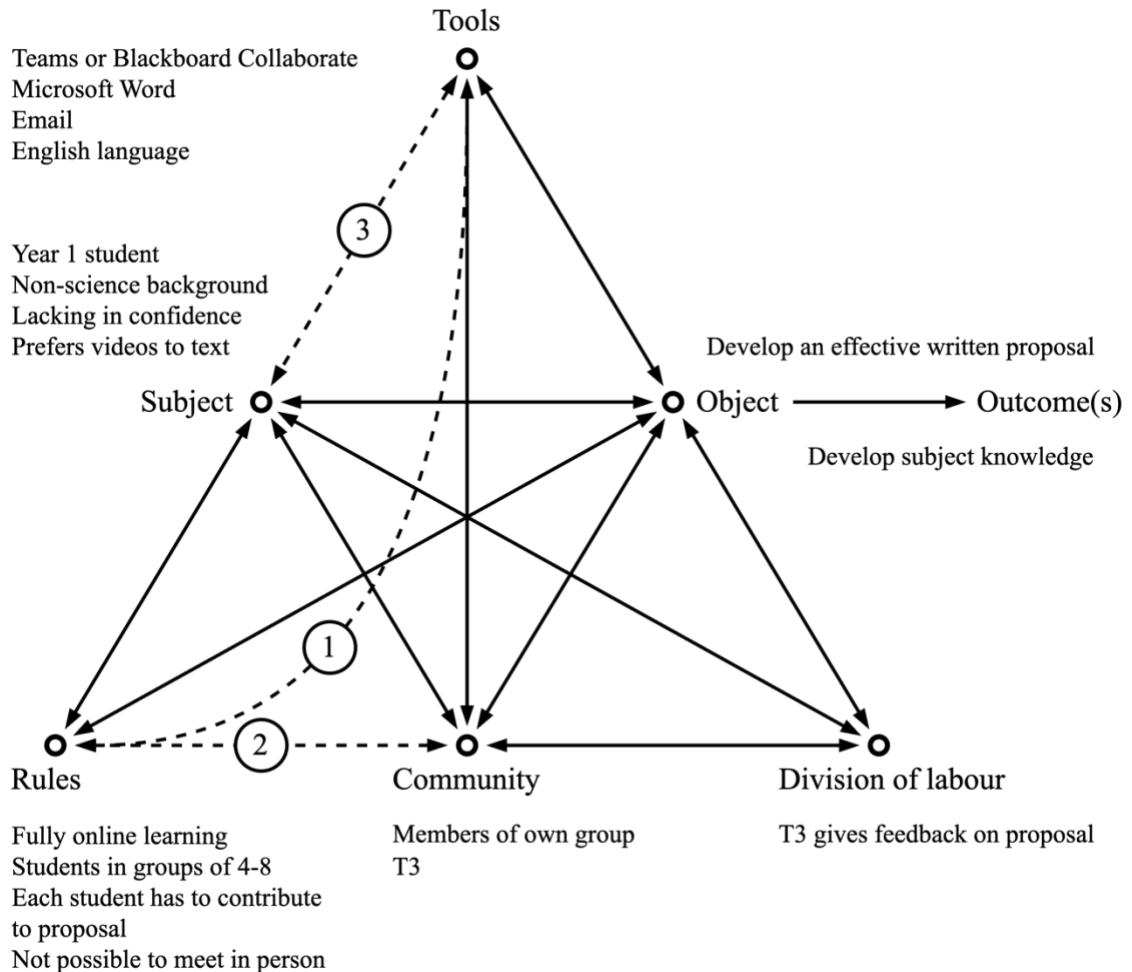
In this section, I present the questioning and analysis (5.3.2) of the historical activity system of developing a group project proposal (DGPP<sub>0</sub>), followed by modelling and examination (5.3.3) of the re-mediated system (DGPP<sub>1</sub>). I then analyse students’ experiences of DGPP<sub>1</sub> implementation (5.3.4), identifying how their practices have been re-mediated through their use of the video annotation tool. Students’ and the instructor’s (T3) reflections on the process and attempts to consolidate the new practice inform the second cycle of expansive learning. Through questioning and analysing DGPP<sub>1</sub>, a more culturally advanced activity system, DGPP<sub>2</sub>, emerges, which is then modelled and examined (5.3.5) and implemented (5.3.6). The intervention report concludes with student and instructor reflections on the process and suggestions for further enhancement of DGPP<sub>2</sub> (5.3.7). Figure 5.7 is a timeline of expansive learning actions carried out.



**Fig. 5.7.** Timeline showing major institutional events, key points in Intervention 2, and expansive learning actions that took place during both cycles of the intervention.

### 5.3.2 Cycle 1: Questioning and analysis

In our first interview in Semester 1, 2021-22, T3 reflected on the process of questioning which had led him to introduce the video annotation tool in Semester 1, 2020-21. This made it possible for me to analyse the historical activity system, DGPP<sub>0</sub>, and identify three contradictions, which I refer to as *monitoring participation and ‘free riders’, limits to ideas exchange and interaction online, and preference for videos over text*. These are shown below in Figure 5.8.



**Fig. 5.8.** Representation of DGPP<sub>0</sub>, the historical activity system. Three contradictions are shown:

1. Monitoring participation and 'free riders': Secondary contradiction between *tools* and *rules*;
2. Limits to ideas exchange and interaction online: Secondary contradiction between *community* and *rules*;
3. Preference for videos over text: Secondary contradiction between *subject* and *tools*

### 5.3.2.1 Monitoring participation and 'free riders'

One key form of questioning that T3 reported in the first interview addressed the issue of monitoring participation. Historically, students had worked in groups to develop a written proposal, using Microsoft Word, which they then submitted by email for teacher feedback. Though students were required to write down which parts of the proposal they had contributed to, it was not always clear whether all students had participated. Students frequently complained of 'free riders', feeling that certain group members were able to achieve a grade for

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their project proposal without having contributed. This was a *secondary* contradiction between the *tools* and *rules*.

### **5.3.2.2 Limits to ideas exchange and interaction online**

In our first interview, T3 explained that the group-based nature of the activity had originally been informed by the requirements of general education modules: teamwork, communication skills and lifelong learning. Exchanging ideas with peers could be of particular benefit to his students, given the heterogeneity of their subject backgrounds and lack of scientific knowledge.

In early 2020, T3 perceived that Covid and the institutional shift to online learning presented challenges to established practices around students' development of the group proposal. It became impossible for students to meet physically to brainstorm and exchange ideas around their topics, and challenging for students to establish relationships with group members. For T3, this compounded the challenges that many Year 1 students were already likely to be experiencing with group-based research: unfamiliarity with content, difficulty in finding relevant information and supporting evidence, and the difficulty of combining multiple independent parts into a coherent proposal.

In online environments, T3 found students to be much less interactive than in traditional classroom settings:

If I ask questions, only a few respond or they keep silent and wait for others to comment. In class they used to speak up, but online they just type in the chat.  
(T3, Interview 1a)

Even if students submitted their proposals in writing, they would still need to present their finished research projects to the whole class, and T3 feared this would prove challenging given the limited opportunities students had to practise with their group. In Activity Theory terms, there was a *secondary* contradiction between the *community* and *rules*.

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### 5.3.2.3 Preference for videos over text

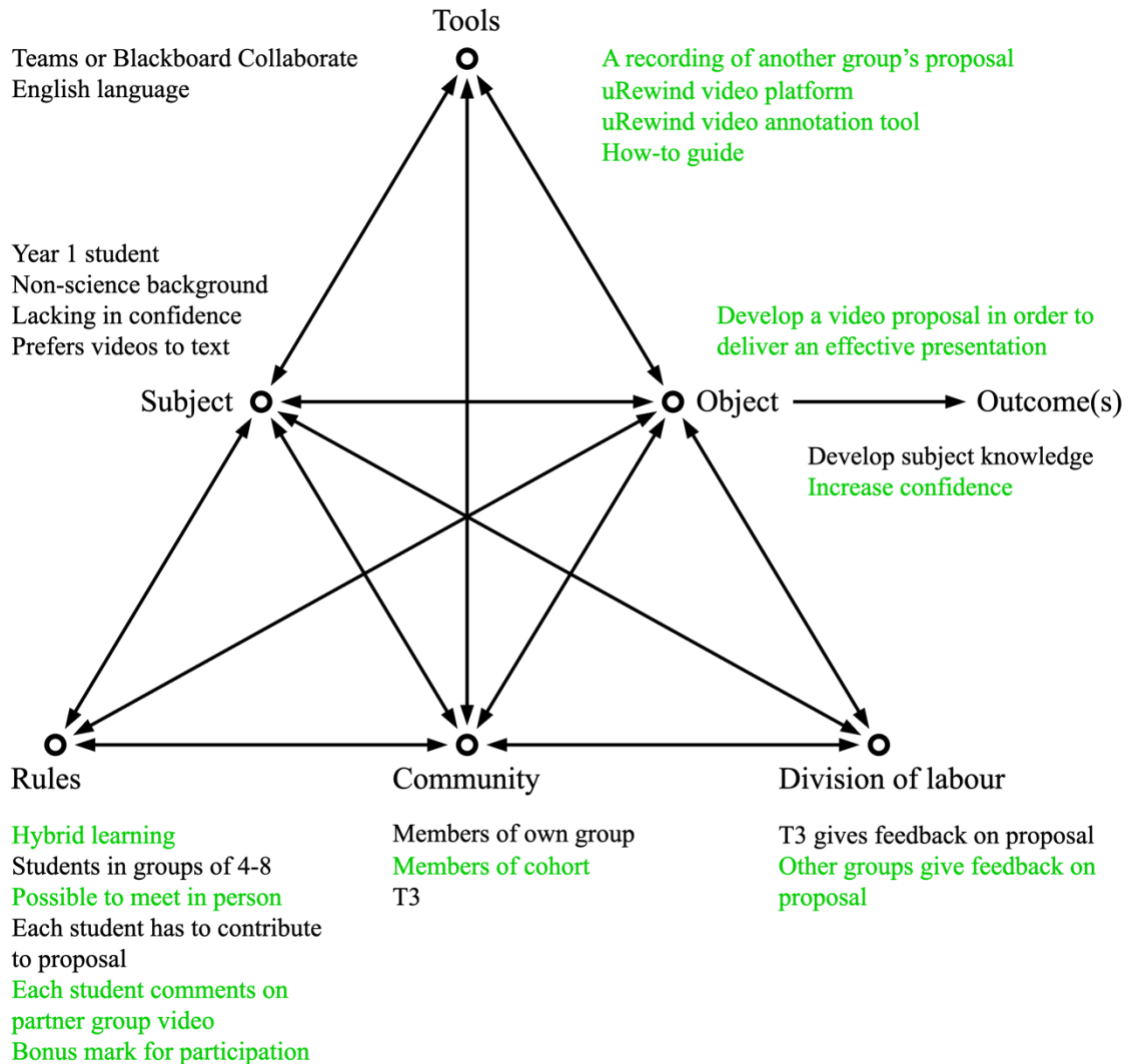
Recent cohorts seemed less engaged in text-based activities. As T3 reflected, students expected to not only acquire content but also co-create it through video:

It seems to me that this generation of students don't like reading text, and using discussion forums is boring. Video may have a stronger impact. (T3, Interview 1a)

There was, then, a *secondary* contradiction between the *subject* and the *tools* of the historical system.

### 5.3.3 Cycle 1: Modelling and examination, Semester 1, 2021-22

T3 outlined the process by which the contradictions in the historical activity system of developing group project proposals, DGPP<sub>0</sub>, led to his experimental, 'freestyle' use of a novel approach to the activity, incorporating peer feedback and the video annotation tool. This new, more advanced, activity system, DGPP<sub>1</sub>, emerged throughout Semesters 1 and 2, 2020-21, with T3 working alone. In Semester 1, 2021-22, the emergent DGPP<sub>1</sub> became the focus of modelling and examination in the first of two cycles of expansive learning, as part of the current formative intervention. This model is shown in Figure 5.9.



**Fig. 5.9.** Representation of DGPP<sub>1</sub>, the proposed activity system for Semester 1, 2021-22. Changes from DGPP<sub>0</sub> are in green.

### 5.3.3.1 Peer learning, proving participation and presentation practice

For T3, the use of video addressed multiple contradictions in DGPP<sub>0</sub>. Creating a video, rather than a text-based proposal, would require students to meet synchronously to exchange ideas in a video-conferencing platform. This would create opportunities for peer learning. It could also address the 'free rider' problem, by providing 'evidence they all participated' (T3). Lastly, in addressing preferences for video, it would give students additional practice in presenting in English online before their final presentation, boosting their confidence.



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### **5.3.3.2 Developing presentation skills and expanding subject knowledge**

The introduction of the annotation tool would, T3 hoped, develop students' presentation skills and expand their subject knowledge. If students shared their proposal with 15 peer groups, peer learning could take place at the level of the cohort, not only at group level. Peer learning could involve not just extending students' knowledge beyond foundation-level content covered in class; it could also allow students to observe diverse approaches to presentations. Historically, feedback had been instructor-led, but in DGPP<sub>1</sub>, students would also benefit from peer comments. In-video feedback could provide a mechanism for students to 'share their thinking'. Not only could this benefit their peers, but it could also provide T3 with further evidence of their learning. Lastly, students would be able to learn from his feedback on other groups, because unlike in DGPP<sub>0</sub>, where all feedback was stored in private emails, T3's comments would now be publicly available.

### **5.3.3.3 Hybrid teaching: more efficient online interaction and possible in-person interaction**

In Semester 1, 2021-22, PolyU introduced hybrid teaching. In contrast to 2020-21, students could meet in person to build relationships with group members, exchange ideas, and record video proposals. For T3, video-annotated peer feedback promised greater efficiency for all members of the learning community due to the ease of use he associated with the tool:

I thought students could make better use of time outside the lectures and tutorials; they can do it anywhere, anytime. I can do it more efficiently too. (T3, Interview 1a)

In a context where students displayed greater willingness than before to complain about additional learning tasks, it was especially important to T3 that peer feedback should be as efficient as possible. In designing the activity, then, he also took care to ensure that peer feedback was not viewed as a compulsory assignment, offering students a 'bonus' mark as an incentive for participation.

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He also made the decision to pair groups together, so Group 1 would give peer feedback on Group 2's proposal and vice versa. This was partly to minimise student workload by limiting the number of videos each student needed to watch and comment on, but also to address an issue encountered in his early experiments with the model in 2020-21: certain groups attracted more comments than others, while others received none.

#### **5.3.3.4 Limited cognitive scaffolding**

Recognising that students would not be familiar with the annotation tool, T3 created a simple how-to guide with screenshots. He also used 20 minutes of lecture time to give students hands-on practice in using the tool.

Other potential challenges were acknowledged, but not addressed before implementation. Though T3 accepted that Year 1 students had difficulty in 'understanding how a proposal can be good, bad or just average' and recognised the need to 'create examples for students to follow', such cognitive supports were not developed. Rubrics were not provided.

#### **5.3.4 Cycle 1: Implementation and process reflection, Semester 1, 2021-22**

Having *questioned* and *analysed* the historical system and *modelled* and *examined* the planned re-mediated activity system, DGPP<sub>1</sub>, the study uses Scanlon and Issroff's (2005) criteria to analyse T3 and the students' experiences of its *implementation*. Through *process reflection*, based on a second interview with T3 and a student survey, it identifies how feedback practices were re-mediated using the annotation tool and highlights contradictions in the re-mediated system.

##### **5.3.4.1 Interactivity: How does the tool meet expectations about interactions between students and teachers and the division of responsibilities between students and teachers?**

T3 commented on each video before his students commented. He explained:

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I felt it might give them ideas for what to write about. Most students are not from a science background. (T3, Interview 1b)

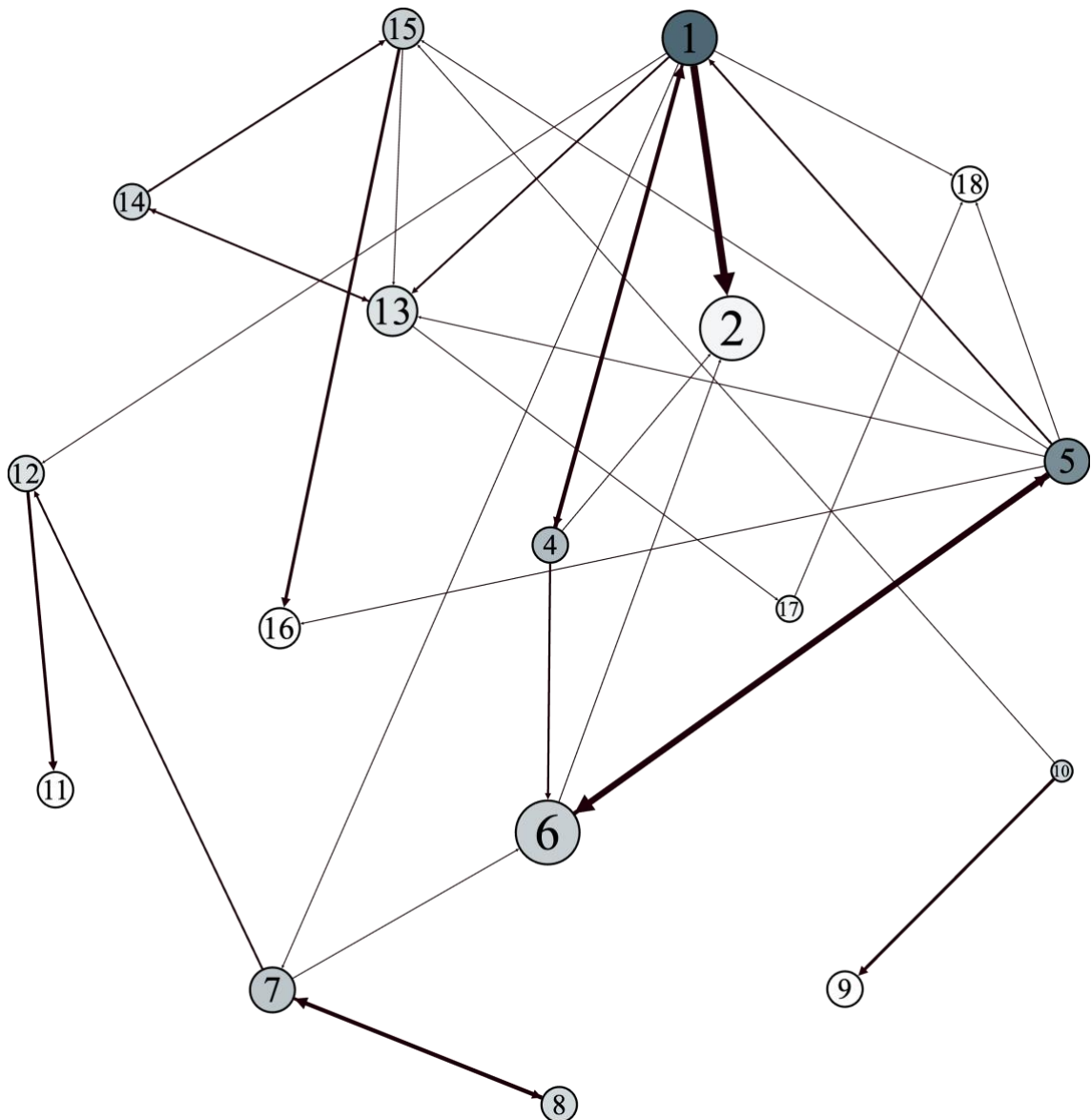
His approach ensured each group received one publicly available instructor comment.

It had not been possible to survey students before the activity to establish their expectations of interactions or the division of responsibilities in using the annotation tool. However, the post-implementation survey indicated that their expectations had largely been met.

Students welcomed the opportunities the tool afforded for direct communication with both T3 and their peers. It 'linked students together by giving comments to, or receiving comments from, other groups'. Reviewing peers' video proposals allowed students to 'learn how other groups work and look into different angles' while developing their project proposal. Peer comments were perceived as 'constructive', helping students improve 'specific aspects' of their 'topic and content'. The process was felt to be 'very interactive' and valuable in students' future development:

It recorded comments from my teacher and peers that I can always look back on. (Student comment, Survey 1)

Two groups interacted particularly well, with all group members posting at least one comment. In Group 1, most of the eight group members viewed six or more peer videos, commenting on at least two of them. In a further nine groups, approximately half of the members were active, meeting the minimum requirement of viewing their assigned partner group's video and posting a comment. Interaction patterns between all 16 groups are shown in Figure 5.10.



**Fig. 5.10.** Relationship map illustrating interactions between all groups in Semester 1, numbered 1 to 18. Groups 3 and 16 were not used. Larger circles show that more comments were received by the group, while darker colours indicate that more comments were given by the group. Thicker lines are used to highlight where more comments were given to the group.

However, participation was low overall. Of a total of 97 students, only 61 viewed a peer video and just 42 posted a comment (see Table 5.3). In four groups, despite system data showing limited peer video viewing, none of the group members commented. In the remaining two groups, just one student posted a comment. The division of labour within groups was therefore unequal. Between the 16 groups, students' interactions were also unbalanced. While Groups 2 and 6 received nine comments each, Group 17 received only one comment,

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and Group 10 received none. It is also striking that just 48 students played their own video to view comments their peers and T3 had posted.

Students enrolled	97
Students who posted at least one comment	42
Total comments posted	71
Comments per active student	1.69

**Table 5.3.** Overview of student commenting in Intervention 2, Semester 1

T3 reflected that his feedback approach might have inhibited students from commenting: on reading his authoritative analysis of their proposals, some students felt that they had nothing to add, or that their ideas might conflict with what he, a subject matter expert, had written. This may be seen as a *secondary* contradiction between *division of labour* and *object*. By leading the feedback process with a desire to guide or support his students, T3 inadvertently prevented them from working towards the object of giving and receiving peer feedback. Students may also have been influenced by instructor-led feedback methods they had previously experienced, believing it was the instructor's responsibility, not theirs, to evaluate peers' work.

T3 also reflected that the lack of cognitive scaffolding had made it challenging for students to engage in peer review, especially since they were in their first year of university study, lacked feedback literacy and were from non-science backgrounds. Not having access to cognitive scaffolding created a *secondary* contradiction between *subject* and *object*: many students were unable to complete the task without this additional tool.

#### **5.3.4.2 Efficiency: How can participants use the tool to achieve desired outcomes without wasting time or effort?**

Students' survey responses revealed that their use of the tool had enabled them to achieve diverse outcomes without wasting time or effort. For example, several reported that it had broadened their subject knowledge. For others, the

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achieved outcome was to develop the group proposal. It was an 'efficient' means of 'collecting ideas' to 'improve flaws in the video':

It allowed us to get comments from T3 and classmates, and let us know about problems we weren't aware of when creating our proposal. (Student comment, Survey 1)

Feedback gathered via the tool was also felt to have improved specific presentation skills, such as 'tone, fluency and design of the PowerPoint'.

Students valued the flexibility afforded by asynchronous online learning, allowing them to 'review the video anytime and take the comments into consideration'. Yet it was the time-stamp function that made the learning experience 'more convenient and efficient' for both feedback provider and recipient. It allowed students to comment 'inside the video', while watching, on specific points. In doing so, students felt their feedback was 'more accurate', and easier for peers to refer to. Receiving time-stamped comments enabled students to quickly 'locate where to improve', making feedback 'more meaningful' (Survey 1).

Student annotation data shows that the 42 people who engaged in peer feedback posted an average of 64.2 words each (Table 5.4). To do this, the students viewed other groups' videos an average of 7.93 times, watching an average of 6.14 minutes of peer video. Given that the students wrote an average of 1.69 comments each within this time, the process can be regarded as efficient.

Qualitative analysis of annotations suggests that the students who were active in giving peer feedback were also highly specific in their comments. In 71 comments, the students included 262 specific units of feedback, achieving an average specificity score of 3.40 across all posts and an average specificity rating of 2.85 per post. Feedback was highly balanced between the specificity categories, achieving a mean balance score of 0.72. This represents effective use of the tool. Given students' self-reported desired outcome to develop their proposals and presentation skills through analysing and commenting on peers' videos, it is also a strong measure of the efficiency of the tool.

<b>Peer commenting: word count</b>	
Number of words posted	2697
Mean number of words posted	64.21
<b>Specificity of peer comments posted</b>	
Total units of specific feedback posted	262
Mean specificity score across all posts	3.40
Mean specificity rating per post	2.85
Mean specificity balance	0.72
<b>Student viewing behaviour: peer video</b>	
Students who viewed at least one video	61
Mean views by active commenters	7.93
Mean number of minutes watched	6.14
<b>Student viewing behaviour: own video</b>	
Students who viewed own video	48
Mean views by all viewers	2.75
Mean number of minutes watched	0.73

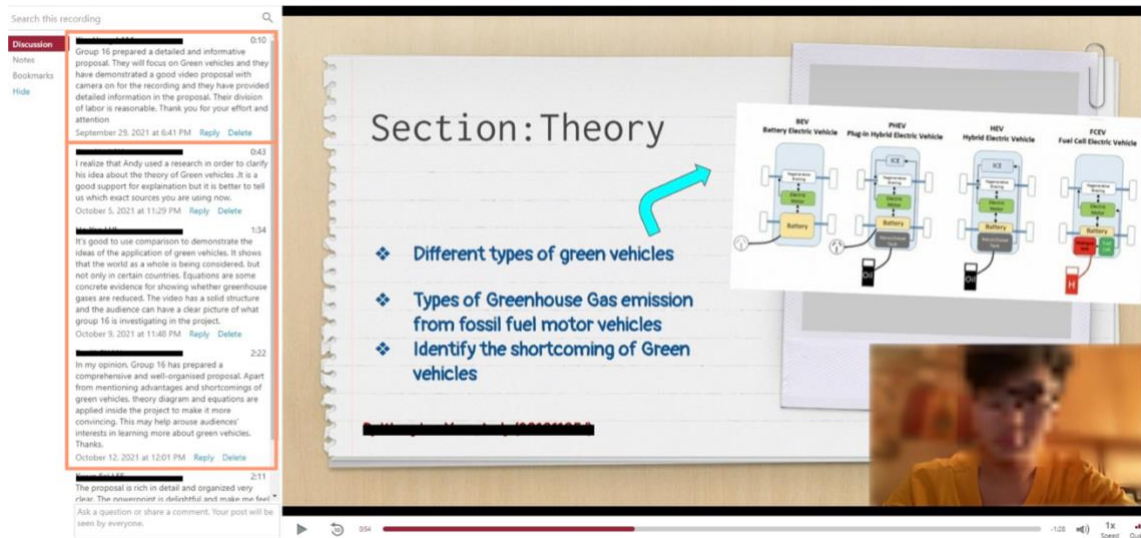
**Table 5.4.** Length and specificity of student comments and student viewing behaviour using the video annotation tool in Intervention 2, Semester 1

The tool was also efficient in helping students access and interpret any feedback they received. In an average of just 0.72 minutes, over an average of 2.75 views, the 48 students who were motivated to do so read their peers' comments on their video. Bearing in mind the specificity of the feedback comments, this represents efficient use of students' time.

Somewhat less efficient was the way students' used the time-stamp function of the tool. Instead of writing a series of shorter, contextualised comments, related to specific parts of the proposals, the majority of students wrote a single, overall comment covering more than one aspect. This is shown in Figure 5.11.

In this area, T3 reflected that the format of his feedback might have been unhelpful, as it consisted of individual, long, general comments, not time-

stamped, contextualised posts. Students may have followed this example. This was a *secondary* contradiction between the annotation *tool*, designed for short time-stamped comments, and cultural *rules* which may have encouraged students to follow the instructor’s lead.



**Fig. 5.11.** Screenshot from the video platform showing a group’s video on the right and longer time-stamped instructor and student comments on the left.

### 5.3.4.3 Serendipity: How do subjects’ expectations affect perceptions of any accidental discoveries made using the tool, and how might this influence the dynamics of control?

In the survey, many students expressed surprise at how the time-stamp function facilitated meaningful interaction between peers, T3, and subject content. This discovery made them more willing to participate in a feedback process that had historically been instructor-led.

Several students exceeded the minimum requirement, not only commenting on the group they had been assigned, but also viewing multiple other proposals before selecting a second group to comment on. T3 was pleased to discover the extent of their peer learning, reflection and critical thinking:

Students made very constructive comments and raised unexpected questions. This is good in terms of their learning. (T3, Interview 1b)



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Even where two groups had investigated the same topic, the activity provided unexpected learning opportunities; analysing and commenting on a peer group's video allowed students to consider the topic from an alternative perspective.

T3 also found students were willing to provide affective support to their peers, an observation supported by the annotation data, revealing that 15 of the 42 commenters had used social language in their feedback. It was also serendipitous that students seen as lacking in confidence had been motivated to participate:

Some are shy to speak up in person. Video-based comments helped introverted students to develop confidence. (T3, Interview 1b)

#### **5.3.4.4 Cost: How do perceived costs of using the tool change the rules of practice?**

T3 reflected that the relatively low number of marks associated with the peer feedback task might have discouraged some students from writing detailed comments or even taking part at all. These students viewed it as unimportant.

I intended it to be compulsory, but the students knew it didn't count for many marks. That might be why they neglected it or didn't write thoughtful posts. (T3, Interview 1b)

For this group, the cost of participation was having less time to complete other assessments. Other students who did not participate described the experience as likely to cause embarrassment, implying a social cost, or reported being demotivated by the majority of their peers not taking part.

In each case, there was a *secondary* contradiction between *object* and *rules*: rules around grading and cultural rules governing interactions between students in this context.

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#### **5.3.4.5 Failure: How do unforeseen problems with the tool affect subjects, the community, the rules of engagement or the division of labour?**

Students who did participate were sometimes critical of the technology. They did not always find the time-stamp function intuitive, and did not realise they needed to pause the video to leave a post in a specific location. Not doing this meant that comments became decontextualised.

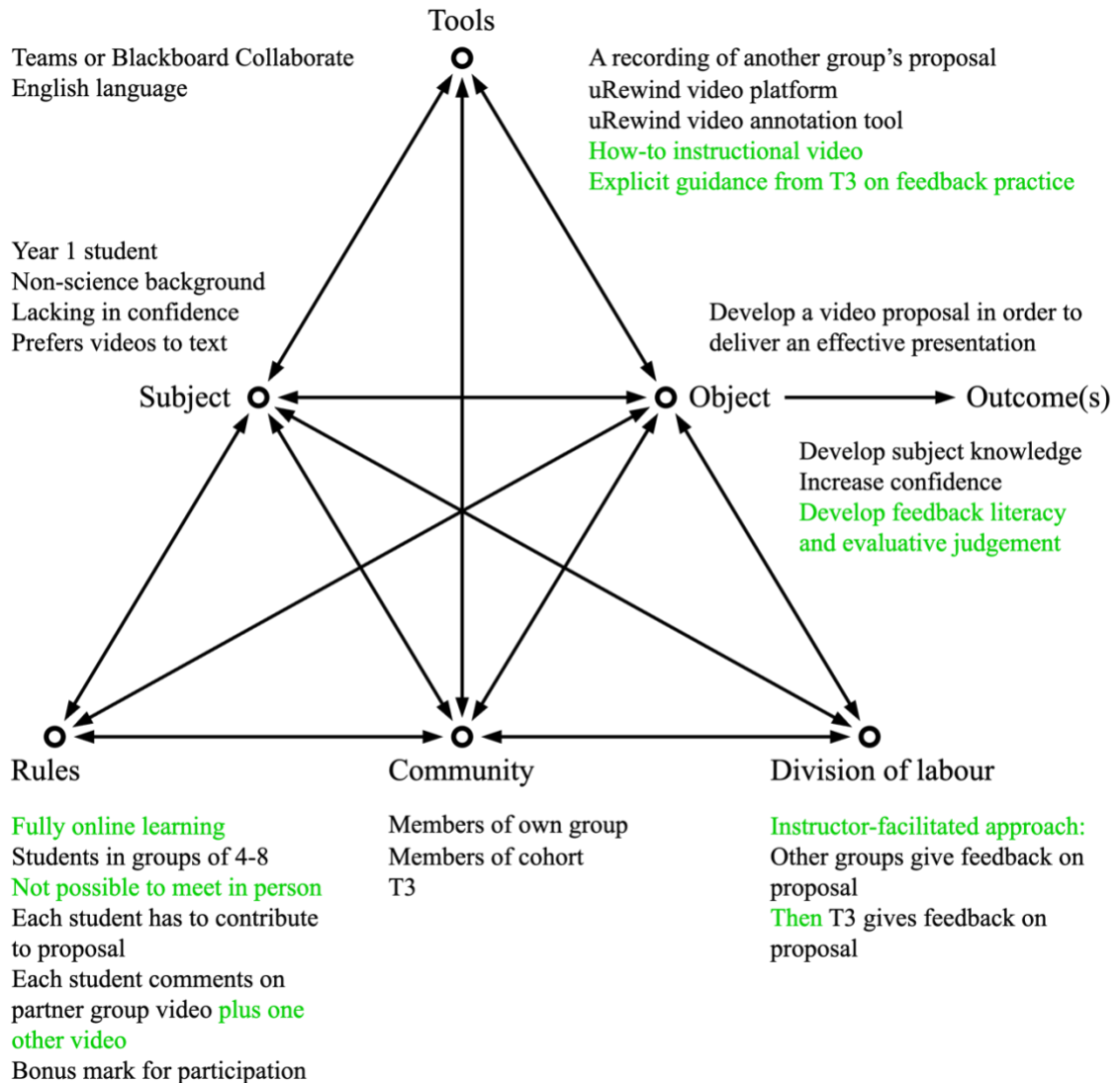
Students reported that the iPad version ‘had many bugs’, whilst on smartphones ‘the screen is not clear enough, especially the comment function’. Others were hampered by unreliable internet connections, which disrupted their ability to engage ‘anytime, anywhere’. Worse still, the tool lacked a notification feature, further impeding student-student interaction. This may explain why only 29 of the 42 commenters read the comments on their own video.

For T3, a further tension was that while he had hoped to increase student engagement by using an alternative to a discussion forum, commenting in the video platform functioned in much the same way: asynchronously and text-based.

Each of these issues can be seen as a *primary* contradiction: the annotation tool had been selected because of its value in supporting peer discussion, yet these failures undermined this primary purpose.

#### **5.3.5 Cycle 2: Modelling and examination, Semester 2, 2021-22**

Process reflection from Cycle 1, which took place at the end of Semester 1, 2021-22, was the stimulus for modelling and examination in Cycle 2 at the start of Semester 2. In the first interview, T3 constructed and explored a more culturally advanced model to address the contradictions that had been inherent in DGPP<sub>1</sub> in Semester 1. This model, DGPP<sub>2</sub>, is shown in Figure 5.12.



**Fig. 5.12.** Representation of DGPP<sub>2</sub>, the proposed activity system for Semester 2, 2021-22. Changes from DGPP<sub>1</sub> are in green.

### 5.3.5.1 Cognitive scaffolding, rules and instructor facilitation

Before students used the tool, T3 would provide additional cognitive support in the form of explicit guidance on how to write specific comments. In a change to the division of labour, he agreed not to post his own feedback on videos until at least one student in the partner group had commented. To increase the number of posts, students would be required to comment on their partner group video and a second video of their choice. Grading and the 'bonus' mark remained unchanged.

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### 5.3.5.2 Expanded expectations of tool use

The pre-task survey revealed that T3's explicit guidance around feedback practices had expanded students' expectations about the value of the tool in realising *desired outcomes*. By facilitating exchanges of ideas and specific comments, it could scaffold reflection. This would allow students to 'understand weaknesses, to improve their speaking skills' and 'build self-confidence through positive feedback.' Peer commenting could also enable them to not simply 'learn different topics', but also learn from how others had presented their proposal. This would develop their ability 'to evaluate other's work' and give feedback: the skills of feedback literacy and evaluative judgement.

### 5.3.5.3 Return to remote learning

One potential challenge to the operation of the planned DGPP<sub>2</sub> was a change in rules: in Semester 2 PolyU reverted to fully online teaching, making it more difficult for students to meet in person to form groups and establish relationships with peers:

My groupmates aren't very active. We need to do the project online instead of face to face and communication isn't as efficient. (Student comment, Survey 2a)

This compounded their anxieties around the proposal activity: uncertainty around what content to include or how to develop their thinking on an unfamiliar topic; the challenge of synthesising disparate contributions in a dispersed group; and lack of confidence in their oral English or in speaking to an audience.

### 5.3.6 Cycle 2: Implementation and process reflection, Semester 2, 2021-22

DGPP<sub>2</sub> was applied in practice in Semester 2, and Scanlon and Issroff's (2005) criteria were again used to analyse participants' experiences of its *implementation*. As in Semester 1, the analysis then informed processes of reflection and evaluation, allowing new contradictions to be identified.

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**5.3.6.1 Interactivity: How does the tool meet expectations about interactions between students and teachers and the division of responsibilities between students and teachers?**

In contrast to Semester 1, T3 gave students time to comment first without intervening. However, in a departure from the proposed DGPP<sub>2</sub>, he proceeded not to comment at all. Sixty students participated (Table 5.5), an increase on the previous semester. Eight groups interacted well, with most or all members commenting on at least one proposal (Figure 5.13). In these groups, students tended to view multiple videos before selecting a second recording to comment on. In five other groups, approximately half of the members were active, commenting on the assigned partner group’s video. In only one group did no students comment. The result was that interactions between groups were more balanced than in Semester 1, with each group receiving at least three peer comments. Unlike in Semester 1, where several groups viewed peer videos but did not comment, the majority of students commented on a video after viewing.

Students enrolled	94
Students who posted at least one comment	60
Total comments posted	101
Comments per active student	1.68

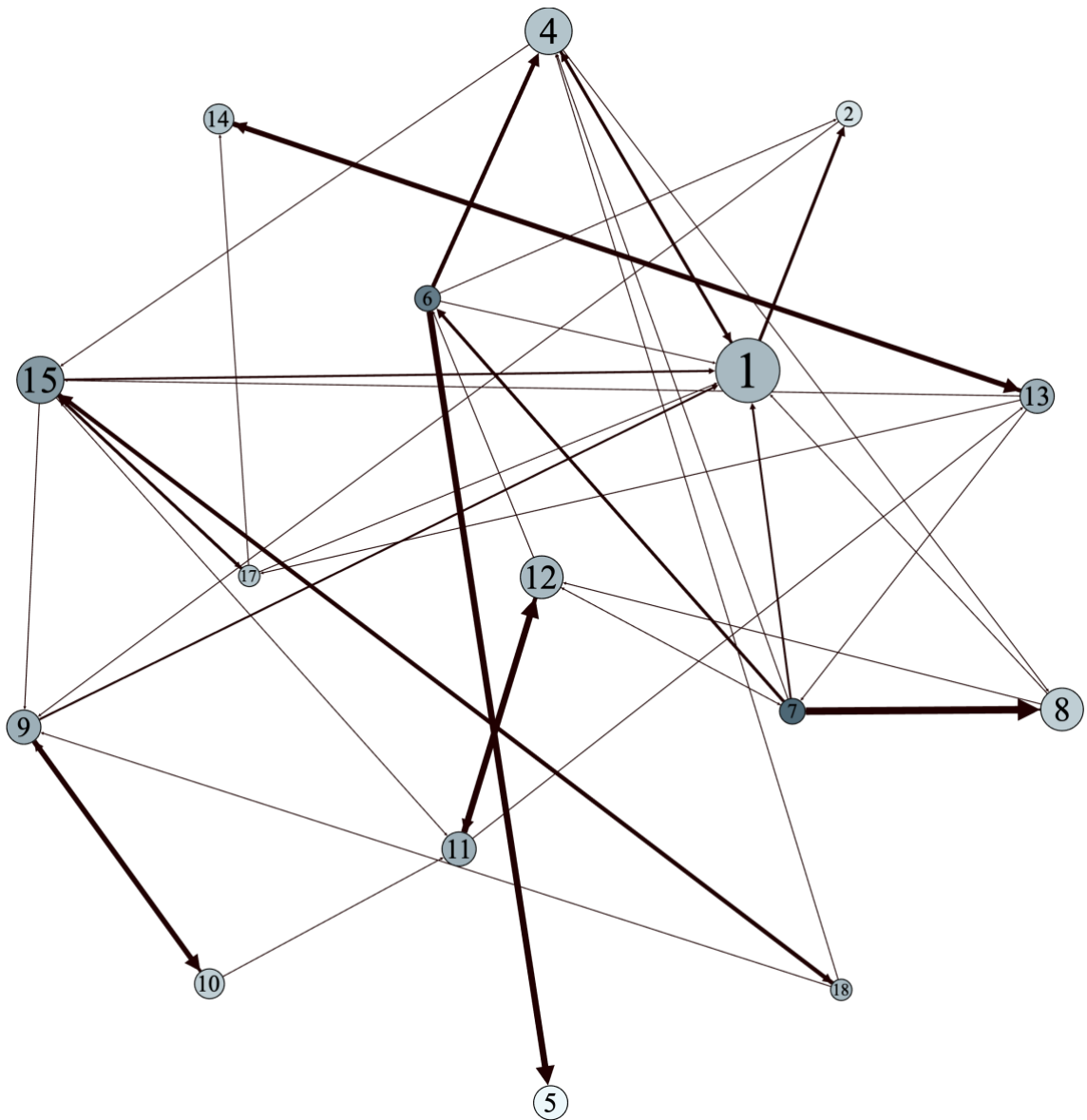
**Table 5.5.** Overview of student commenting in Intervention 2, Semester 2

Students’ expectations were broadly met. It was ‘great to interact with peers’, as it ‘gave [students] other ideas and perspectives’. Their feedback could be ‘incorporated into the final presentation, to enhance and improve it’. Students were impressed with the level of interactivity, noting that peers had ‘watched the video in detail, commenting on each speaker’ (Survey 2b). However, it is noteworthy that 34 students did not interact. This may be explained by three contradictions in DGPP<sub>2</sub>. First, as T3 reflected, it is possible that not having opportunities to interact in person before using the tool affected the sense of community in the cohort, impeding interactivity: a *secondary* contradiction between *rules* and *community*. Second, it is possible that the absence of

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instructor feedback and facilitation meant that some students' expectations about student and instructor roles were not met: a secondary contradiction between *community* and *division of labour*. Third, students still did not have a rubric with standardised criteria to scaffold their feedback, generating a *secondary contradiction* between *subject* and *object*.



**Fig. 5.13.** Relationship map illustrating interactions between all groups in Semester 2, numbered 1 to 18. Groups 3 and 16 were not used.

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### 5.3.6.2 Efficiency: How can participants use the tool to achieve desired outcomes without wasting time or effort?

Student annotation data shows that the 60 people who engaged in the peer feedback activity posted an average of 78.6 words each (Table 5.6). To do this, the students viewed other groups' videos an average of 6.03 times, watching an average of 5.46 minutes of video. Given that students posted an average of 1.68 comments within that time, this process can be regarded as more efficient than in Semester 1.

<b><i>Peer commenting: word count</i></b>	
Number of words posted	4715
Mean number of words posted	78.6
<b><i>Specificity of peer comments posted</i></b>	
Total units of specific feedback posted	388
Mean specificity score across all posts	3.08
Mean specificity rating per post	2.65
Mean specificity balance	0.80
<b><i>Student viewing behaviour: peer video</i></b>	
Students who viewed at least one video	72
Mean views by active commenters	6.03
Mean number of minutes watched	5.46
<b><i>Student viewing behaviour: own video</i></b>	
Students who viewed own video	47
Mean views by all viewers	1.77
Mean number of minutes watched	0.66

**Table 5.6.** Length and specificity of student comments and student viewing behaviour using the video annotation tool in Intervention 2, Semester 2

Qualitative analysis of annotations suggests that the students who were active in giving peer feedback were also highly specific in their comments. In 101 comments, the students included 388 specific units of feedback, achieving an

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average specificity score of 3.08 across all posts and an average specificity rating of 2.65 per post. Feedback was highly balanced between the specificity categories, achieving a mean balance score of 0.8. This represents effective use of the tool, albeit marginally less so than in Semester 1. This may suggest that when a larger proportion of students used the tool, the expanded group included more students who were less skilled at feedback.

The tool was also efficient in helping students access and interpret any feedback they received. In an average of just 0.66 minutes, over an average of 1.77 views, the 47 students who were motivated to do so read their peers' comments on their video. Bearing in mind the specificity of the feedback comments, this again represents efficient use of students' time as in Semester 1. It is striking, however, that only half of the cohort viewed the feedback they had received. If their 'desired outcome' had been to use their peers' suggestions to develop their proposal or presentation skills, not taking the time to read them seems inefficient on their part.

In contrast to Semester 1, the vast majority of students made effective use of the time-stamp function. Comments were more contextualised and linked to specific parts of the proposals, and tended to focus on one aspect. This reflects the increased attention paid to time-stamping in the additional guidance T3 provided. Table 5.7 compares students' tool use in Semesters 1 and 2.

As in Semester 1, students' survey responses emphasised the efficiency of the tool in helping them access and understand feedback that they had received. Time-stamped comments directed them to 'exactly which parts needed to be changed' and were perceived as more 'targeted' in revealing shortcomings:

They highlight deficiencies, like fluency or pronunciation. I can learn weaknesses through multiple evaluations and focus on improving them.  
(Student comment, Survey 2b)

Students explained how features of the tool made peer commenting efficient, making it more likely that their feedback would be accessed and understood:

The operation is easy. I can pause and continue the video while writing.



Peers can know which part we are commenting on by the time shown on the comment (Student comments, Survey 2b)

	Semester 1	Semester 2
<b>Peer commenting</b>		
Students enrolled	97	94
Students who posted at least one comment	42	60
Total comments posted	71	101
Comments per active student	1.69	1.68
<b>Peer commenting: word count</b>		
Number of words posted	2697	4715
Mean number of words posted	64.21	78.6
<b>Specificity of peer comments posted</b>		
Total units of specific feedback posted	262	388
Mean specificity score across all posts	3.40	3.08
Mean specificity rating per post	2.85	2.65
Mean specificity balance	0.72	0.80
<b>Student viewing behaviour: peer video</b>		
Students who viewed at least one video	61	72
Mean views by active commenters	7.93	6.03
Mean number of minutes watched	6.14	5.46
<b>Student viewing behaviour: own video</b>		
Students who viewed own video	48	47
Mean views by all viewers	2.75	1.77
Mean number of minutes watched	0.73	0.66

**Table 5.7.** Comparison of student activity between Semesters 1 and 2 in Intervention 2

These processes enabled students to develop evaluative judgement:

I can easily compare our own proposal with others and find out our pros and cons. (Student comment, Survey 2b)

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**5.3.6.3 Serendipity: How do subjects' expectations affect perceptions of any accidental discoveries made using the tool, and how might this influence the dynamics of control?**

Not commenting on students' recordings allowed T3 to discover what they could accomplish without instructor facilitation. More confident students posted early, enabling peers to follow their examples of good feedback practice. This was an unexpected benefit of the facilitation approach. Fortunately, the worsening public health context did not have a negative impact on the activity. In general, students were impressed with the outcome: the high-quality feedback they received. Peers often succeeded in identifying 'things we hadn't noticed before, making our presentation more interesting' (Survey 2b).

**5.3.6.4 Cost: How do perceived costs of using the tool change the rules of practice?**

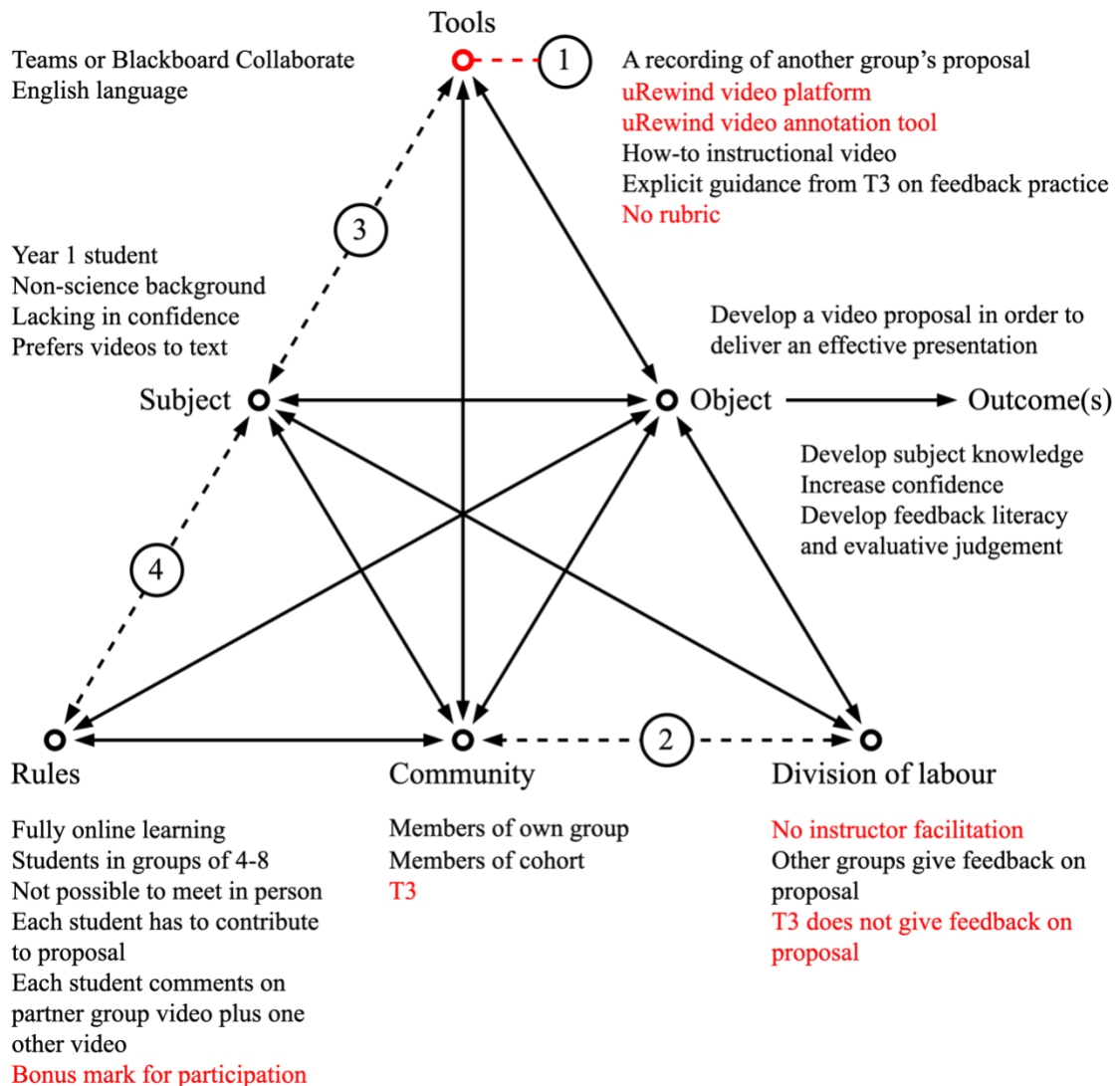
No students reported feelings of embarrassment about posting or receiving feedback. It is possible that not knowing their peers, due to the return to online learning, removed some of the social cost students had experienced in Semester 1. However, as T3 noted, the use of 'bonus' marks may have again signalled that the peer feedback process was less important than other assessments, and did not merit students' full participation. The contradiction from Semester 1 between *rules* and *object* remained unresolved, affecting student motivation. In contrast, those who did participate were felt to have been motivated by wider goals, not the attainment of a small grade.

**5.3.6.5 Failure: How do unforeseen problems with the tool affect subjects, the community, the rules of engagement or the division of labour?**

Students highlighted an additional shortcoming in the tool's design that inhibited peer discussion: it lacked features such as 'likes' and emojis that could have allowed them to appreciate aspects of peers' work. These could have enhanced participation by reducing the costs of engagement to less confident students.

### 5.3.7 Consolidation

Exploring the contradictions inherent in DGPP<sub>2</sub> makes it possible to plan how the outcomes of the intervention may be consolidated into future peer feedback practices in the module, provided these contradictions, illustrated in Figure 5.14 and numbered 1-4, are resolved.



**Fig. 5.14.** Representation of four key contradictions inherent in DGPP<sub>2</sub>:

1. Shortcomings of the tool: Primary contradictions within the *tool*;
2. Lack of active teacher facilitation: Secondary contradiction between *community* and *division of labour*;
3. Lack of rubric with standardised criteria to guide peer feedback: Secondary contradiction between *tools* and *subject*;
4. Participation 'bonus' mark did not increase student motivation: Secondary contradiction between *rules* and *subject*.

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### **5.3.7.1 Investigate or overcome the shortcomings of the tool**

For the reasons mentioned in section 5.2.5.1, it has not been possible to address several of the primary contradictions in the tool (1). However, T3 agreed that students could benefit from reminders to revisit their videos and guidance on the use of more social, less formal language.

### **5.3.7.2 Move towards active instructor facilitation**

T3 accepted the need to actively manage students' video-annotated peer feedback by using a more responsive, tailored approach. This might involve writing time-stamped questions or comments to stimulate initial posts among less confident groups; acknowledging and developing ideas in more active groups; and contacting inactive groups to remind all members of the need to comment. Using such an approach could resolve the secondary contradiction between community and division of labour (2).

### **5.3.7.3 Develop a rubric and give students practice in applying it**

Though he did not create one in Semester 2, T3 accepted the importance of providing students with a rubric in order to resolve the secondary contradiction between tools and subject (3). He also agreed that students would need opportunities to practise applying the rubric before commenting.

### **5.3.7.4 Grade peer feedback as part of the presentation task**

Findings from Semesters 1 and 2 led T3 to acknowledge that students could be more motivated to engage in peer feedback if it were viewed as part of the presentation task, rather than as a separate activity carrying a 'bonus' mark. This would underscore the value of evaluating other groups' proposals and acting on their feedback as a prerequisite for creating a successful presentation. It could resolve the secondary contradiction between rules and subject (4).

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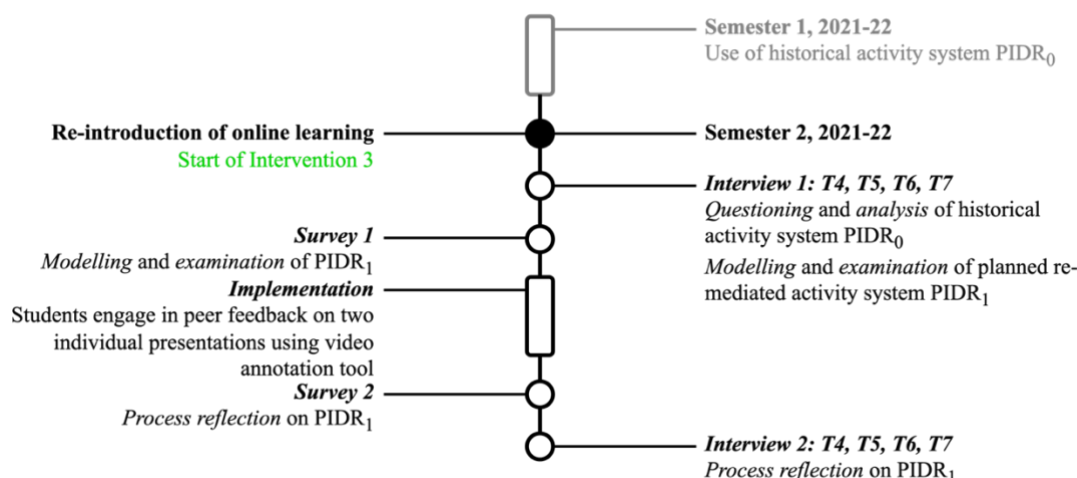
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## 5.4 Intervention 3: Doctoral presentation skills module

### 5.4.1 Introduction

In this module, taught by nine instructors from the University's English Language Centre, doctoral candidates from across PolyU develop their presentation skills in preparation for academic conferences and their viva. In the first of two assignments, they are required to present the introduction to their research, or a paper from their discipline, and answer questions from their peers. Until January 2020, this activity took place in person. For the first 18 months of the pandemic, students used *synchronous* tools to continue to engage in the same task in real time, online. In Semester 1, 2021-22, one instructor, T4, introduced Microsoft OneDrive as part of an *asynchronous* video-based approach. In this formative intervention, it is this video-based approach to peer feedback that is analysed as the *historical* activity system. To overcome inherent contradictions in this historical activity system, in Semester 2, I collaborated with T4 and three colleagues, T5, T6 and T7, to *question* and *analyse* existing practices in the module through a departmental workshop, individual instructor interviews, email exchanges and student surveys. Drawing upon the unique insights of instructors and students, we *modelled* and *examined* a more culturally advanced activity system in which students' peer feedback activity was re-mediated by the video annotation tool.

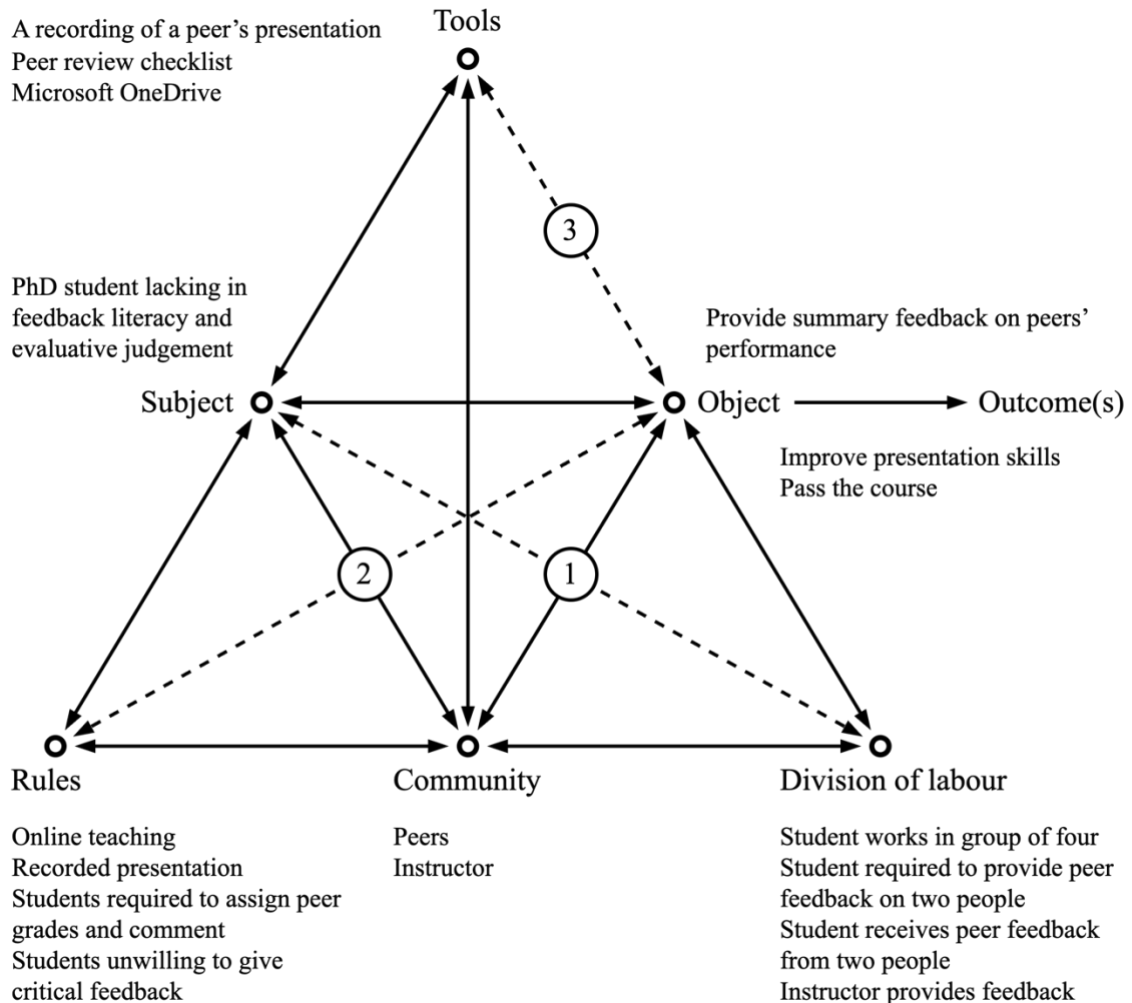
In this section, I present the questioning and analysis (5.4.2) of the historical activity system of presenting introductions to doctoral research (PIDR<sub>0</sub>), followed by the modelling and examination (5.4.3) of the re-mediated system (PIDR<sub>1</sub>). I then analyse students' experiences of PIDR<sub>1</sub> implementation (5.4.4), identifying how their practices have been re-mediated by the introduction of the video annotation tool. The report concludes with student and teacher reflections on the process and suggestions on how PIDR<sub>1</sub> might be further enhanced (5.4.5). Figure 5.15 is a timeline of the expansive learning actions carried out.



**Fig. 5.15.** Timeline showing major institutional events, key points in Intervention 3 and expansive learning actions that took place during the intervention.

### 5.4.2 Questioning and analysis

In our first interviews in Semester 2, 2021-22, the instructors reflected on the process of questioning which had led them to introduce the video annotation tool. This made it possible for me to analyse the historical activity system,  $PIDR_0$ , and identify three contradictions. I refer to these as *lack of historically accumulated expertise in peer assessment*, *cultural reticence to be critical*; and *giving summary rather than specific feedback using video*. These are shown below in Figure 5.16. It was vital that all instructors were involved in the questioning process. Though T4 was unique in having implemented the historical activity system in Semester 1, T5 and T6 had considerable experience in teaching previous iterations of this module. As Programme Leader and Deputy Director of the English Language Centre, respectively, the two were ideally placed to contribute to an analysis of the challenges doctoral students traditionally experience when engaging in peer feedback on presentation skills. Whilst T7 had only recently joined PolyU, he had expressed interest in exploring the tool's impact on peer feedback practices. Students were also well placed to share the challenges they had experienced with peer feedback in their responses to Survey 1.



**Fig. 5.16.** Representation of PIDR<sub>0</sub>, the historical activity system. Three contradictions are shown:

1. Lack of historically accumulated peer assessment expertise: Secondary contradiction between *subject* and *division of labour*;
2. Cultural reticence to be critical: Secondary contradiction between *rules* and *object*;
3. Giving summary rather than specific feedback using video: Secondary contradiction between *tools* and *object*

#### 5.4.2.1 Lack of historically accumulated expertise in peer assessment

Recalling his experience of implementing the historical activity system, PIDR<sub>0</sub>, in Semester 1, T4 reflected on students' overall low feedback literacy and evaluative judgement:

They don't know how to give feedback because they don't have the expertise. That's why I gave them guidelines, but it's tricky because they're not able to recognise what's effective and what's not. (T4, Interview 1)

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In PIDR<sub>0</sub>, students shared recorded presentations in groups of four. They then used a checklist to evaluate two groupmates' presentations, rating specific aspects as *highly effective*, *effective* or *not effective*, based on the rubric. Students then answered two open-ended questions about what their peers did well or less well. T4 explained:

They did the checklist OK, but comments were minimal: 'Their organisation was good' or 'They could improve their pronunciation'. Not unuseful, but not in great depth. (T4, Interview 1)

T5 had observed a similar phenomenon in earlier iterations of the course, when students presented research to the whole group:

When students become the audience, they just listen, and do not pay attention to particular points. I ask if there is any feedback from them; they just give feedback from a very holistic perspective. (T5, Interview 1)

He attributed this to their lack of experience of giving feedback to others, having attended school and completed undergraduate studies in the Chinese mainland. This was supported by student survey responses, where fewer than one in ten students reported prior experience in peer review, perceiving it as a highly unusual approach:

Reviewing peers is difficult. Receiving feedback also feels weird, as it usually comes from the module convenor. (Student comment, Survey 1)

For T7, students' lack of evaluative judgement also stemmed from shortcomings in their presentation skills and knowledge of English. Based on observations at the beginning of Semester 2, when he engaged his groups in short peer feedback activities in online breakout rooms, he concluded that students would find any peer feedback approach challenging without active instructor support:

It's related to their knowledge level, the way they conceptualise their speaking. To me, it's below average. I need to step in and support them. (T7, Interview 1)

In PIDR<sub>0</sub>, then, there was a *secondary* contradiction between the *subject*, who lacked the skills of feedback literacy and evaluative judgement, and the *division*



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*of labour*, which required them to engage in peer feedback, taking on roles of both feedback provider and recipient.

#### **5.4.2.2 Cultural reticence to be critical**

In interviews, a further practice-problem emerged. Even where students had the skill of evaluative judgement, they tended to be reluctant to share critical comments. This was true whether feedback practices took place asynchronously, using a video tool and checklist, or synchronously, mediated by a synchronous online environment. Recalling his experiences with PIDR<sub>0</sub> from Semester 1, T4 reflected:

They don't want to offend anybody, so they don't want to be overly critical of their classmates. Whereas [I'm] constantly on at them: 'You're not offending anybody, you're helping them. You're pointing out how they can improve.' So, there's still that socialised issue. (T4, Interview 1)

Students acknowledged the same challenge:

People know where the problem is, but they won't point it out as they think it might cause offence.

It seems we prefer to give feedback about the merits of a presentation, like good pronunciation and pace. Few students point out shortcomings. (Student comments, Survey 1)

In PIDR<sub>0</sub>, then, there was a *secondary* contradiction between culturally entrenched *rules* of social interaction, which inhibited students from giving critical feedback, and the *object*, which required them to do so.

#### **5.4.2.3 Giving summary rather than specific feedback using video**

Instructors identified a third practice-problem in the historical activity system. When students gave peer feedback using Microsoft OneDrive and the checklist, their comments tended to be general, summarising peers' performance, rather than specific and formative. T4 reflected:

The way I did it before, I had a checklist of different things for the students to look for, so it was more like an overall judgement. (T4, Interview 1)

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Despite its use of video, PIDR<sub>0</sub> retained many of the contradictions of traditional, face-to-face peer feedback approaches:

I'm trying to encourage them to give each other feedback, but it's hard because they can't interrupt to point things out. They have to give feedback at the end, and most of the time it's fairly general. Students rarely refer to specific parts. (T4, Interview 1)

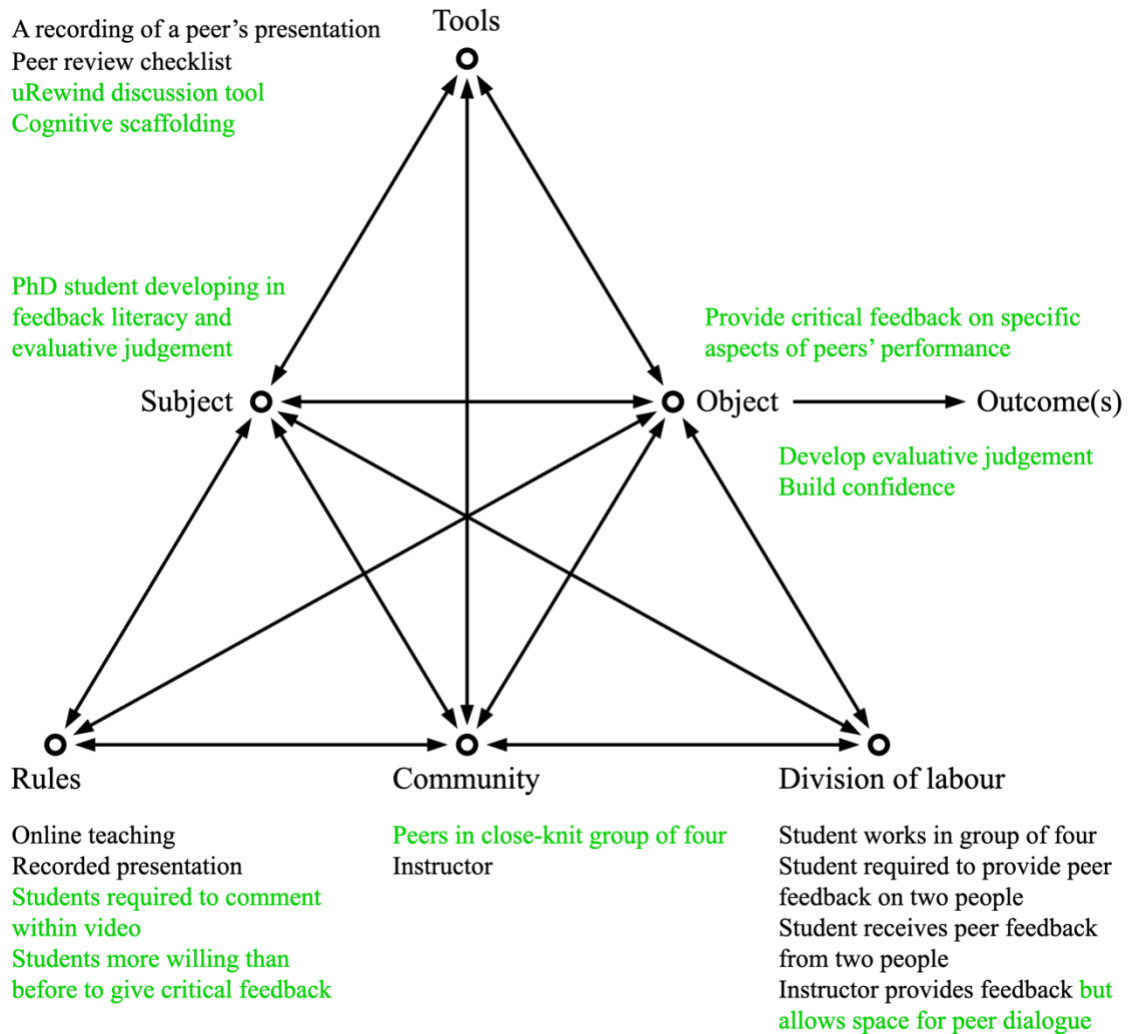
It's not detailed feedback. It's generally, 'Oh, I really liked your presentation.' As it's just a short, the feedback they put is normally only a couple of lines, so they're really focusing on one thing. One positive, one negative is the most it gets to. (T6, Interview 1)

For T7, linear video-based feedback using Microsoft OneDrive forced students to adopt a *synoptic* as opposed to a *dynamic* viewing perspective, a concept taken from linguistics. Instead of analysing 'how the text unfolds sequentially', traditional video approaches encouraged students to post 'generalised comments on the overall product' (T7, Interview 1). Here, T7's observations echoed those of T5, who had questioned students' lack of specificity when commenting on peers' presentations in a live, online environment.

In PIDR<sub>0</sub>, then, there was a *secondary* contradiction between the *tools*, the video platform without an annotation function, and the checklist; and the *object*, which required them to give feedback on specific aspects of peers' performance.

#### **5.4.3 Modelling and examination**

In our interviews, the instructors explained the process whereby contradictions in the historical activity system, presenting introductions to doctoral research, PIDR<sub>0</sub>, led them to construct the more culturally advanced system, PIDR<sub>1</sub>, in which students' activity was re-mediated by the novel video annotation tool and the object was expanded. The model is shown in Figure 5.17. This section examines the three contradictions in PIDR<sub>0</sub> in turn, analysing how they were addressed through PIDR<sub>1</sub>.



**Fig. 5.17.** Representation of PIDR<sub>1</sub>, the proposed activity system for Semester 2, 2021-22. Changes from PIDR<sub>0</sub> are in green.

### 5.4.3.1 Cognitive scaffolding to develop feedback literacy and evaluative judgement

For all instructors, a critical change in PIDR<sub>1</sub> was the provision of additional *tools*: cognitive scaffolding tasks to develop students' feedback literacy and evaluative judgement in preparation for the main peer feedback task. In Activity Theory terms, this aimed to overcome the *secondary* contradiction between *subject* and *division of labour*. Cognitive scaffolding took different forms. T4 and T5 designed opportunities for students to practise giving and receiving peer comments on presentation skills. For T5, this would take place live, online, in a whole-class setting, building on an approach he had employed successfully in earlier iterations of the module:

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Every lesson, I prepare two SCMP articles. Students discuss them in groups, and different people present their analysis to the class. When the other students give feedback, I tell them to focus on what they learned from their peers. (T5, Interview 1)

T4 combined peer feedback practice with practice in using the novel tool:

In the first few weeks, students prepared mini-Pecha Kuchas with six slides, 20 seconds on each slide, introducing themselves. I put them on uRewind and explained we were going to be using the platform, so it was a good chance to practise commenting. (T4, Interview 1)

For T7, cognitive scaffolding took the form of whole-class analysis of exemplar presentation videos. Using a linguistically informed, multimodal approach, he paused the recording at critical moments and invited students to comment on the effectiveness of specific techniques:

I tried to push them to do a frame-by-frame analysis, [rather than] a description or running commentary. So, are the strategies effective? What about the rhetorical effect on the audience? (T7, Interview 1)

Exemplar videos also formed part of T6's approach to fostering evaluative judgement. Early in the semester, she directed students to an online repository of recorded presentations from distinguished speakers. This supplementary resource, co-developed by Hong Kong universities, included pre-set time-stamped annotations, which allowed students to search recordings for specific techniques and highlight them as they appeared in the context of each video. This was a self-directed, student-centred approach to help them apply evaluative judgement in evaluating peers' videos:

I tell them to pick one and critique the presenter. They get the hang of it, then they're happier critiquing their classmates. (T6, Interview 1)

T6's task also used video-based self-assessment. This, she felt, would not only develop evaluative judgement, but also improve the quality of each student's presentation:

Before they upload their presentation this week, I've told them to record themselves doing something different and critique themselves doing it. It'll be interesting to see how they get on, having trained themselves to critique others. (T6, Interview 1)

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T4 and T7 believed that their role as instructors would be critical in scaffolding peer feedback during the activity itself, given students' lack of experience. However, they were also conscious that this would need to be done selectively, giving students space to engage in the feedback process (Figure 5.17):

I'll play it by ear. If they post something unfair or plain wrong, I may intervene and say, 'I disagree, this is good.' Perhaps I'll need to encourage them to engage more, reply to comments, for example. (T4, Interview 1)

Intervening may have a negative impact. I want to motivate them to have a mature discussion instead of forcing them to say, 'This isn't very good.' (T7, Interview 1)

Nevertheless, instructors were aware that more active facilitation might involve significantly more work for them compared with the historical approach:

It takes time, even when it's fairly general, picking out a few points, eye contact, pronunciation. I'll have to minimise how often I go in and leave feedback. (T6, Interview 1)

When asked to comment about its potential, students' survey responses indicated that they viewed the tool as a means of developing both feedback literacy and evaluative judgement. External peer feedback provided using the tool could help them 'realise potential problems, including mistakes I may neglect'.

Students felt that time-stamped peer feedback could be 'objective and fair', yet also insightful, due to the breadth of perspectives and research disciplines within the group:

I hope to learn more from students: different ways of thinking or academic language. (Student comment, Survey 1)

Nevertheless, some students expressed concern about their ability or that of their peers to provide accurate feedback using the tool, suggesting that students ought to be required to 'grade a series of presentations to check their standard'.

Students were positive about opportunities to develop internal feedback and evaluative judgement through time-stamped peer commenting. By evaluating

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their classmates, students would be able to ‘absorb the advantages, and avoid their mistakes’, or identify areas for improvement in their own presentations. By ‘analysing others’ performance’, students would ‘gain experience in finding the weaknesses and the way to modify them’ and ‘practise critical thinking’. Put simply, it would ‘give me a chance to be a judge, and think as a judge’. The use of rubrics was particularly important:

Since we will be following the same assessment criteria when writing feedback on others’ presentations, we can better fulfil these criteria when giving presentations ourselves. (Student comment, Survey 1)

#### **5.4.3.2 Social-affective support and community-building**

The instructors were aware that in order to develop and apply the skill of evaluative judgement, students would need to overcome their cultural reticence to be critical. In Activity Theory terms, this would resolve the secondary contradiction between the culturally entrenched *rules* of social interaction and the *object* of the activity system. Most instructors felt that this would be achieved through practice, using the instruments mentioned in the previous section. For T4, the tool itself had the potential to resolve this contradiction by facilitating more informal learning and formative assessment, setting new *rules*:

There’s a possibility they’ll be more open and honest. The feedback form looked too much like an assessment, whereas the platform is more engaging, less formal. (T4, Interview 1)

For T6, the act of creating recorded presentations rather than presenting live would raise students’ confidence in their speaking skills, making them more open to receiving peer feedback:

I think to have that confidence, knowing they can record it, record it again and time it, and if it’s overrunning, adapt it and bring it in on time, can really help them. (T6, Interview 1)

She was less convinced that students would feel comfortable using the annotation tool to write in-depth, critical comments:

They’re happy leaving a fairly general ‘You could make more eye contact’, and they don’t feel they’re offending anyone, but I wonder if a number of them

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could feel less comfortable going into more detail. They'll feel they're nagging or being too critical. (T6, Interview 1)

Students viewed the tool as 'motivating... as if we have our own fans'. Many relished the new opportunities it afforded for 'enhanced interactions with peers', 'advice that can improve my presentations' and friendship:

I will be very happy and motivated if other students speak highly of my presentation. (Student comment, Survey 1)

Peer feedback was seen as particularly valuable, since this would be provided by 'people with the same purpose and same experience as me', who 'face similar difficulties'.

Others valued the intimacy provided by the activity design, which allowed them to share their videos with 'designated people'. This, some felt, would help mitigate affective barriers to engaging in peer feedback, a process that made them 'nervous'. Nevertheless, several participants voiced concerns that their peers may 'not want to get involved', 'not be willing to write long, complete comments' or have 'different standards' of peer assessment. Others still questioned the value of doing the activity online:

If submission and commenting happen without face-to-face contact, it could feel detached and unreliable. Will they say something true and heartfelt? (Student comment, Survey 1)

#### **5.4.3.3 Supporting students in moving from the general to the specific through time-stamping**

The instructors identified the potential of the time-stamp function in supporting students in shifting from general, summary comments to more specific, formative commenting. This could overcome the third practice problem, lack of specificity in peer feedback, identified by instructors and students in questioning. In Activity Theory terms, this would resolve the secondary contradiction between the historical *tools*, Microsoft OneDrive and the checklist, and the *object*. The time-stamp function could also encourage deeper reflection by reducing cognitive load:

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It'll be easier for them if they can pause it and break it down, rather than remember everything they want to say at the end. If we're asking them to look at what can be improved, it'll be easier to and stop and think at different points, make it more detailed. (T6, Interview 1)

T5 felt that in previous iterations of the course, some students had refrained from commenting on peers' presentations because they were unfamiliar with the subject matter, and believed they could not offer informed analysis of the presentation as a whole. The tool, he argued, would make it easier for students to address micro-skills that they felt more comfortable discussing:

Students can pay particular attention to one area. If their presentation is about, say, applied mathematics, and full of formulae, and their peers have no idea what they're talking about in terms of content, they can give feedback on body language. They can choose what to focus on. (T5, Interview 1)

T7 emphasised the value for students in being able to both observe and contribute to the development of the discussion, focusing on specific aspects of the presentation:

It's a dynamic approach. You can pause it, you can comment, and you can have a longitudinal unfolding of the comments, not only for the students who produce them but for those who receive them too. It's much better than a synoptic, generalised perspective on a paper checklist. (T7, Interview 1)

Students identified this as a potential benefit, too, discussing the value of obtaining a 'detailed record of the feedback' that they could 'review regularly' over time.

For T4, the design of the tool would aid students in developing the evaluative judgement needed to post specific rather than general comments:

They can take as long as they like when watching their classmates' presentation. They can pause it, think about the feedback, give the feedback and then watch it again, see if they're right or change their mind. (T4, Interview 1)

#### **5.4.4 Implementation and process reflection**

Having *questioned* and *analysed* the historical system and *modelled* and *examined* the planned re-mediated activity system, PIDR<sub>1</sub>, the study uses Scanlon and Issroff's (2005) criteria to analyse the instructors' and students'



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experiences of *implementation*. In doing so, it focuses on annotation and system data from 80 students, comprised of one group of 20 students per instructor. This makes it possible to compare and contrast the different ways in which the model was implemented. Through *process reflection*, based on second interviews with the four instructors, and a second student survey, it identifies how feedback practices were re-mediated through students' use of the annotation tool and highlights contradictions in the re-mediated system.

#### **5.4.4.1 Interactivity: How does the tool meet expectations about interactions between students and teachers and the division of responsibilities between students and teachers?**

In implementing the model, expectations about interactions between students and teachers and the division of responsibilities were largely met. First, there was an expectation among instructors that students would *engage more actively in peer review* using the novel tool than previous cohorts had done under historical forms of the activity system. This would involve greater interaction between students, mediated by interactions with the novel tool. Second, there was an expectation among all participants that by altering the division of labour so students were directly responsible for giving feedback on their peers' presentation skills and engaging with the feedback they received, the new system could enable students to *develop feedback literacy and evaluative judgement*. Third, participants expected that students' interactions would both be *underpinned by and contribute to social-affective support and a sense of community* within each group. Lastly, participants had conflicting expectations around *the role of the instructor in facilitating interactions*. Each expectation around interactivity is addressed in turn.

##### **5.4.4.1.1 Interactivity: Student engagement in peer commenting**

Instructors reported that their students had engaged with the peer feedback process to a far greater extent than in historical forms of the activity system. System and annotation data indicates that in the groups analysed, each of T4, T6, and T7's students posted peer feedback comments, whilst 16 of T5's 20

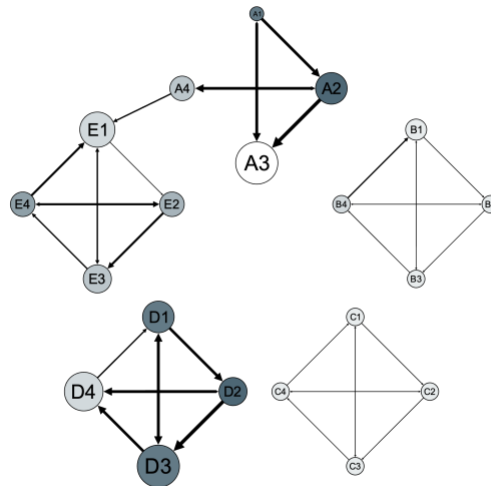
students were active (Table 5.8). Among the groups, T7's students posted the most feedback, with a total of 196 comments ( $\bar{x}=9.80$ ). Ten students in his group wrote more than four comments on each of their two assigned peers' presentations, while four posted more than seven comments per video. Students received between four and 22 peer comments each ( $\sigma=4.73$ ). Measured in comments per active student, T4's group were least active ( $\bar{x}=4.40$ ), with one posting only once and just five students writing a series of four or more time-stamped posts on both videos they had been assigned. Students received between two and nine peer comments each ( $\sigma=2.48$ ). Figures 5.18 to 5.21 illustrate the different interaction patterns across the four groups analysed.

	<b>T4</b>	<b>T5</b>	<b>T6</b>	<b>T7</b>	<b>Total</b>
Students enrolled	20	20	20	20	<b>80</b>
Students who posted at least one comment	20	16	20	20	<b>76</b>
Total comments posted	88	87	92	196	<b>463</b>
Comments per active student	4.40	5.44	4.60	9.80	<b>6.04</b>
Total replies posted	32	4	30	58	<b>124</b>
Total instructor comments posted	89	39	122	271	<b>521</b>

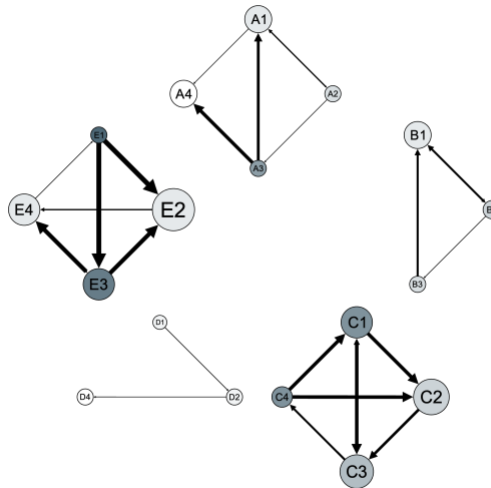
**Table 5.8.** Overview of student and instructor commenting in Intervention 3

Explaining lower levels of interactivity within his groups, T4 argued that this mirrored patterns of in-class participation:

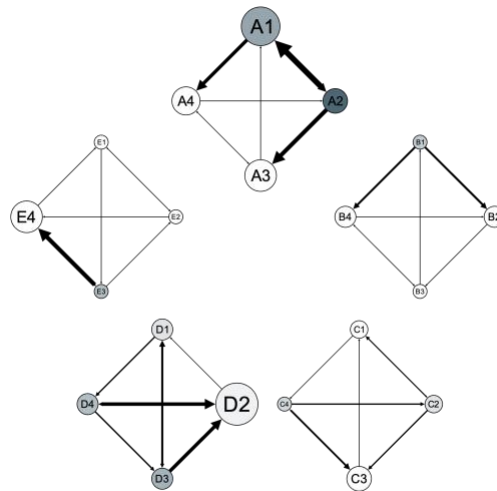
There are some who speak up more in class. Those tended to be the ones who offered more feedback. Others aren't so confident: 'Who am I to provide advice when I don't have confidence in my own presentation skills?' (T4, Interview 2)



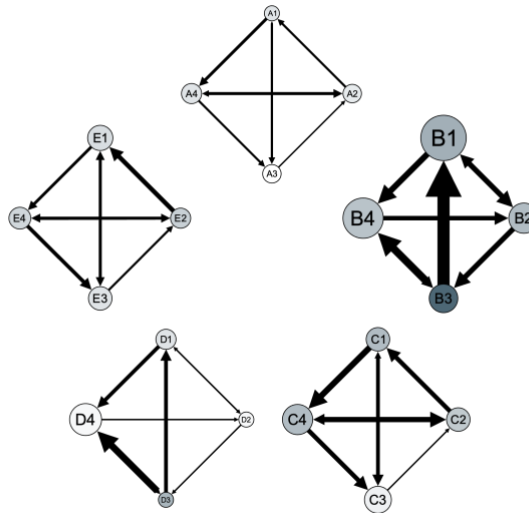
**Fig. 5.18.** Relationship map illustrating the interactions between students in T4's group arranged into five sub-groups of four, A to E, with each student numbered 1 to 4. Larger circles show that more comments were received by the student and darker colours indicate that more comments were provided by the student. Thicker lines indicate that more comments were given. Here, student A4 commented on a video shared with them by E1, a student from a different group. However, groups B and C were less active than others in the cohort.



**Fig. 5.19.** Relationship map illustrating the interactions between students in T5's group arranged into five sub-groups of four, A to E, with each student numbered 1 to 4. Groups B and D were much less active than others in the cohort.



**Fig. 5.20.** Relationship map illustrating the interactions between students in T6's group arranged into five sub-groups of four, A to E, with each student numbered 1 to 4.



**Fig. 5.21.** Relationship map illustrating the interactions between students in T7's group arranged into five sub-groups of four, A to E, with each student numbered 1 to 4. Group B was particularly active compared with others in the cohort.

In this respect, T4's expectations were not fully met: there remained a secondary contradiction between culturally entrenched *rules* of social interaction and the *object* of the activity system. Not all students felt comfortable interacting using the tool.

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#### 5.4.4.1.2 Interactivity: Developing feedback literacy and evaluative judgement

Many students embraced the opportunity to take on the role of feedback provider as well as receive feedback from peers. Expectations were met. As one put it:

I play the teacher when watching the videos. I can find the advantages and disadvantages of other presenters during peer review. Then I can learn a lot.  
(Student comment, Survey 2)

Students identified multiple benefits of internal feedback. Giving feedback to others was, they argued, a process of self-reflection which ‘invoked the need for critical thinking’:

If I give feedback, I’m evaluating myself, if I’m confident and capable of doing so. Watching others’ presentations gives me an idea of where and how I can correct myself and what modification I can implement to enhance my skills.  
(Student comment, Survey 2)

Interacting with peers using the tool developed the skill of evaluative judgement, with several students reporting that it helped them ‘understand what a good presentation is’.

Students commented that the video-annotated peer feedback they received felt ‘more objective and critical’. It focused on specific ‘suggestions for further improvement’, particularly in presentation skills which students felt they ‘could not evaluate independently’, such as pace, tone or identifying their research gap. Peer comments were generally perceived as ‘valuable’ and ‘beneficial’.

Nevertheless, some students lacked confidence in their peers’ skills, maintaining that the responsibility for feedback ought to lie with the instructor, not their classmates:

I especially liked my instructor’s feedback. It’s more professional. I think sometimes suggestions from the teacher are more useful than peer review.

There must be my teacher in the three-way trip, who can better guide and improve my skill. (Student comments, Survey 2)

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Peer feedback was often 'limited', as 'many students just do not want to criticise other people'. If reviewer and reviewee had very different academic backgrounds, it risked being 'superficial', due to a lack of interest or expertise in the research field. In these cases, the same *secondary* contradiction between *subject* and *division of labour* remained.

#### **5.4.4.1.3 Interactivity: Social-affective support as an underpinning and result of interaction using the tool**

T5 attributed interactivity among his students to the social-affective support that he had cultivated by establishing peer groups early in the semester, and maintaining these for the peer feedback activity:

By that point they were willing to write honest peer feedback. If I had grouped them at random, they wouldn't have been. They would have been worried. (T5, Interview 2)

T5 argued that students' interactivity within familiar, closed groups vindicated his decision not to ask students to make their recordings visible to the whole class:

If there are only four of them and they know one another, they'll feel safe. If I'd opened it up to everyone, they wouldn't have written anything. (T5, Interview 2)

T4 conceded that despite the potential benefits of opening up feedback to the whole group, 'some students might not want their recording to be viewed by the whole class... and it was probably the only way this could have worked, limiting the amount of work the students had to do, giving feedback on two classmates. It made the whole thing manageable.' (T4, Interview 2)

Although T5's beliefs were reflected by one student, who '[liked] the way it is private, secure and won't let everybody access your presentation', many others expressed disappointment at not being able to 'share with more classmates' since 'two are too limited'. Allowing more people to 'assess the presentations' would encourage greater dialogue (Student comments, Survey 2). This points to a *secondary* contradiction between the *rules* and *object* of the new activity

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system. By limiting students' ability to share with a wider audience, the rules reduced the potential for ideas exchange.

#### **5.4.4.1.4 Interactivity: Conflicting expectations of the instructor's role**

T7 attributed the very high level of interactivity among his students to his own active role in scaffolding the peer feedback process. This included, in the early stages, selecting high-quality student comments and sharing them with the class by email, both to encourage already active students and to model purposeful forms of interaction to those yet to post. Students responded positively to the approach. Later in the activity, T7 began responding to student comments. He reflected:

I think this enhanced interactivity in a way that the feedback form couldn't do. I wanted to give them the idea that, 'OK, your opinions are valued, I endorse them, I agree or disagree with them', rather than just 'Overall, it's good'. I also wanted to know if they would agree with my comments. I wanted dialogue. (T7, Interview 2)

T7 was successful in achieving this, both between him and his students and among sub-groups of students in the class analysed. With 271 comments, he posted more than his three colleagues combined, and yielded 58 student replies, with the majority of students engaging in discussions around specific points in each video. Here, the relative brevity of his and students' comments 'left space' for further dialogue.

Posting 89 and 122 comments respectively, T4 and T6 saw it as their role to provide time-stamped feedback, and, like T7, model effective feedback practices and affirm comments that students had made:

I went in after a few days and some groups had already got going. I left some comments so everyone could see an example to follow, from me or another student. Then I left it, and in the last few days went round filling the gaps. (T6, Interview 2)

T4 preferred to give students space to find their original voice before he intervened:

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I waited until students had had feedback from two classmates. Then I added my own feedback, sometimes replying to comments posted by others, saying, ‘Yes, I agree,’ and elaborating a bit. I thought about providing a model, but I was concerned students may just have taken my comments and thought, ‘Oh, that’s very good’, and copied or reworded them, so they would have been my comments, not theirs. So, I left them to it. (T4, Interview 2)

Both T6 and T7 stressed the importance of keeping instructor-student and student-student dialogue as informal as possible:

I don’t use formal English. My comments have a lot of exclamation marks after them. It’ll be very quick things like ‘Great eye contact!’, ‘What about the citation?’ (T6, Interview 2)

I treated it as a casual conversation, just talking to the students: ‘I agree with you, you made a good point’. (T7, Interview 2)

For T7, posting regular, informal comments made his and his students’ feedback feel more immediate. This was ‘not a replacement of in-person interaction, but if we need to teach online it is one way to go’ (T7, Interview 2). Several students echoed this in survey responses, describing the process of commenting as one of ‘real-time reaction, because you can stop the video and comment at any time’, making feedback seem ‘fresh and real’. Being able to respond to instructor and student posts gave students a sense of ‘interaction with the audience, even though we are not face-to-face’ (Student comments, Survey 2). Despite the potential for inauthenticity in interactions via the platform, due to their asynchronicity and use of text, a concern raised by T4, the instructors’ presence and engagement with students helped establish an authentic learning environment in which participants could ‘exchange ideas, learn from others, and gain confidence’ (Student comments, Survey 2).

By contrast, T5 posted just 39 comments within the platform, opting to provide private, individual feedback comments via the traditional feedback form, and using the platform to remind students to post peer feedback. Though most students met this minimum requirement, there was very little evidence of peer dialogue, with just four replies posted. This may reflect different expectations of the task and the division of responsibilities, with T5 seeing it as his role to provide formal feedback in an ‘official’ document, something he felt students



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also expected. In the new activity system, these conflicting expectations of the instructor's role in facilitating interaction can be seen as a *secondary* contradiction between the learning *community* and the *division of labour*.

#### **5.4.4.2 Efficiency: How can participants use the tool to achieve desired outcomes without wasting time or effort?**

Three forms of efficiency arose from my analysis. The first, relating to the outcome of *improving presentation skills by giving and making sense of peer feedback*, is supported by analysis of annotation and system data, Table 5.9, and interview and survey data. The second relates to *the achievement of diverse new desired outcomes* that emerged during implementation and process reflection. The third, which arose in interviews, is *the time and effort required by instructors to facilitate peer feedback using the tool*.

##### **5.4.4.2.1 Efficiency in improving presentation skills by giving and making sense of peer feedback**

In our second interview, T4 reflected on how the novel tool made the process of giving peer feedback more efficient than it had been under historical activity systems:

In the past, they would watch their classmates present live once and then maybe offer feedback, which was difficult. Now they can re-watch, focus on particular aspects, think about the feedback they want to give. (T4, Interview 2)

Student annotation data indicates that T5, T6 and T7's groups posted significantly more words per student (145, 166, and 156, respectively;  $\sigma=98.1$ , 79.5, 76.4) than that of T4 (85.1;  $\sigma=60.1$ ). However, T7's students' posts were short ( $\bar{x}=15.9$  words) and time-stamped, whereas students in T5 and T6's groups tended to write a smaller number of longer, summary comments ( $\bar{x}=26.7$ , 36.0 words) that did not make use of the time-stamp function. System data shows that T6 and T7's groups spent significantly more time viewing peers' videos before posting ( $\bar{x}=22.5$ , 22.9 minutes) than those of T4 and T5 ( $\bar{x}=10.3$ , 12.1 minutes), with T7's students viewing their peers' videos 16 times, around twice as many times as those in other groups, during the peer review

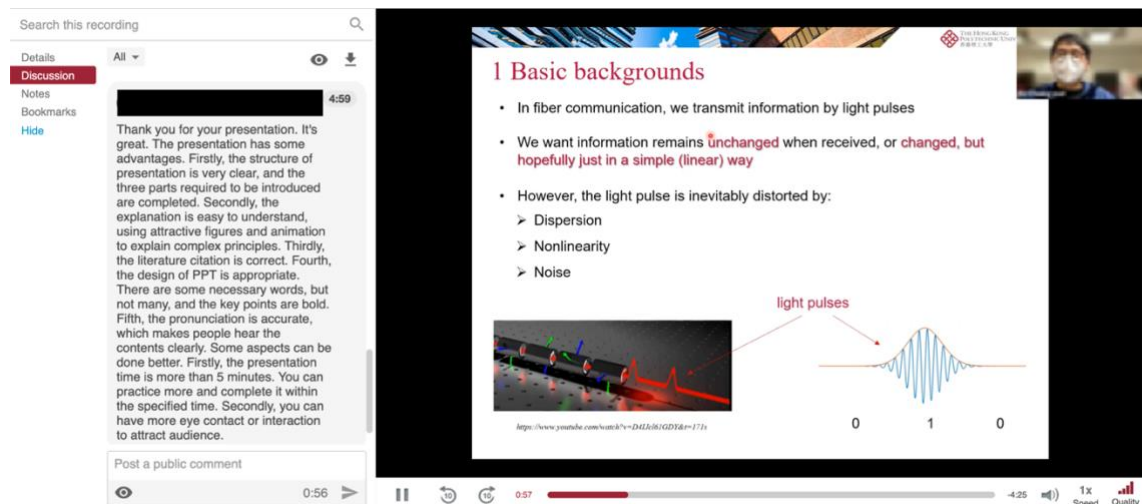
process. This suggests a pattern of thoughtful, specific and highly contextualised commenting: evidence that students achieved the outcome of giving peer feedback using the novel tool, giving far more feedback than had been possible under the historical system, making more effective use of their time.

	T4	T5	T6	T7	Total
<b>Peer commenting: word count</b>					
Total words posted	1701	2324	3313	3120	<b>10458</b>
Number of words per comment	19.3	26.7	36.0	15.9	<b>22.6</b>
Mean number of words posted per student	85.1	145	166	156	<b>124</b>
<b>Specificity of peer comments posted</b>					
Total units of specific feedback posted	215	249	354	423	<b>1241</b>
Mean specificity score across all posts	3	3.38	4.35	3.85	<b>3.65</b>
Mean specificity rating per post	1.94	1.94	2.86	1.73	<b>2.12</b>
Mean specificity balance	1.04	0.93	0.80	0.83	<b>0.90</b>
<b>Student viewing behaviour: peer video</b>					
Students who viewed at least one video	20	19	20	20	<b>79</b>
Mean views by active commenters	5.95	8.13	9.80	16.0	<b>9.97</b>
Mean number of minutes watched	10.3	12.1	22.5	22.9	<b>17.0</b>
<b>Student viewing behaviour: own video</b>					
Students who viewed own video	19	18	20	19	<b>76</b>
Mean views by all viewers	3.84	4.56	7.20	10.9	<b>6.63</b>
Mean number of minutes watched	2.94	2.75	7.69	7.53	<b>5.23</b>

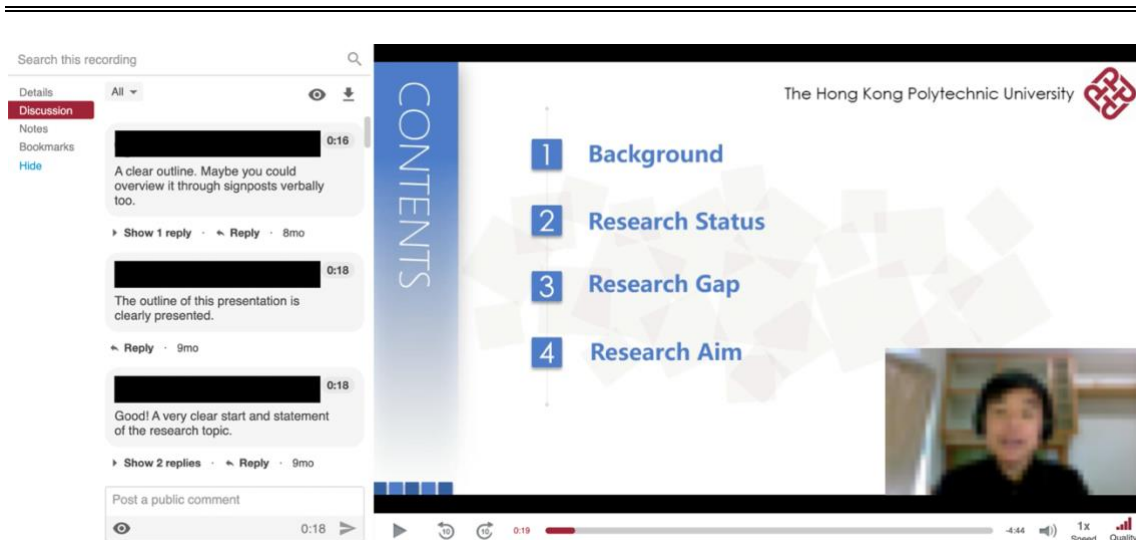
**Table 5.9.** Length and specificity of student comments and student viewing behaviour in Intervention 3

Qualitative analysis of annotations reveals that T7's students *were* highly specific when commenting. In 196 comments, the students posted 423 specific feedback units, achieving an average specificity score of 3.85 across all posts. Feedback was highly balanced between the specificity categories, with a mean

balance score of 0.83. It is worth noting that while T6's group posted fewer specific feedback *units* ( $n=354$ ), their comments were slightly more specific than T7's, with a higher specificity score (4.35) and greater balance (0.80). This could reflect a tendency among some students to include a balance of retrospective and prospective feedback within longer, summary comments, but to concentrate more on one type of feedback in a series of shorter, contextualised comments. It is also possible that T7's students' much shorter comments, by their very nature, did not go into detail regarding *motive* or *goals*, feedback categories associated with longer, more analytical posts. Conversely, T6's students' longer comments which did not make use of the time-stamp tool were less contextualised. T4 and T5's groups were less successful in terms of specificity and contextualisation. Nevertheless, students achieved their desired outcome, improving their presentation skills by analysing and commenting on their peers' presentations, to a far greater extent than would have been possible under the historical system, without the annotation tool. Figures 5.22 and 5.23 show differences in how T6 and T7's students used the tool.



**Fig. 5.22.** Screenshot from the video platform showing a video created by one of T6's students on the right and a single long comment addressing multiple aspects of the presentation on the left. I have blurred the student's face.



**Fig. 5.23.** Screenshot from the video platform showing a video created by one of T7's students on the right and several short time-stamped comments with replies on the left. I have blurred the student's face.

The tool was also efficient in helping students access and interpret any feedback they received. In an average of just 5.23 minutes, over an average of 6.63 views, the 76 students who were motivated to do so read their peers' comments on their video. Bearing in mind the specificity of the feedback comments, this represents highly efficient use of students' time. Rather than reviewing their video in one sitting, students reviewed it multiple times, focusing on different sections where peers had commented. This pattern was particularly evident in T6 and T7's groups, where students reviewed their video more times ( $\bar{x}=7.20, 10.9$ ) and spent more time doing so ( $\bar{x}=7.69, 7.53$  minutes). These differences may reflect differences in the amount or quality of peer feedback provided. Nevertheless, the fact that most students were motivated to read their peers' comments in order to improve their presentation skills is further evidence that the re-mediated activity system was more efficient than the historical system.

Student survey responses emphasised the efficiency of the time-stamp function, both when giving feedback and in making sense of comments received. It was 'convenient' since it allowed them to comment 'directly, without spending time describing every problem'. It was then 'much easier to know what comments refer to'. Getting 'accurate, precise suggestions at specific times' helped to show students 'exactly what [they needed] to improve or had

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done well'. Furthermore, being able to 'see the specific location of each comment' meant 'a lot of searching time was saved'.

For many students, being able to pause and comment created a sense of being 'in slow motion'. It allowed reviewers time to 'think more carefully', making the process 'effective' and even 'enjoyable'. Students spoke of the 'critical', 'direct' nature of feedback exchanged using the tool.

Nevertheless, the annotation data exposed *quaternary* contradictions among certain groups of students, in which some members were working towards the historical *object* of providing *summary* feedback in the form of a single comment at the end of videos, while others were seeking to write critical feedback on *specific aspects* of peers' performance using the time-stamp tool. While posting single comments might have felt more efficient to the first group in terms of achieving desired outcomes, it also made the process of making sense of feedback less efficient for the second.

#### **5.4.4.2.2 Efficiency in achieving new and diverse outcomes using the tool**

Survey comments also revealed that the object of the activity had expanded, with students working towards and achieving diverse learning outcomes using the tool. Being able to analyse their peers' and their own practice raised their awareness of, and enabled them to focus on, specific aspects of presentation skills. This included slide design, images, body language, pace, intonation, attention-getting and signposting. Students were also able to develop specific skills associated with academic research, such as analysing the literature and identifying a research gap. Yet other outcomes were far more expansive, emphasising evaluative judgement, critical thinking, confidence-building and personal growth:

Having the opportunity to both review and read peers' reviews have helped me to be more critical about my presentation. It makes me think about the merits and weaknesses, which trains my critical thought.

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By allowing us to show our presentations and view others' work, it helped us to build self-confidence and achieve faster progress and growth. (Student comments, Survey 2)

Students were able to achieve these outcomes through their purposeful use of the tool. Rather than spending time and effort watching their peers' presentations in a linear manner, either online or in person, students were able to make far more effective use of the hours set aside for the task, interacting with the recordings in specific ways to ensure outcomes were achieved. There was no sense in students' survey responses that their time or effort was wasted.

#### **5.4.4.2.3 Efficiency for instructors in facilitating peer feedback using the tool**

The instructors also commented on how the tool made the process of managing the peer feedback activity more efficient than in the historical system:

It's easy to trace the comments and they're bite-size, so they're easy to digest. I don't need to go back and forth between the video and feedback form to write lengthy responses. The flow of ideas, commenting, interaction, and inter-semiotics between comments, slides and speech work well together on a single platform. I don't get distracted. (T7, Interview 2)

I like the fact it's embedded within the LMS. It's easy to find, students can access it without any issues. It works pretty seamlessly in that you can watch students' recordings, then offer feedback on them. (T4, Interview 2)

Though the tool added to teachers' workload, this was outweighed by its impact on student learning, as T4 and T6 explained:

It took longer, but in a good way. I could engage more with students' performance. Using OneDrive, students would post their videos and upload the form. I would watch, add some comments to the form, and that would be it. This time I feel it's far more diagnostic, more formative, as I can time-stamp comments on specific aspects of it. It's a longer process but really worthwhile, and it worked better than how we did it last time. (T4, Interview 2)

I was hesitant about how much extra work it would be, breaking it down, pausing and writing. But actually I really liked it. It was really good to be able to say, 'Look, you're looking at your notes, I can see where your eyes are,' and linking it to the point where it's happening. Being able to highlight exactly when it happens, I liked that. (T6, Interview 2)

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From whichever perspective efficiency is measured, data from this intervention points to a positive *secondary* contradiction between the novel *tool* and the *rules* governing the time and effort participants were willing to spend on the peer feedback task. There is evidence, first, that by eliminating the need for linear viewing and repeated searching, the tool allowed the participants to make more effective use of their time and effort. Yet it is also evident that the process of writing time-stamped comments was perceived by some to be so worthwhile, enjoyable even, that participants were willing to devote more time and effort to this task than they might have done under the historical system.

**5.4.4.3 Serendipity: How do subjects' expectations affect perceptions of any accidental discoveries made using the tool, and how might this influence the dynamics of control?**

From the interview and survey data, three accidental discoveries emerged. Each of these relates to an unexpected way in which students used and benefited from the novel tool, positively influencing the division of labour. First, instructor and student *expectations for student participation were surpassed*, reducing the need for instructor involvement. Second, by changing how students were able to interact with recordings, instructors discovered that the tool *removed some of the affective barriers students had previously experienced when confronted with their own practice*. Finally, there was evidence that the tool *promoted autonomous peer learning through community-building*.

**5.4.4.3.1 Surpassing expectations for student participation**

Having begun the peer feedback task with low expectations of students' ability to engage in critical dialogue, T7 was pleased to discover that these expectations were surpassed:

I was surprised by the number of comments, because at the beginning I thought they would look at it like, 'Oh, this is just a task to fulfil the course requirements.' After all, the course isn't graded, it's only pass or fail. In the end, most students received at least 20 comments! (T7, Interview 2)

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Students shared this sense of discovery about learning using the tool:

I never imagined people could be so active giving text comments, rather than commenting during the presentation.

I was surprised by the effectiveness of this virtual peer review platform compared with the conventional face-to-face ineffective method. (Student comments, Survey 2)

In response, T7 was able to step back and take on the role of facilitator, with a change in the division of labour allowing students to take greater responsibility for feedback on their learning:

Maybe next year if I rerun it, even though I want to give a lot of constructive feedback, I'll retreat a bit more because I know how much students will engage. (T7, Interview 2)

This reveals a *primary* contradiction within the *division of labour*. Whilst the high level of participation exceeded T7's expectations, allowing him to 'retreat a little', this was itself the product of his hands-on involvement.

#### **5.4.4.3.2 Using the tool to overcome affective barriers to self-assessment**

Earlier in the course, T6 had encouraged her students to use Teams to engage in self-review, itself an attempt to shift the division of responsibilities from instructor to student. However, she had had limited success due to the affective barriers students faced. The extent to which the novel tool enabled students to overcome these barriers was unexpected:

I hadn't appreciated how useful it would be that they don't have to go back and watch the whole thing again. I mean, nobody ever wants to watch themselves recorded. I kept telling them, 'The only way to improve is to watch yourself', and they were like, 'Nooooo!'. But being able to click on the time-stamp and see what's happening just at that point, they don't have to re-watch the whole thing to find that incident. (T6, Interview 2)

By giving students increased autonomy in terms of how they viewed their videos, the tool made it possible for students to resolve the *secondary* contradiction that had existed between culturally entrenched *rules* and *object*.



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#### **5.4.4.3.3 Promoting autonomous peer learning through community-building**

Understanding the importance of social-affective support in peer feedback, T5 had sought to build strong social ties within his groups. However, he had not anticipated the extent to which the tool-mediated activity could further strengthen these ties:

Reading through the comments, some students had mentioned, ‘Let’s discuss this after the course’. It’s been good for them. (T5, Interview 2)

By developing autonomous learning communities in which students were comfortable exchanging feedback, the activity had altered the division of labour and opened up new opportunities for learning. This points to a contradiction between *community* and *division of labour*. Rather than strong learning communities solely being a *precondition* for students to take on greater responsibility for their learning, stronger communities were also a *product* of the more culturally advanced system.

#### **5.4.4.4 Cost: How do perceived costs of using the tool change the rules of practice?**

Two themes emerged from the instructor interviews around the perceived costs of using the novel tool: *perceived costs to students* and *perceived costs to instructors*. These are addressed in turn.

##### **5.4.4.4.1 Perceived costs to students**

The historical approach to peer feedback, PIDR<sub>0</sub>, had involved students presenting and providing feedback live, in-person, in class time. By requiring them to create a recorded presentation and engage in peer feedback outside class time, the more culturally advanced activity system PIDR<sub>1</sub> imposed an additional cost in students’ time. As T5 observed:

I think they like the idea, but the workload is higher than before. They’re not only full-time students, but they also work as research assistants. One said, ‘I can’t give very comprehensive feedback, I can only be brief’. (T5, Interview 2)

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However, T4 argued that time costs had been lowered due to the pandemic. Delayed research projects meant students could dedicate more time to the presentation skills module.

Given that no students raised issues of time costs in their survey responses, it is possible that time spent engaging in the peer feedback process was not perceived as a cost, but rather, as revealed in the findings around efficiency, an effective and meaningful use of resources that rewarded greater investment.

#### **5.4.4.4.2 Perceived costs to instructors**

Instructors agreed that the more culturally advanced activity system imposed greater workload on them. However, they disagreed on the benefits that resulted from this:

The workload is more than I expected. Online commenting takes more time, and you need to handle students' enquiries like 'How do I operate it?' Compared with the feedback form on its own it's probably twice the workload. I still have question marks around whether all that extra effort will improve their learning experience. (T7, Interview 2)

For T5, another time cost was monitoring students:

If there's anybody who doesn't do anything, I need to contact them. It's more demanding. (T5, Interview 2)

Nevertheless, he welcomed the saving the activity represented in terms of curriculum hours:

Because it's out of class, I don't need to spend 15 minutes each class on it. It won't disturb other class activities, where timing is tight. (T5, Interview 2)

For T4, its asynchronicity allowed time costs to be more effectively managed:

It took all of us as instructors a long time. I have 46 students and 10 to 15 minutes per student, that's a lot of time, but in a good way, because you're dealing with students individually. One good thing about it is you can pick it up when you've got time: 'OK, I've got an hour. I'll go in and see.' (T4, Interview 2)

There was therefore a *secondary* contradiction between *tools* and *rules*.

Though the tool imposed additional time costs for instructors, the benefits of

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which were not always apparent, it also freed up time in the curriculum, enabling some instructors to more effectively manage *their* time.

#### **5.4.4.5 Failure: How do unforeseen problems with the tool affect subjects, the community, the rules of engagement or the division of labour?**

Interviews and surveys highlighted multiple unforeseen issues with *the design of the tool*, each of which affected *subject-community interaction*. In addition, the use of *other instruments*, the rubric and feedback form, in the new system had an unexpected negative impact on the rules of engagement. These are addressed in turn.

##### **5.4.4.5.1 Impact of tool design on subject-community interaction**

Students had difficulty sharing recordings with peers, a vital prerequisite for peer review using the tool, due to the design of the platform. Videos could only be shared with students who had previously accessed the system, yet, confusingly, users new to the system were still able to receive notifications, even though their peers' videos could not be accessed.

There could be a bug in the share function. I got a notification someone had shared a video with me, but when I logged in there was nothing. (Student comment, Survey 2)

Students found it problematic that the platform did not notify them when peers had commented on their recordings. This caused some to view their videos multiple times, so as not to miss feedback that might have been added, and led four others not to review their recordings at all, having incorrectly assumed that no one had commented. Posting comments was perceived as 'a little confusing' by many students, due to the lack of a 'submit' button. The way posts were displayed also made it difficult for students to follow discussions, since many expected them to reflect 'the chronology of the video' rather than 'when posts were added.' For several students, the lack of emoticons, a rich text editor, images, hand-drawn annotations, and audio and video comments made the

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learning environment feel lean and feedback cold and imprecise. These *primary* contradictions in the tool impeded interactivity within each group.

Not having the ability to record oral feedback ran counter to the course objectives, as T7 argued:

On a communicative course, it's a bit awkward because we encourage students to give oral comments. In person, students would do it orally. Maybe. (T7, Interview 2)

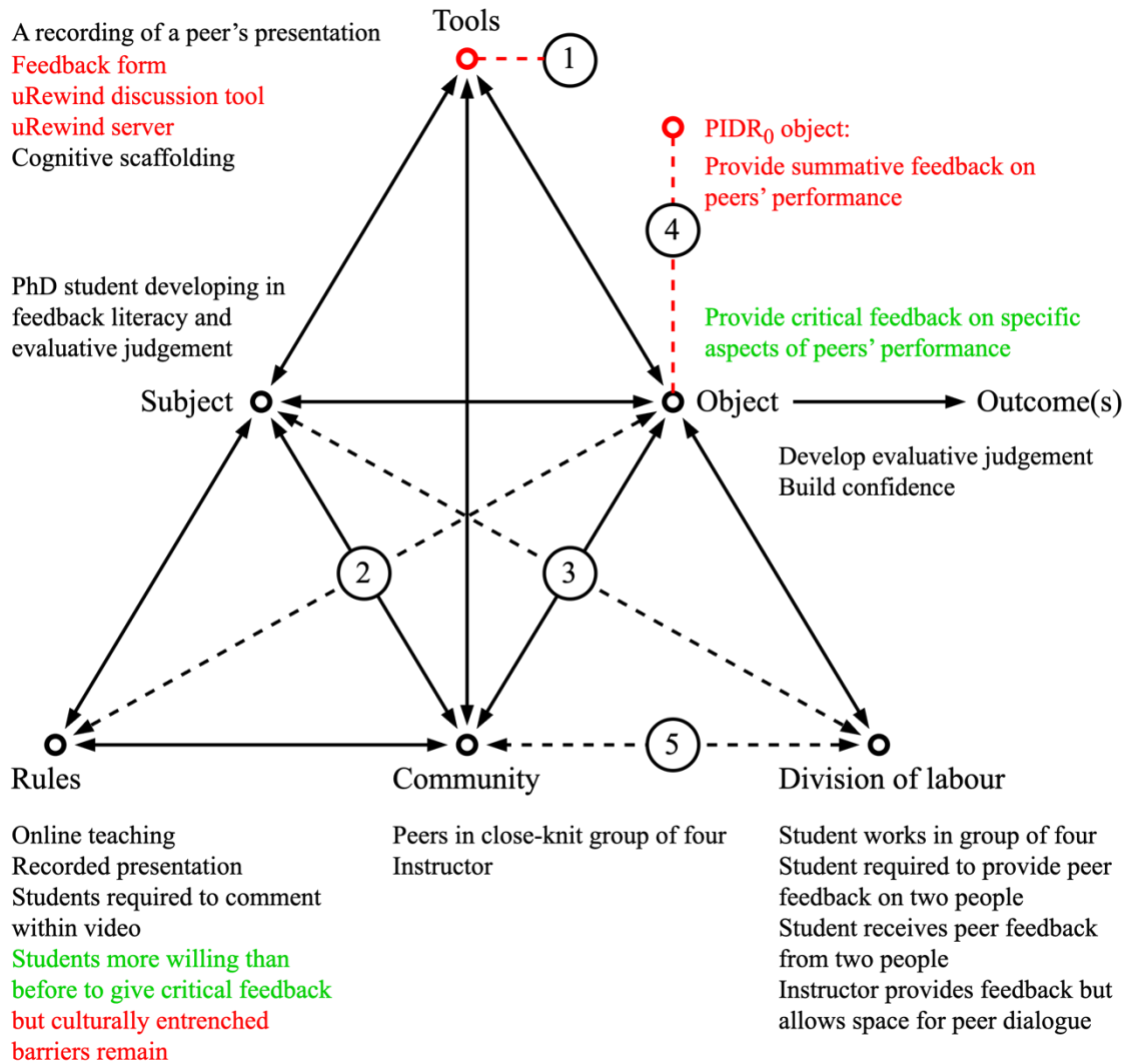
Being able to leave voice messages could, he felt, 'create a connection between commenting practice and everyday life experience': the practice of oral commenting in the context of an in-person presentation. The absence of this was a *secondary* contradiction between *tool* and *object*.

#### **5.4.4.5.2 Impact of other instruments on rules of engagement**

Other instruments, the feedback form and rubric, created *secondary* contradictions with the *object* of the new system. T4, who had emphasised the need for students to follow the rubric when commenting, found that some students had 'sort of copied and pasted' from the instrument. When presented with the feedback form and online commenting tool, some of T7's students judged the form to carry more weight, and dedicated less time and effort to peer commenting and discussion using the tool. It is likely that by providing formal instructor feedback using the form, T5 diminished the value of peer comments or made students reluctant to post, for fear that their feedback might contradict that of the instructor-expert. This relates to the contradiction between *community* and *division of labour* outlined in 5.4.4.1.

#### **5.4.5 Consolidation**

Exploring the contradictions inherent in PIDR<sub>1</sub> makes it possible to plan how the outcomes of the intervention may be consolidated into future peer feedback practices in the module, provided these contradictions, numbered in Figure 5.24, are resolved.



**Fig. 5.24.** Representation of five key contradictions inherent in PIDR<sub>1</sub>:

1. Shortcomings of the tool: Primary contradictions within the *tool*
2. Students not always confident interacting with peers: Secondary contradiction between the *rules* and *object*;
3. Students do not always see themselves or peers as legitimate feedback providers: Secondary contradiction between the *subject* and *division of labour*;
4. Students provide summary feedback rather than feedback on specific aspects of peers' performance: Quaternary contradiction between the *object* of PIDR<sub>1</sub> and that of the historical system, PIDR<sub>0</sub>;
5. Students value instructor feedback above their own: Secondary contradiction between *community* and *division of labour*

#### 5.4.5.1 Communicate and mitigate shortcomings of the tool

If students are to continue using the tool to engage in peer feedback, instructors felt it was critical that future versions of the activity system resolve the primary contradictions (1) outlined in 5.4.4.5.1 by making students aware of the limitations of the tool, on the assumption that these issues cannot immediately

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be overcome. In practice, this would involve providing more explicit instructions, an additional *tool*, explaining how to share videos within group, how to post, how comments are displayed, and that students are not notified when comments are added. This could ensure that initial motivation for peer collaboration is sustained and interactivity maximised.

#### **5.4.5.2 Provide guided hands-on practice in using the tool**

Instructors felt that providing opportunities for students to engage in guided, hands-on practice in using the tool for peer feedback early in the module could address multiple contradictions. First, it could allow students to gain in confidence in interacting with peers, overcoming the contradiction between culturally entrenched *rules* of social interaction and the *object* of providing critical feedback (2). Second, students could use the tool to develop the skills of feedback literacy and evaluative judgement, overcoming the contradiction between *subject* and *division of labour* to think of themselves and their peers as legitimate providers of feedback (3). Fostering these skills might involve, in addition to peer review, *evaluation of exemplar videos* followed by *guided discussion with instructors*, as used by T6 and T7 during implementation. To further establish shared expectations around effective feedback as specific, contextualised, formative and with a balance of prospective and retrospective analysis of different aspects of the presentation, and to overcome the quaternary contradiction (4) discussed above in 5.4.4.2.2, instructors agreed that this should also involve *modelling of the time-stamp function*, to make its cognitive and social-affective benefits explicit and ensure students used it.

#### **5.4.5.3 Be explicit about instructor roles and abandon the form**

Instructors' time and effort tended to be used most efficiently when the focus was on fostering student-student dialogue and validating their opinions through informal commenting, using the time-stamp tool. Instructors' activity was less effective when it involved writing summary feedback on the historical form. Using the form not only added considerably to instructor workload, but it also negatively influenced student expectations, causing some of them to value

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teacher feedback above their own or that of their peers. To overcome this *secondary* contradiction between *community* and *division of labour* (5), outlined in 5.4.4.1, instructors agreed to abandon the form in future.

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## 5.5 Cross-intervention analysis: Generalisation

Attempts at generalisation are a critical final part of the expansive learning cycle. It is important to note that generalisation has a specific technical meaning in expansive learning, as defined in section 3.5, and this meaning is not the same as a positivist would hold.

In this section, I analyse four themes common to all three interventions to explore how video-annotated peer feedback could be generalised. These include *using active facilitation; expanding the variety of cognitive scaffolding used; embedding social-affective support; and using wider learning objectives, not grading, to enhance motivation.*

For each theme, I present the general issue that has been raised. Next, I set out how it was raised in different ways across the three interventions. I then highlight core points of commonality between the interventions. I conclude my analysis of each theme by outlining actions which could be taken to realise specific goals, either by the institution, in other activity systems, or by the subjects of the activity system in each intervention.

### 5.5.1 Use active instructor facilitation

In each intervention, the role of the instructor in facilitating video-annotated peer feedback proved critical. Whilst the seven instructors adopted distinct approaches to facilitation, with T3 taking on different roles in Semesters 1 and 2, the group drew similar conclusions about the need for active strategies. Though such strategies must be context-specific, what they have in common are agreeing expectations for peer feedback with students, including the division of responsibilities between instructors and students and rules for commenting; modelling good feedback practices; providing space for discussion; and monitoring or weaving discussions as needed.

In terms of efficiency and interactivity, T6 and T7's active facilitation approach achieved the most successful outcomes, with the two instructors posting short, informal time-stamped comments and questions to promote peer dialogue. This



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approach served to demonstrate effective feedback practices. It also placed students at the heart of the process, developing their evaluative judgement and self-confidence. In contrast, T4 and T5 focused their time and effort on posting summary feedback using the historical form. This not only added to their workload, but also diminished the *use value* of students' peer feedback, since it implied that instructor feedback carried more weight. In Cycle 1 of Intervention 2, T3 unintentionally limited the space for discussion by posting lengthy overall feedback comments before students could add theirs. In the Cycle 2, he stepped back from the process altogether. Without active facilitation, many students lacked the cognitive and social-affective support needed to take part. In Intervention 1, while T1 and T2 provided feedback using a separate form, their comments were more formative than those given by T4 and T5 in Intervention 3. While T1 and T2, unlike T6 and T7, did not engage in online discussions, they used class time to facilitate in-person dialogue around students' recordings and peer feedback. Their approach, like that of T6 and T7, succeeded because it had been communicated to students and expectations were managed.

In future versions of the activity, practitioners should tailor their approach to the learning environment (online, hybrid or in-person) and feedback literacy of students. Time-stamped questions and comments should be used to stimulate initial posts among less confident groups, though more confident students would also benefit from posts to acknowledge or develop their ideas. It would also benefit instructors to share best practices in facilitating video-annotated peer feedback. This could take place through workshops organised by the Educational Development Centre.

### **5.5.2 Expand the variety of cognitive scaffolding**

Findings from the interventions suggest that while cognitive scaffolding is fundamental to student engagement in video-annotated peer feedback, the nature of the support required depends on sociocultural factors, including learning environment, level of study, and student feedback literacy and evaluative judgement.

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One example of this is the use of rubrics. In both models in Intervention 2, the undergraduate students received little cognitive scaffolding, and engagement and interaction was limited. These findings prompted T3 to suggest students would have benefited from a rubric to guide their peer commenting. In contrast, the postgraduate professionals in Intervention 1 engaged actively in the process, posting highly specific, contextualised comments. This persuaded T2 that a rubric would not have yielded any additional positive impact; it might even have restricted them. Intervention 3 provided evidence that if used without other scaffolds, rubrics may limit engagement, motivating students to copy wording from the descriptors rather than develop their evaluative judgement. What the interventions have in common is that all seven instructors concluded alternative forms of cognitive scaffolding were required, either because these had been used successfully, or because their absence had negatively impacted implementation of the model.

It is crucial that practitioners incorporate expanded forms of cognitive scaffolding into other activity systems that use video-annotated peer feedback, regardless of the level of study, to support students with lower feedback literacy and evaluative judgement. Instead of rubrics, scaffolding could include exemplar videos, tasks where students evaluate videos, or guided discussions of videos, as used by T6 and T7 in Intervention 3. To set expectations around feedback as specific, contextualised, formative, and incorporating prospective as well as retrospective analysis, findings from the interventions suggest this should also involve modelling of and guided, hands-on practice in using the time-stamp tool, together with analysis of feedback comments. During the feedback process, it would be helpful for students to have opportunities to engage in in-class discussions around comments they have given and received, as in Intervention 1. If they are to be used, future activity systems might involve students in developing rubrics, using an assessment for learning approach. In this way, rubrics could be an expression of students' own voice.

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### 5.5.3 Embed social-affective support

Findings from all three interventions underscore the importance of embedding social-affective support in video-annotated peer feedback tasks, particularly among students who lack historically accumulated expertise in peer assessment. The findings also reveal the impact of other sociocultural factors on students' *need for* social-affective support and capacity to *provide* peer support.

In Interventions 1 and 3, social-affective support was embedded, yet in markedly distinct ways. The first intervention involved health professionals with broadly similar characteristics, interacting in a hybrid learning environment. Their shared professional backgrounds and regular opportunities to meet and discuss feedback in person created a strong, supportive learning community in which all participants felt confident engaging in peer review. The third intervention took place within a context of fully online learning. This led the instructors to actively promote the development of strong learning communities, not only by asking students to engage in feedback within small groups, but also through the use of pre-task socialisation activities. In Intervention 3, especially with T6, these activities modelled effective use of the time-stamp function, which, when used effectively by students during video-based peer feedback, helped minimise many of the affective barriers associated with peer review. By contrast, social-affective support was not embedded in Intervention 2, where participants worked in diverse groups with students from other disciplines whom they had not previously met. Paradoxically, the relative anonymity afforded by online learning may have encouraged some students to engage in more critical commenting than in hybrid mode. However, participation was lower compared with Interventions 1 and 3.

It is critical that practitioners take actions to embed social-affective support into other activity systems using video-annotated peer feedback. While it is more challenging to foster learning communities within a large cohort of undergraduate students, as in Intervention 2, this might be achieved more easily in a future activity system where students have more frequent

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opportunities to interact and record presentations in person. In an online context, community-building could take the form of students recording short video self- or group introductions, as tried in Intervention 3, and inviting others to post time-stamped questions and comments, using the annotation tool. In either context, it is also paramount that students receive guided, hands-on practice in using the tool, to maximise the reported social-affective benefits associated with time-stamped commenting.

#### **5.5.4 Use wider learning objectives, not grades, to enhance motivation**

In all three interventions, motivation emerged as a central theme in participants' reflections on students' interactivity and engagement in video-annotated peer feedback. Instructors concluded that students were more likely to be motivated by wider learning objectives and personal growth than the attainment of a participation grade. This was supported by the survey, system, and annotation data from each intervention.

Overall, student interactivity and engagement was observed to be greatest where the *use value* of the activity to students was highest. In Intervention 3, as implemented by T6 and T7, students felt that providing critical feedback on peers' performance, and receiving peer feedback on their own performance, supported meaningful outcomes that extended beyond the task; not solely improving presentation skills, but also developing evaluative judgement and building self-confidence. While T4 and T5's groups were motivated by similar outcomes, the value of peer comments was reduced by the greater importance attached to instructor feedback, provided via the form. Nevertheless, in all four groups, peer feedback was successful because the focus was on future performance, not on achieving a grade. There was only a pass or fail grade for the assignment. In Intervention 1, though there was a participation grade, it was observed to have little impact on students' interaction, with most exceeding the minimum requirement. Here, the exchange value of the grade was outweighed by the use value of engaging in peer review, a process closely aligned with both the course learning objectives and students' broader professional learning goals. Due to the characteristics of students in Intervention 2, this alignment

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was more difficult to achieve; peer feedback was associated with a group project which not all members were not invested in. However, awarding a participation grade did little to boost participation. As in the other interventions, active students were motivated by the use value of a process which they felt would deepen their subject knowledge through peer learning, whilst developing their feedback skills and confidence. Removing the participation grade might have helped less active students to focus on this use value, encouraging them to take part.

In future activity systems, it is critical that instructors demonstrate that video-annotated peer feedback processes are aligned not only with the course learning objectives, such as a related summative assessment task, but also with wider professional or personal development objectives, including teamworking and evaluative judgement. If students are motivated by grades, it should be made clear how participating in peer feedback can enhance their performance, rather than simply awarding a grade for participation. Changing student attitudes to peer feedback is likely to require a shift in policy at programme or institution level.

## **5.6 Conclusion**

In this chapter, I have reported the findings of each intervention in turn, tracing the expansive learning process. In doing so, I have revealed how students' use of the annotation tool re-mediated peer feedback practices, thus highlighting sociocultural considerations. I then carried out a cross-intervention analysis to illuminate points of commonality and difference.

In the next chapter, I discuss the significance of my findings.

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## Chapter 6: Discussion

### 6.1 Introduction

The aim of my thesis is to contribute to the literature on the use of video in peer feedback for communication skills development in HE. In this chapter, I discuss the significance of my findings. In 6.2, I discuss how my findings answer my research questions. Section 6.3 argues how my findings contribute to the areas of literature reviewed in Chapter 2. My analysis for this chapter took the form of thoroughly reviewing my research outcomes to help answer my research questions, then revisiting the themes in the literature.

### 6.2 Answering the research questions

In this section, I discuss how my findings answer my research questions as defined in section 2.7:

RQ1: How does the use of a video annotation tool in peer feedback activities *re-mediate* culturally entrenched activity systems?

RQ2: What systemic *contradictions* may be generated through the design and implementation of video-annotated peer feedback activities?

RQ3: How might these contradictions be *overcome* in future versions of the activities, in practice by practitioners?

#### 6.2.1 How does the use of a video annotation tool in peer feedback activities re-mediate culturally entrenched activity systems?

In each intervention, instructors and students' use of the video annotation tool transformed established activity systems, resolving contradictions to enable peer feedback processes to become more *interactive* and *efficient*, and students' comments more *specific* and *contextualised*. Re-mediation of each system was shaped by sociocultural factors, including opportunities for students to receive feedback from *multiple sources*, such as from instructors or through self-reflection; the *sequencing* of these sources; *the role of the instructor* in

facilitating the peer feedback process; the use of *cognitive scaffolding*; and the impact of grades and social-affective support on students' *motivation*. In this subsection I summarise the impact of participants' use of the tool on their activity systems, highlighting the role of these sociocultural factors (identified as themes in Area A of my literature review) in developing interactivity, efficiency, specificity, and contextualisation (Area B). I compare the three interventions in Table 6.1.

	<b>Intervention 1</b>	<b>Intervention 2</b>	<b>Intervention 3</b>
<b><i>Historical contradictions</i></b>	Students had limited opportunities for innovation; were not incentivised to critically evaluate peers' presentations; had limited class time	Students found historical task un motivating and complained of 'free riders'; could not exchange ideas online; preferred video to text	Students lacked expertise in peer assessment; were culturally reticent to be critical; tended to give general rather than specific peer feedback
<b><i>Expansion of object</i></b>	Students engaged in peer feedback to develop context-specific innovation	Students engaged in peer commenting to develop video proposal	Students engaged in critical peer review to develop specific aspects of presentation
<b><i>Changes in practice</i></b>	Students motivated to engage in peer feedback to scaffold reflection; developed feedback literacy and evaluative judgement	Students developed skills and self-confidence; developed feedback literacy and evaluative judgement; easy to monitor participation	Students developed skills and self-confidence; developed feedback literacy and evaluative judgement
<b><i>Changes in student experience</i></b>	Interactive: feedback changed from instructor-led to dialogic and 'opened up' discussion; online discussion removed barriers to engagement  Efficient: could use class time for more ideas exchange; high number of contextualised comments addressed specific aspects of presentation	Interactive: peer commenting created connectedness among cohort  Efficient: students able to compare proposal; developed understanding of required standard; accessed targeted suggestions for improvement	Interactive: smaller peer groups removed barriers to engagement; active instructor facilitation also helped  Efficient: scaffolding led to more specific and critical commenting

**Table 6.1.** Comparison of the three interventions summarising how students' use of the video annotation tool for peer feedback tasks re-mediated each activity system

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### **6.2.1.1 Intervention 1: Postgraduate health education module**

In this postgraduate health education module, participants' use of the annotation tool expanded the object of the activity system. Whereas previous cohorts had created presentations that summarised example cases provided by the instructors, these students developed their own context-specific educational innovations. Under the historical activity system, students had been motivated by peer grades and were not incentivised to critically evaluate their peers' presentations, yet the new video-annotated feedback process motivated them to engage in peer commenting to scaffold further reflection and development, developing their feedback literacy and evaluative judgement. Previously, peer feedback had been conducted during class time. The use of the annotation tool enabled this process to take place asynchronously online, reducing cultural barriers to engagement, 'opening up' the discussion, creating space for reflection and freeing up class time for further ideas exchange.

Participants experienced the re-mediated activity as highly interactive, engaging in feedback with multiple peers, actively using annotated comments to generate internal feedback, gaining cognitive and social-affective support through in-class discussion, and receiving instructor feedback at the end of the process. In this way, the novel tool had altered the dynamics of control, transforming feedback from information handed down from instructor to student into a dialogue involving multiple participants. In contrast to the historical activity, in which students watched several hours of presentations without commenting, the re-mediated process was perceived as efficient: participants were able to use the annotation tool to achieve desired outcomes, developing their case studies, without wasting time or effort. In general, students made effective use of the time-stamp function, posting short, contextualised comments which addressed specific aspects of their peers' presentations. The large number of replies to these comments, views and minutes watched is further evidence that the students found the process efficient and useful.



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### **6.2.1.2 Intervention 2: Undergraduate general education module**

In this undergraduate general education module, the instructor and two cohorts of students used the video annotation tool over two successive cycles of expansive learning to expand the object of their activity system. Traditionally, students had worked in groups to write a project proposal, the purpose of which was to develop their knowledge of climate change. Students had not found the group writing task motivating, and often complained of ‘free riders’ in their groups, which the instructor was unable to monitor. When teaching and learning moved online, it became more challenging for students to interact and exchange ideas around their proposals. Under newer versions of the activity system, re-mediated by the novel tool, students engaged in peer feedback to develop video proposals, through which they enhanced their presentation skills and self-confidence and, in the most culturally advanced system, developed their feedback literacy and evaluative judgement. Creating video proposals and engaging in annotated peer feedback made it possible to monitor student participation at each stage.

Particularly in the second learning cycle, where the instructor did not post comments first, participants experienced the process as highly interactive, reporting that peer commenting created a sense of connectedness among the cohort. It was also efficient in enabling students to compare their proposal with others, developing their understanding of the required standard, and then quickly access specific, targeted peer suggestions for future improvement.

### **6.2.1.3 Intervention 3: Doctoral presentation skills module**

In this doctoral presentation skills module, four instructors and 12 groups of 20 students expanded the object of their activity system in different ways through their use of the novel video annotation tool. Previously, students had engaged in non-annotated video-based peer review using Microsoft OneDrive, providing summary feedback via an evaluation checklist. Due to their lack of historically accumulated feedback literacy and cultural reticence to be critical, their feedback tended to be general and minimal. Receiving peer feedback felt

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uncomfortable to them. The re-mediated activity system, incorporating cognitive and social-affective support and more active instructor facilitation, engaged students in providing more specific and critical feedback. In doing so, students developed their self-confidence and evaluative judgement.

In particular, students benefited from cognitive support that involved them in analysing exemplar presentations using time-stamped comments or discussing feedback with their peers and instructors before engaging in peer review. This led to greater interactivity and more specific peer commenting. Participants' use of the annotation tool also tended to be more efficient and interactive if the instructor actively monitored discussions and posted short, informal, time-stamped comments instead of using the historical evaluation checklist. This, and the fact feedback took place in small, private groups, mitigated the affective factors students associated with peer review.

### **6.2.2 What systemic contradictions may be generated through the design and implementation of video-annotated peer feedback activities?**

Findings from Chapter 5 reveal that across the three interventions, the design and implementation of video-annotated peer feedback activities generated systemic contradictions. In this subsection I briefly summarise these. I also provide an overview of the contradictions in Table 6.2.

In each intervention, primary contradictions emerged within the tool, impeding the efficiency and interactivity of each activity system. These included the absence of a notification function, which meant that some students did not read feedback comments they had received, while others logged in repeatedly to check for comments; the lack of rich media and social features, which could have reduced barriers to communication; and issues with sharing videos, which undermined confidence in the tool. The tool was used precisely because of its value in supporting peer discussion around students' videos, yet these issues undermined this primary purpose.

	Intervention 1	Intervention 2	Intervention 3
<b>Primary</b>	<i>Tool:</i> absence of notification function meant some students did not read comments that they received		
	<i>Tool:</i> lack of rich media and social features created barriers to communication		
	-	-	<i>Tool:</i> failure of share function undermined confidence
<b>Secondary</b>	-	<i>Community vs. division of labour:</i> instructors' approaches to feedback impeded interactivity and peer dialogue	
	-	<i>Rules vs. object:</i> students' continued reluctance to post critical comments limited interactivity or made feedback less efficient	
	<i>Rules vs. subject:</i> grades did not boost motivation		-
	<i>Community vs. object:</i> lack of cognitive scaffolding led to divergent expectations of peer feedback, making it less efficient and interactive	<i>Tools vs. subject:</i> absence of rubric limited peer discussion and reduced students' interest in peer feedback received	-
<b>Quaternary</b>	-	-	<i>Historical object vs. object of new system:</i> evaluation form focused on more summary feedback, leading to general comments rather than critical formative feedback on specific aspects

**Table 6.2.** Overview of contradictions encountered in each intervention, indicating which were common to more than one intervention

In both cycles of Intervention 2 and in two instructors' implementations of Intervention 3, secondary contradictions emerged between the community and the division of labour. These manifested themselves in the *instructors' approaches to facilitation*, including *their provision of feedback* and the ways in which this feedback was *sequenced*, and the extent to which students' expectations of instructor roles were agreed and managed. Providing instructor feedback in summary form before students had had the opportunity to engage in peer review, as in Intervention 2, Cycle 1, inhibited ideas sharing and

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modelled a less efficient, less interactive approach to peer commenting. Not giving feedback and not facilitating the process, in Cycle 2, also impeded discussion, since students' expectations regarding the division of responsibilities were not met. Conversely, in Intervention 3, students knew to expect instructor feedback from T4 and T5, after the peer review process. However, the formal way in which this feedback was given, using a historical evaluation form, caused some to value instructor feedback above their own, viewing peer comments as less legitimate.

In both cycles of Intervention 2 and in two instructors' implementations of Intervention 3, secondary contradictions also emerged between *culturally entrenched rules, which made students reluctant to engage in critical peer commenting*, and the object. In Intervention 2, this manifested itself in limited interactivity, whilst in Intervention 3 it resulted in a tendency for some students to post general, surface-level feedback, making the process less efficient.

In Intervention 1 and both cycles of Intervention 2, there were secondary contradictions between rules and subject: *the use of bonus marks and participation grades did not increase students' motivation to participate in peer feedback processes*. In Intervention 2 it had the opposite effect. While some students regarded the activity as unimportant due to the low number of marks it carried, others viewed it as an additional burden to be completed as quickly as possible. In both cases, desired outcomes were not fully realised.

In all three interventions, contradictions were generated by the *lack of cognitive scaffolding* or the nature of scaffolding provided. In Intervention 1, the absence of cognitive scaffolding gave rise to a secondary contradiction between the community and the object, using the peer review process to develop a case study. Since students were not given a rubric, exemplars, or guidance in providing feedback using the annotation tool, some had divergent expectations of the nature and purpose of peer feedback. They posted comments that were less contextualised and specific and retrospective rather than prospective, with the result that the process was less efficient and interactive. In Intervention 2, despite the provision of scaffolding such as an exemplar video and practice in

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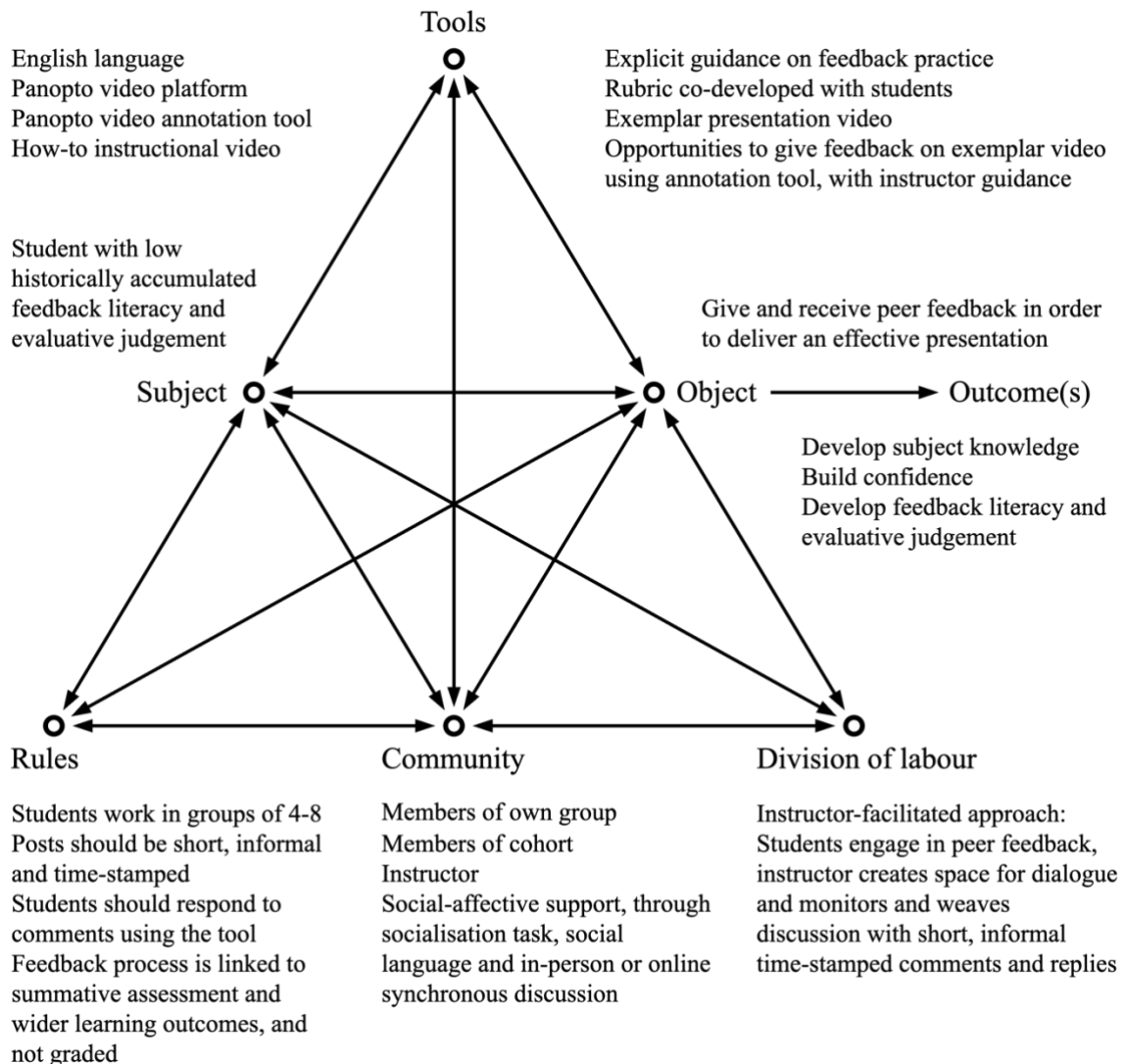
operating the annotation tool, the absence of a rubric with standardised criteria to guide peer feedback generated a secondary contradiction between subject and tools. Participation was limited, with no peer discussion in the form of replies to comments and little interest from students in the peer feedback they received. In Intervention 3, some students were encouraged to use a rubric, yet this was part of an evaluation form designed to help students achieve the object of an earlier activity system: the provision of grades and summary feedback on peers' performance. This led to a quaternary contradiction between this historical object and the object of the new system, which manifested itself in students writing general, summary comments rather than critical, formative feedback on specific aspects of their peers' performance. This made students' learning experience less interactive and also less efficient, since their desired outcomes, developing evaluative judgement and building confidence, were only partially realised.

### **6.2.3 How might these contradictions be overcome in future versions of the activities, in practice by practitioners?**

The cross-intervention analysis in section 5.4 highlighted how contradictions common to all three interventions might be overcome in future versions of the activities by practitioners in practice. In each case, instructors agreed on the importance of *active teacher facilitation* strategies: setting and managing expectations for peer feedback, including the division of labour between instructors and students and rules for commenting; modelling effective feedback practices; creating space for discussion, either in person or online; and monitoring or weaving discussions. Instructor posts should be short, informal and time-stamped.

Instructors also agreed that it would be critical to *expand the variety of cognitive scaffolding*, to include exemplar videos and activities where students evaluate or discuss these videos; guided practice in using the time-stamp function, together with analysis of feedback comments; in-class discussions around comments they have given and received; and opportunities for students to co-develop rubrics, using an assessment for learning approach.

*Embedding social-affective support* was also seen as fundamental to any future activity system, with evidence that this can be achieved through pre-task socialisation activities which, through modelling effective use of time-stamping, aim to allow students to feel comfortable using the tool. Wherever possible, students should be encouraged to discuss their feedback in person.



**Fig. 6.1.** Representation of a future activity system incorporating strategies for video-annotated peer feedback which enable practitioners to overcome contradictions which emerged in Interventions 1 to 3.

Lastly, instructors in all three interventions reflected that *wider learning objectives, not grades*, ought to be used to enhance student motivation. These could include not only course learning objectives, to be achieved through strategically aligned summative assessments, but also professional or personal

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goals, such teamworking or evaluative judgement. It should be made clear how participating in peer feedback can contribute to these goals, rather than simply to a participation grade.

Figure 6.1, a simplified summary activity system diagram, brings these strategies together and suggests where they have implications in the activity system.

### **6.3 Contribution to knowledge**

In this section, I argue how my research findings contribute to the two areas of literature reviewed in Chapter 2: Area A, the sociocultural factors that can shape students' experiences of video-based peer feedback in HE settings, and Area B, students' experiences of video-*annotated* peer feedback in these settings. In each area, I revisit each theme in turn, presenting the value of my findings in relation to the literature.

My core contributions are around the critical role of the instructor in designing and implementing video-annotated peer feedback processes. They include highlighting the centrality of active facilitation approaches and instructor feedback; emphasising the importance of selecting forms of cognitive scaffolding which are appropriate to the sociocultural context; foregrounding the purposeful blending of an in-person, instructor-facilitated approach and an online, student-centred approach; providing further evidence against assigning grades for video-based peer feedback; and providing a more nuanced perspective on how instructor presence and peer group size can mitigate the negative impact of social-affective factors on student motivation.

Further contributions are to explain aspects of how students experience video-annotated peer feedback. These include highlighting the relationship between specific varieties of cognitive scaffolding and features of the annotation tool and how this may result in more efficient, specific use of the tool; uncovering the relationship between perceptions of objectivity and peer collaboration; and highlighting the nature and extent of guidance and structure that is likely to promote interactivity. My final contribution is to recognise that irrespective of the

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precise task design or implementation, annotation tools will be used by students in ways that are not anticipated or scaffolded.

### **6.3.1 Area A: Video-based approaches to peer feedback in HE**

In this subsection, I revisit the sociocultural factors that can shape students' experiences of video-based peer feedback, presenting the value of my findings in relation to the literature.

#### **6.3.1.1 Multiple sources and sequencing**

My first contribution here is *to highlight the centrality of instructor feedback in promoting video-annotated peer feedback*. There is little agreement in the existing literature on the value of instructor feedback. Some argue for the inclusion of this feedback source (Ritchie, 2016); others suggest that it might not be essential, or could be limited to very brief comments (Leger et al., 2017); and yet others warn that it could be a 'poisoned gift', detrimental to peer learning (Murillo-Zamorano & Montanero, 2018, p. 146). Where instructor feedback is advocated, it is argued that it ought to be provided before peer feedback, allowing students to make sense of instructor feedback (Simpson et al., 2019) and offer more personalised feedback than instructors can provide (Yoong et al., 2023a; 2023b).

What these works overlook is that whilst instructor feedback *is* essential to video-annotated peer feedback, it can be given in a variety of ways; and instructors must design and implement their approaches to suit their specific sociocultural context. Different formats, styles, and sequences can be equally effective, provided students' expectations are met and they have space to engage in peer commenting.

In Intervention 1, students were able to discuss their innovations and peer comments with T1 and T2 informally, in class, but the instructors did not intervene in online peer discussions. This enabled students to direct the flow of online discussions (Hulsman & van der Vloodt, 2015), obtaining more personalised feedback (Yoong et al., 2023a; 2023b) which typically showed a



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'more precise understanding of [their] difficulties' (Murillo-Zamorano & Montanero, 2018, p. 146). While formal instructor feedback was provided once peer commenting had finished, students' expectation of that feedback did not seem to affect the confidence they placed in peer feedback. This can be explained by sociocultural factors, such as the strong sense of community within the group, due to their shared professional background, and the hybrid learning environment, which allowed for in-class discussion. In Intervention 3, instructor feedback was most successful when it was provided at the same time as peer feedback, in the form of short, informal comments (cf. Leger et al., 2017). This not only modelled contextualised, objective feedback, but also kept conversations going by acknowledging effective contributions. This was particularly important in a context where many students lacked feedback literacy and evaluative judgement, and there was no opportunity to discuss their feedback in person. By posting brief comments, instructors created space for students to provide deeper, more personalised feedback (Yoong et al., 2023a; 2023b) and established the expectation that the responsibility for feedback lay with them.

My second, related, contribution to these themes is *to signpost the negative consequences of inadequate instructor feedback in video-annotated peer feedback processes*. In conceptualising instructor feedback as either detrimental (Murillo-Zamorano & Montanero, 2018), non-essential (Leger et al., 2017) or beneficial (Ritchie, 2016), or something to be sequenced in a specific way (Simpson et al., 2019; Yoong et al., 2023a; 2023b), regardless of the sociocultural context, existing studies also overlook when and why instructor feedback may be less effective in supporting peer feedback, and what may happen in specific contexts if it is not provided.

In Cycle 1 of Intervention 2, both the nature and sequencing of instructor feedback reduced the space for students to comment on peers' presentations and critically reflect on their own work (cf. Murillo-Zamorano & Montanero, 2018). It also modelled an approach to feedback which was not dialogic and formative but instead unidirectional and summative. This militated against peer discussion, so that students did not engage in dialogue to make sense of the

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instructor's posts (cf. Simpson et al., 2019), let alone discuss their own comments. In Cycle 2, not receiving any instructor feedback meant that although students had space to comment, there was no model to support students who lacked feedback literacy and evaluative judgement and no acknowledgement for those who contributed. In Intervention 3, instructor feedback was less successful when it was provided after the peer feedback process in the form of more formal, evaluative comments, as again students were not supported. This resulted in less ideas exchange and further entrenched the belief among some students that instructor feedback carried greater weight. My findings suggest that these beliefs may be changed if, rather than presenting themselves as the ultimate and most important feedback source, instructors focus their time and effort on scaffolding and facilitating peer feedback, fostering the skills of feedback literacy and evaluative judgement to ensure peer feedback is as interactive and efficient as possible.

Both contributions are important for the literature because they highlight the need to pay attention to sociocultural factors in analysing the role of the instructor in peer feedback.

My third contribution is *to recognise that annotation tools are used by students for self-reflection in ways that are not anticipated or scaffolded by teachers in task designs*. Existing studies suggest that video-based peer feedback is likely to be of greatest benefit if combined with a process of self-reflection (Hulsman and van der Vloodt, 2015; Simpson et al., 2019; Yoong et al., 2023a; Zheng et al., 2021), since this can help students develop evaluative judgement (Smith et al., 2020). Whilst self-reflection is certainly a critical process, what these papers miss is that rather than being a necessary *condition* for 'effective' video-based peer feedback, self-reflection is an *outcome* of this approach, generated through students' interactions with the tool, their peers and peers' content.

In all three interventions, while students had not been asked to engage in self-reflection as a discrete step in addition to peer feedback (cf. Hulsman & van der Vloodt, 2015; Zheng et al., 2021), they did reflect on their own practice throughout the process. Examples include students in Interventions 1 and 3

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recording their presentations several times until they were satisfied with them, which by definition involves a process of self-evaluation; students in each intervention who experienced the act of providing peer feedback as a process of deep internal reflection; or the students in Intervention 1 for whom the purpose of peer feedback was to scaffold reflection on the needs of clients and colleagues in developing an educational innovation. The number of responses to peer comments and the time students spent reading them are also evidence of self-reflection. This contribution is vital because it emphasises student agency in shaping the outcome of research; existing studies tend to start with an outcome in mind and then simply measure how far this is achieved.

### **6.3.1.2 Instructor-facilitated and student-centred approaches**

My first contribution to this theme is *to highlight the centrality of active facilitation approaches to achieving interactivity and specificity in video-annotated peer feedback processes*. Existing studies have tended to draw a distinction between instructor-facilitated approaches (Hunukumbure et al., 2017; Paul et al., 1998) and those which are more student centred (Chen et al., 2019; Hsia et al., 2016; Nikolic et al., 2018). The first tend to be conducted whole class, synchronously, orally and in person, while the second typically take place in small groups, asynchronously, in writing online (Gatrell, 2022). In the literature, instructor-facilitated approaches are characterised as constructive and supportive, with open discussion (Hunukumbure et al., 2017; Paul et al., 1998). Student-centred approaches may be interactive and collaborative, with more genuine exchanges of ideas, due to the relative ‘safety’ of the online environment, although if instructors do not provide sufficient guidance, engagement may be limited (Nikolic et al., 2018) and student feedback may lack specificity and depth (Hsia et al., 2016).

What is underemphasised in these works is the importance of active facilitation, regardless of the specific setting. In all three interventions, there was evidence of interaction and collaboration (Chen et al., 2019) as students engaged in written feedback asynchronously online, and of specificity and depth in their commenting (Hsia et al., 2016; Nikolic et al., 2018). However, these

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phenomena were shaped to a large extent by instructors' approaches to facilitation, with more active facilitation associated with greater interactivity, specificity and depth. In Intervention 3, instructor facilitation proved particularly effective if it took the form of frequent monitoring of recordings, with shorter, informal, time-stamped comments to acknowledge student posts, model effective feedback practices, and promote peer dialogue. The online presence of the instructor helped to establish a constructive, supportive environment with open discussion (Hunukumbure et al., 2017; Paul et al., 1998), whilst preserving the benefits associated with online, asynchronous, student-centred approaches: interactivity, collaboration, genuine ideas exchange, specificity and depth (Chen et al., 2019; Hsia et al., 2016; Nikolic et al., 2018). Where instructor facilitation was less active in Intervention 3, interactions were more limited and feedback lacked specificity and depth. Given that the participants in Intervention 3 had relatively low historically accumulated feedback literacy and evaluative judgement, it is likely that active facilitation can help students develop these skills, regardless of their previous experience. Intervention 2 provides further evidence of how less active facilitation approaches inhibit student interactivity and engagement in an online environment. In this intervention, the students not only lacked evaluative judgement and feedback literacy, but as Year 1 undergraduates they also had more limited subject knowledge.

My second, related contribution to this theme is *to foreground instructors' purposeful blending of an in-person, instructor-facilitated approach and an online, student-centred approach*. By drawing a distinction between these two approaches, existing studies overlook how they might be combined to harness the benefits of each.

Intervention 1 provides evidence of how this can be achieved in practice, with in-person instructor facilitation acting to enhance the effectiveness of online student-centred peer feedback. Having intentionally freed up class time through students' use of the annotation tool, the instructors used this to facilitate in-person discussion around students' recordings and peer feedback provided, a process perceived by students as constructive, supportive, and open

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(Hunukumbure et al., 2017; Paul et al., 1998). This helped to establish expectations for feedback within the online environment. It ensured that even without the active online presence of the instructors, students' video-annotated peer feedback was interactive and specific, with evidence of collaboration and ideas exchange (Chen et al., 2019; Hsia et al., 2016; Nikolic et al., 2018).

Both contributions are critical for the literature because they highlight instructor agency in designing and implementing video-based peer feedback processes in an online or hybrid setting. Though active facilitation is key, this facilitation can be equally effective whether it takes place asynchronously online or synchronously in person.

### **6.3.1.3 Cognitive scaffolding**

My main contribution to this theme is *to highlight why particular forms of scaffolding can be more or less effective in specific sociocultural contexts*. There is broad agreement in the literature around the importance of cognitive scaffolding. Particular attention is paid to the role of rubrics in developing students' feedback literacy and evaluative judgement (Ritchie, 2016) or improving the specificity of peer comments (Anderson et al., 2012), as well as the need to provide instructions and advice to ensure students understand and apply them (Hsia et al., 2016; Nagel & Engeness, 2021; Yoong et al., 2023a, 2023b). Other works stress the benefits of combining rubrics with additional scaffolds, such as training courses, in which students learn about peer assessment (Lai et al., 2020; Li and Huang 2023) or practise using the rubric to evaluate self-introduction videos or exemplars (Murillo-Zamorano and Montanero, 2018; Zheng et al., 2021). Yet others call for alternative scaffolds, such as a peer review form, to invite more open comments (Davids et al., 2015); guided in-person discussions, to foster students' analytical and reflective skills (Admiraal, 2014); or instructor prompts, to encourage spontaneous discussion (Hunukumbure et al., 2017). In each case, however, the interaction of cognitive scaffolding with the wider sociocultural context is underexplored.

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My findings yield new insights on this. One example is students' use of the rubric in Intervention 3 and the non-use of rubrics in Interventions 1 and 2, where rubrics were not provided. In two of the implementations of Intervention 3 with T4 and T5, the principal scaffold used was the rubric, presented in the historical peer review checklist. While students had given presentations in class, with opportunities for live peer feedback, they had not had opportunities to practise using the rubric to evaluate self-introduction videos or exemplars with the video annotation tool (Murillo-Zamorano & Montanero, 2018; Zheng et al., 2021). Additionally, the rubric-checklist prescribed evaluation criteria, rather than scaffolding freeform comments (cf. Davids et al., 2015), which led many students in these groups to write less specific, less contextualised feedback, in some instances lifting phrases directly from the checklist rather than using their own words. By contrast, the students in T6 and T7's groups had additional cognitive scaffolds to develop their evaluative judgement, with the checklist given less prominence. In T6's group, students used an online video repository with pre-set time-stamped annotations to evaluate exemplar videos (Murillo-Zamorano & Montanero, 2018), whereas T7 engaged students in guided in-class discussions to develop their analytical and reflective skills (Admiraal, 2014). While the checklist served to guide students when commenting on peers' videos, the forms of scaffolding used by T6 and T7 were better suited to students' use of the video annotation tool to achieve their object: providing critical feedback on specific aspects of peers' performance. This would suggest that for students with low historically accumulated evaluative judgement, rubrics or checklists alone are not sufficient to scaffold video-based peer feedback; other more active approaches are needed.

Participants' use of alternative scaffolds can explain the different outcomes in Interventions 1 and 2, where rubrics were not used. In Intervention 1, despite the absence of a rubric or any evaluation criteria, most students engaged successfully in interactive, specific, contextualised peer commenting. This can be attributed to the instructors' facilitation of guided, in-person discussions throughout the peer feedback process, which promoted open discussion. Given the stronger sense of community in this group and students' relatively higher

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level of evaluative judgement, it is also possible that using more prescriptive evaluation criteria could have inhibited the students' activity (Davids et al., 2015), although it could have benefited the smaller number of students with lower levels of evaluative judgement. In contrast, students in both cycles in Intervention 2 had more limited scaffolding. In Cycle 1, this consisted of a guide to the technical operation of the tool. For Cycle 2, it also included hands-on practice and explicit guidance from the instructor (Hsia et al., 2016; Nagel & Engeness, 2021; Yoong et al., 2023a, 2023b), yet these approaches focused separately on technical operations and advice on peer assessment, rather than providing opportunities for students to practise giving peer feedback and applying the advice. While student engagement was higher in Cycle 2 as a result of the additional scaffolding, comments were less specific. Given the students' lower level of evaluative judgement, the use of a more structured rubric, as well as more active forms of scaffolding, might have been beneficial.

This contribution is critical for the literature because it underscores the importance of sociocultural context in understanding the impact of varied forms of scaffolding.

#### **6.3.1.4 Motivation**

My first contribution to this theme is *to provide further evidence in favour of the view that grading students on their participation in video-based peer feedback is unlikely to enhance motivation*. In general, scholars concur that students who engage in such processes tend to be intrinsically motivated rather than grade-oriented, though the exact source of this motivation is unclear. Motivation may derive from a desire to perform better in linked summative assessments (Simpson et al., 2019; Toland et al., 2016); perceived improvements in communication skills (Krause et al., 2022); or simply the 'satisfaction, pleasure and challenge' of peer review (Hsia et al., 2016, p. 64). Indeed, if the process is purely formative and ungraded, it is likely to be less stressful and thus more motivating (Yoong et al., 2023b). Nevertheless, others have concluded that grades can motivate low-ability students (Nikolic et al., 2018).

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My findings lend weight to the former opinion. In Intervention 1 and both cycles of Intervention 2, the use of participation grades and bonus marks did not increase students' motivation. In Intervention 2, it had the opposite effect. Whereas some students viewed the activity as unimportant due to the low number of marks it carried, others saw it as an additional burden to be completed as quickly as possible. For these students, the use of a grade was a source of stress (cf. Yoong et al., 2023b). In Intervention 1, the fact that many students exceeded the minimum requirement of posts indicated that the group were already sufficiently motivated to engage in peer feedback without the need for a participation grade. Like the doctoral students in Intervention 3, who were not graded for participating in peer feedback, the postgraduate students in Intervention 1 were motivated by factors identified in the literature: related summative assessment (Simpson et al., 2019; Toland et al., 2016), perceived improvements (Krause et al., 2022), and 'satisfaction, pleasure and challenge' (Hsia et al., 2016). In Intervention 2, all three factors were lacking because the peer feedback process was much less well aligned with the summative assessment and students' interests beyond the module. This contribution is valuable as it may help scholars understand when grading video-based peer feedback is likely to be merely ineffective and when it could in fact be detrimental to students' willingness to engage.

My second contribution to this theme is *to highlight how the impact of social-affective factors on motivation can be mitigated by instructor presence and peer group size*. Existing works agree that students' motivation to engage in video-based peer feedback can be negatively impacted by anxiety and stress (Lewis et al., 2020; Smallheer et al., 2017; Zheng et al., 2021), distress (Hunukumbure et al., 2017), vulnerability (Colasante, 2011), fear and intimidation (Näykki et al., 2022), and shame (Herrmann-Werner et al., 2019). There is less consensus on how these feelings can be mitigated, with studies advocating, on the one hand, in-class peer dialogue (Admiraal, 2014) with the *presence* of supportive and respectful peers and instructors (Lewis et al., 2020), and, on the other hand, the *absence* of instructors (Smallheer et al., 2017), a reduced number of peers or even the absence of *peers*, so feedback is private between instructor and



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student (Colasante, 2011). What the existing literature overlooks is that instructors can be present in a variety of ways and at different points throughout the process, particularly in a hybrid learning environment. In addition, while the use of smaller peer groups may be beneficial, it is not sufficient to address the negative impact of social-affective factors on motivation, due to the influence of other sociocultural factors which are underexplored in the literature.

My findings from Intervention 1 can explain the apparent contradictions in the literature regarding the impact of instructor presence on social-affective factors. In this hybrid setting, students benefited from the presence of supportive instructors *in class* (Lewis et al., 2020), facilitating constructive peer dialogue (Admiraal, 2014), but also from the absence of instructors *online* (Smallheer et al., 2017). In the absence of instructors, peer feedback was less stressful and intimidating, and students were more motivated to engage. However, this was contingent on in-person social-affective support, which was lacking in Intervention 2.

The different experiences in Intervention 3 can explain the effect of group size on social-affective factors. They suggest that conducting video-based peer feedback in smaller groups is an important but not sufficient condition for removing social-affective barriers to engagement. While the decision to 'close the network tighter' (Colasante, 2011, p. 84) created a safe enough learning environment for the majority of students to take part, other factors were required to ensure students' comments were specific and critical. These included active instructor facilitation, itself a means of support, and the socialisation tasks that groups engaged in before peer reviewing the doctoral presentations. In this online setting with students who lacked evaluative judgement, the supportive presence of instructors was critical (Lewis et al., 2020). Where instructors were less present, students' motivation to engage in critical peer feedback was negatively affected.

This contribution is valuable because it shows that instructor presence and peer group size are not simply variables that can be adjusted to raise student motivation. Instead, instructors and peers are part of complex activity systems,

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and changes in their roles will be mediated by diverse sociocultural elements within those systems, with often unexpected outcomes in terms of motivation.

### **6.3.2 Area B: Uses of video annotation tools in peer feedback**

In this subsection, I revisit the characteristics of student experiences of video-annotated peer feedback in HE settings, again presenting the value of my findings in relation to the literature.

#### **6.3.2.1 Efficiency, specificity and feedforward**

My contribution to these themes is *to explain the relationship between specific forms of cognitive scaffolding and inherent features of the annotation tool, and how this may result in more efficient and specific, feedforward-focused use of the tool*. In the literature there are two strands of opinion on the efficiency of video-annotated peer feedback approaches. The first argues that they are more efficient than non-annotated approaches, despite additional student workload, since they result in more deliberate, solutions-focused commenting and more peer feedback overall (Lai et al., 2020). In promoting more specific, contextualised commenting, they can reduce the time students would otherwise spend searching recordings for events that correspond to the feedback provided (Leung & Shek, 2021; Shek et al., 2021) and minimise primacy and recency bias (Shek et al., 2021). The second argues that video-annotated peer feedback is more cognitively challenging for less experienced or lower-ability students, resulting in low motivation and engagement (Fadde & Sullivan, 2013; Li & Huang, 2023). For these students, simplified, instructor-guided viewing is likely to be more productive than relying on inherent features of the tool (Fadde & Sullivan, 2013). Existing works are also divided on the factors that generate specificity and feedforward in video-annotated approaches, with this again attributed to, on the one hand, certain characteristics of the tools (Baran et al., 2023; Rich & Hannafin, 2009), or, on the other, cognitive scaffolds, such as observing or assessing sample videos (Ellis et al., 2015). What these studies overlook is that far from being distinct, competing determinants of efficiency and specificity, the two factors are interrelated: guided viewing ensures that more

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students can benefit from the efficiency of the tool and its potential for specificity and feedforward.

T7's implementation of Intervention 3 provides evidence that students with relatively low evaluative judgement can, through instructor-guided viewing (Fadde & Sullivan, 2013) and analysis of exemplars, develop the skills needed for specific, contextualised commenting, and take advantage of the efficiency of the tool (Lai et al., 2020; Leung & Shek, 2021; Shek et al., 2021). This phenomenon was observed to a lesser extent among T6's group, who did engage in analysis of exemplars, yet with less explicit guidance, before commenting; and less so still among T4 and T5's students, who did not engage in guided viewing and wrote comments which were generally less specific and contextualised. Rather than the annotation tool and instructor-guided viewing being distinct determinants of efficiency, my findings suggest that guided viewing may in fact enhance the efficiency of the tool. The different levels of efficiency in Interventions 1 and 2, neither of which used guided viewing, may be explained by the students' differing levels of evaluative judgement. In Intervention 1, participants used their relatively high historically accumulated expertise in peer feedback to engage in specific, contextualised commenting. However, my findings also highlight the influence of other sociocultural factors on efficiency, including the nature of the learning community and social-affective support.

This is important to the literature that addresses efficiency, specificity and feedforward because it once again underscores the need for cognitive scaffolding in order to maximise students' efficient and specific use of the tool.

### **6.3.2.2 Perceptions of objectivity and peer collaboration**

My contribution to this theme is *to explain the relationship between perceptions of objectivity and peer collaboration*. There is broad agreement on the potential of video annotation tools to support peer feedback which is contextualised, evidence-based, and therefore perceived as objective (Baran et al., 2023; Cattaneo et al., 2020; Evi-Colombo et al., 2020; Ho et al., 2021; Leung & Shek,

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2021; Rich & Hannafin, 2009; Shek et al., 2021). However, the literature is far less clear regarding the relationship between perceptions of objectivity and peer collaboration. Some studies attribute participants' enhanced sense of objectivity to greater participation, which generates a wider range of perspectives and thus more balanced feedback (Rich & Hannafin, 2009; Shek et al., 2021). In other works, it is the evidence-based, objective nature of video-annotated feedback that leads students to engage in greater collaboration (Baran et al., 2023; Cattaneo et al., 2020). What is missed is that this relationship may work in both directions, but in order for it to be successful, it must be purposefully built into the design of the activity system.

Intervention 1 and T7's implementation of Intervention 3 were each characterised by highly interactive, contextualised and specific commenting, despite differences in the sociocultural context. In Intervention 1, the instructors focused on community-building and interactivity first. This created the conditions for a very high number of contextualised, specific posts from across the group, contributing to perceptions of objectivity (Rich & Hannafin, 2009; Shek et al., 2021). This approach was appropriate, given students' relatively high feedback literacy and evaluative judgement, their shared characteristics and the hybrid environment. In contrast, T7 emphasised developing the skill of contextualised, specific commenting through whole-class analysis of exemplar videos, ensuring that students' posts were more objective. This gave students the confidence to post, and their perceptions of quality in peer comments motivated them to interact. This approach was also suited to the context of a fully online environment and students with little sense of community and low historically accumulated peer feedback expertise. It also called for more active instructor facilitation compared with Intervention 1, with T7 scaffolding interactions in each group.

This contribution is important for the literature as it emphasises that different aspects of students' experiences of video-annotated peer feedback are complex and interrelated, and cannot be studied in terms of a straightforward causal relationship.

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### 6.3.2.3 Interactivity, guidance and structure

My contribution to this theme is *to highlight the nature and extent of guidance and structure that is likely to promote interactivity in video-annotated peer feedback*. In the existing literature, there is a broad consensus on its interactive, participatory and collaborative nature. This is attributed to students being able to author specific, time-stamped comments, resulting in open, authentic communication, and critical, constructive feedback (Leung & Shek, 2021); the environment is more interactive because it is less face-threatening, with fewer cultural barriers to knowledge exchange (Evi-Colombo et al., 2020). However, it is also acknowledged that in order to cultivate interactivity, instructors must both facilitate and contribute to critical dialogue (Shek et al., 2021) and share *guidance* on giving and receiving constructive feedback (Colasante, 2011; Ellis et al., 2015). It is also suggested that video-annotated peer feedback is more likely to be interactive if it is *structured* (Näykki et al., 2022; Pless et al., 2021). What is unclear in the literature is the required *nature and extent* of this guidance and structure.

In Cycle 2 of Intervention 2, students were provided with significantly more explicit guidance from the instructor on peer commenting than in Cycle 1 (Colasante, 2011; Ellis et al., 2015), and completed a more structured task (Näykki et al., 2022; Pless et al., 2021), posting comments on a specific group's video plus a second recording of their choice. Peer feedback was more interactive in Cycle 2 in terms of peer video views, active commenters, comments and words posted, despite the absence of instructor facilitation and scaffolding of peer dialogue.

Intervention 3, with its use of groups of four and requirement that students comment on two named peers, and the provision of the feedback checklist, was more structured and guided still. It is possible that this contributed to the generally high interactivity across all four implementations, characterised by full participation in three groups, high wordcount and peer dialogue. While Intervention 1 achieved a similar level of interactivity, the distribution of peer comments in Intervention 3 was significantly more equal. This, again, may be

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attributable to the greater structure and guidance in Intervention 3. However, it is worth noting that the most interactive group, with T7, made least use of the checklist; in contrast, T4 and T5's groups were instructed to refer to the checklist when commenting, and particularly T5's students were less interactive. This would suggest that T7's use of guided analysis of exemplar videos and active instructor facilitation had greater impact.

This contribution is critical because it highlights the need for researchers to pay closer attention to the way guidance and structure are built into the design of video-annotated peer feedback. Not all students will benefit equally from guidance and structure, and certain forms of guidance and structure may have an unexpected or even negative impact on interactivity, depending on the sociocultural context.

#### **6.4 Conclusion**

In this chapter, I have answered my research questions and discussed the contribution of my findings to the literature. My core contributions are around the centrality of active facilitation and appropriate cognitive scaffolding, the use of blended approaches, and the negative impact of grading and positive impact of instructor presence and smaller peer group size on motivation. I also highlight how cognitive scaffolding may result in more efficient, specific uses of the tool; uncover the relationship between perceptions of objectivity and collaboration; and highlight the guidance and structure needed to promote interactivity using the tool.

In the following chapter, I conclude my thesis. I reflect on the objectives of my study, the findings, limitations, and the broader implications of my work for policy, practice and future research.

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## **Chapter 7: Conclusion**

### **7.1 Introduction**

I begin this chapter by reminding the reader of the research objective for this study, and how I approached that objective. I then summarise the findings that I interpreted from the data, answering my research questions, before addressing the study's limitations. Next, I focus on the central tenet of my thesis, outlining my contribution to new knowledge. Finally, I draw the thesis to its conclusion by discussing implications for policy, practice and future research.

### **7.2 Research objective**

This thesis has sought to contribute to the literature on the use of video in peer feedback for communication skills development in HE. In Chapters 1 and 2, I argued that the literature did not take sufficient account of the sociocultural aspects that shape the design and implementation of video-based peer feedback tasks and re-mediate students' engagement in these tasks using video.

My intention was to contribute new knowledge about the impact of these sociocultural aspects on students' experiences of video-annotated peer feedback. In alignment with my ontology and epistemology, discussed in Chapter 3, I designed a form of intervention underpinned by Activity Theory and the related notion of expansive learning, outlined in Chapter 4. I used this methodology to collaborate with instructors in my institution to stimulate and trace the design and implementation of video-annotated peer feedback in three modules, where in each intervention the annotation tool re-mediated an established activity system. These interventions were reported in detail in Chapter 5. From the synthesis of that data, I argued a number of key findings. Based on these findings, in Chapter 6, I argued that my thesis made contributions to knowledge.

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### 7.3 Research findings

In each of the three interventions, re-mediation of the activity system was shaped by sociocultural factors arising from the history of the activity and its multiply mediated structure: opportunities for students to receive feedback from multiple sources, such as instructors or self-reflection; the role of the instructor in facilitating the peer feedback process; the use of cognitive scaffolding; and the impact of grades and social-affective support on students' motivation. Instructors and students' use of the annotation tool transformed established systems, resolving contradictions to enable peer feedback processes to become more interactive and efficient, and student comments more specific and contextualised.

The object of each activity system was expanded in the course of each intervention. In Intervention 1, students' new object was to engage in peer feedback on their own educational innovation, using the tool, to scaffold reflection and development. The re-mediated activity system reduced cultural barriers to participation, and freed up class time for discussion, which provided cognitive and social-affective support. Students' use of the tool radically altered the division of labour, transforming feedback from something conveyed from instructors to students into critical dialogue, involving all cohort members. In Intervention 2, students' use of the tool was oriented towards the development of video proposals, which enhanced their presentation skills and self-confidence while fostering feedback literacy and evaluative judgement. The re-mediated system helped students internalise assessment standards and access specific, targeted peer suggestions for improvement. It also created a sense of connectedness among the cohort. In Intervention 3, students used the annotation tool to achieve the expanded object of more specific, critical peer review than had been seen in earlier iterations of the module. In the re-mediated activity system, they benefited from cognitive scaffolds, such as the analysis of exemplar presentations and whole-class discussions of feedback with peers and instructors, and active instructor facilitation. Negative social-affective factors were mitigated by the use of small, private groupings and regular, informal instructor commenting.



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The design and implementation of video-annotated peer feedback tasks generated new systemic contradictions and exacerbated existing ones. In all interventions, primary contradictions in the tool, including the absence of a notification function or social communication features, undermined its core purpose in facilitating peer discussion. Secondary contradictions between community and division of labour manifested themselves in instructors' provision of feedback and how this was sequenced. Formal, summary, comments in Interventions 2 and 3 caused some students to value instructor feedback above their own or view peer comments as less legitimate. Secondary contradictions also emerged between culturally entrenched rules, which made students reluctant to engage in critical commenting, and the object. In Intervention 2, this manifested itself in limited interactivity. In Intervention 3 it resulted in more general, surface level feedback, making the process less efficient. Participation grades, used in Interventions 1 and 2, did not increase students' motivation to participate in peer feedback processes: a secondary contradiction between rules and subject.

In all three interventions, contradictions were generated by the lack of cognitive scaffolding or the nature of scaffolding provided. In Intervention 1, the absence of cognitive scaffolding gave rise to a secondary contradiction between community and object, where some students had divergent expectations of the purpose of peer feedback and posted comments that were less contextualised and specific. In Intervention 2, guidance on feedback and practice in operating the tool were not sufficient for students to engage in peer discussion; this created a secondary contradiction between subject and tools. In Intervention 3, the rubric formed part of an evaluation form designed to help students realise the object of an earlier activity system: providing grades and summary feedback on peers' performance. This generated a quaternary contradiction, manifesting itself in students writing general, evaluative comments as opposed to critical, formative feedback on specific aspects of performance.

In section 5.4, I suggested how the contradictions may be overcome in future versions of the activities. First, active instructor facilitation strategies are fundamental, so that student expectations for peer feedback are clearly

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communicated and managed; effective feedback practices are modelled; there is space for discussion; and discussions are monitored and woven with short, informal, time-stamped instructor comments. Second, cognitive scaffolding must be expanded to include student-generated rubrics, analysis of exemplars, guided practice in time-stamped commenting, analysis of feedback comments and, where possible, in-class discussions around feedback given and received. Third, it is critical that social-affective support is embedded through socialisation activities which build students' confidence in using the tool. Lastly, wider learning objectives, not grades, ought to be used to enhance student motivation.

#### **7.4 Limitations**

Having consolidated the findings of the study, I now consider limitations in its design and implementation. I begin with practical issues that I was able to address, and move on to consider wider concerns which I was unable to overcome or were beyond the scope of the project.

I anticipated several practical issues with research processes at the start of the project. In Semester 1, timetabling issues meant that it was not possible to conduct Survey 1 with the students in Intervention 2 before they engaged in video-annotated peer feedback. In addition, lead instructor T1 in Intervention 1 did not allow students to answer either of the two surveys during class time, which led to a low response rate. Although I obtained enough responses to include in my analysis at each stage of the learning cycle, my reporting of students' expectations and experiences of video-annotated peer feedback was less rich than I had hoped. In particular, I was unable to explore students' experiences of the hybrid learning environment in more depth, to understand how in-class discussion enhanced online collaboration using the tool. Before the start of Semester 2, I was better able to communicate the importance of students completing the surveys in class at the correct points in the learning cycle. This resulted in much higher response rates in Cycle 2 of Intervention 2 and in Intervention 3, creating a much richer picture of how the re-mediated activity systems shaped students' experience.

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My experience in Intervention 1 relates to a broader concern: my need to adapt to the learning and teaching context. In this postgraduate health education module, it was critical that students had the freedom to design a learning intervention using their own choice of tool. Placing emphasis on video annotation software might have influenced these choices, limiting their opportunities for authentic use of other tools. Intervention 3, meanwhile, took place in the context of a large doctoral presentation skills module with nine instructors and 480 students in 24 groups of 20. The importance of standardisation across all groups meant that it was not feasible for individual instructors to make significant changes to the task design, such as the size of subgroups or the marking criteria used, even if this was identified as a need based on analysis of the activity system. This limited the potential for each re-mediated activity system to address all contradictions in the historical system by exploring the full range of strategies from the literature.

One additional shortcoming is that although I engaged instructors and students in questioning and analysing historical activity systems, their agency in modelling and examining new activities was often more limited. I had considerable influence over the activity design, particularly in Interventions 2 and 3. Moreover, in Intervention 1, in which the instructors led the design process, modelling and examination had taken place before the interview, and was the product of the instructors' own prior questioning and analysis. These expansive learning actions did not take place in the first interview; rather, it was an opportunity for me to learn how these actions had unfolded. In all three interventions, the instructors would have benefited from working through each expansive learning action in turn and constructing their own representations of their existing and planned activity systems. Having these activity system diagrams and the time to think through them could have generated richer discussions. Instead, I produced the diagrams after each interview had taken place. Students' involvement in each intervention was restricted to open-ended survey responses. Although these did enable me to better understand and analyse their practice-problems, their expectations of the re-mediated activity system, and their experiences of video-annotated peer feedback, they had no

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role in constructing the new system: this had been decided on before their survey responses had been collected. Student interviews or focus groups would have given me a richer understanding of their role as subjects in each activity system. This could then have been used to inform the design and implementation of each re-mediated model, thus enhancing my research.

Other limitations, as with my decision not to use student interviews or focus groups, also stemmed from constraints around capacity, timescale, and word count. Having recruited eight instructors to participate in Intervention 3, I proceeded to collect such rich interview data that I decided to limit my analysis to only four of them, selecting those that represented the broadest combination of approaches to video-annotated peer feedback. I also chose to limit my analysis of the annotation and system data to one, instead of three, groups per instructor in Intervention 3, and to use this data in all interventions for illustrative purposes. Discussing the specificity of the annotation data in depth and carrying out analysis of students' interaction patterns using the tool would require a different kind of project.

Lastly, it could be argued by those with a different ontological or epistemological stance that a limitation of my study is its lack of generalisability: its inability to provide solutions that can be transferred directly to other contexts. However, this would not align with the ontological and epistemological positions I hold, as established in sections 3.2 and 3.3. The three formative interventions in my thesis were designed to be tailored and developmental, addressing the complexities of each specific context. Given that the sociocultural aspects of different contexts are central to the project, it would be bizarre to seek to produce generalisable findings. The findings from this project should therefore not be seen by policymakers or practitioners as immediately replicable. Instead, they are intended as rich, contextualised analyses of how students' use of the video annotation tool re-mediated each activity system, yielding contributions which could benefit policymakers or practitioners in a similar context.

## 7.5 Contribution to new research knowledge

My intention throughout my study has been to address the research gaps identified in the literature. Having set out my contributions in detail in section 6.3, I highlight the key contributions here. I also provide a summary of them in Table 7.1, organised by the research areas and themes I identified in Chapter 2.

Research area	Theme	Contribution
<b>Area A: Video-based approaches to peer feedback in HE</b>	Multiple sources and sequencing	<ul style="list-style-type: none"> <li>to highlight the centrality of instructor feedback in promoting video-annotated peer feedback</li> <li>to signpost the negative consequences of inadequate instructor feedback in video-annotated peer feedback processes</li> <li>to recognise that annotation tools are used by students for self-reflection in ways that are not anticipated or scaffolded by teachers</li> </ul>
	Instructor-facilitated and student-centred approaches	<ul style="list-style-type: none"> <li>to highlight the centrality of active facilitation approaches to achieving interactivity and specificity in video-annotated peer feedback processes</li> <li>to foreground instructors' purposeful blending of an in-person, instructor-facilitated approach and an online, student-centred approach</li> </ul>
	Cognitive scaffolding	<ul style="list-style-type: none"> <li>to highlight why particular forms of scaffolding can be more or less effective in specific sociocultural contexts</li> </ul>
	Motivation	<ul style="list-style-type: none"> <li>to provide further evidence in favour of the view that grading students on their participation in video-based peer feedback is unlikely to enhance motivation</li> <li>to highlight how the impact of social-affective factors on motivation can be mitigated by instructor presence and peer group size</li> </ul>
<b>Area B: Uses of video annotation tools in peer feedback</b>	Efficiency, specificity and feedforward	<ul style="list-style-type: none"> <li>to explain the relationship between specific forms of cognitive scaffolding and inherent features of the annotation tool, and how this may result in more efficient and specific, feedforward-focused use of the tool</li> </ul>
	Perceptions of objectivity and collaboration	<ul style="list-style-type: none"> <li>to explain the relationship between perceptions of objectivity and peer collaboration</li> </ul>
	Interactivity, guidance and structure	<ul style="list-style-type: none"> <li>to highlight the nature and extent of guidance and structure that is likely to promote interactivity in video-annotated peer feedback</li> </ul>

**Table 7.1.** Summary of contributions to new research knowledge

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My core contributions are around the critical role of the instructor in designing and implementing video-annotated peer feedback processes. They include highlighting the centrality of active facilitation approaches and instructor feedback; emphasising the importance of selecting forms of cognitive scaffolding which are appropriate to the sociocultural context; foregrounding the purposeful blending of an in-person, instructor-facilitated approach and an online, student-centred approach; providing further evidence against assigning grades for video-based peer feedback; and providing a more nuanced perspective on how instructor presence and peer group size can mitigate the negative impact of social-affective factors on student motivation.

Further contributions are to explain aspects of how students experience video-annotated peer feedback. These include highlighting the relationship between specific varieties of cognitive scaffolding and features of the annotation tool and how this can result in more efficient, specific use of the tool; uncovering the relationship between students' perceptions of objectivity and peer collaboration; and highlighting the nature and extent of guidance and structure that is likely to foster interactivity. My final contribution is to recognise that regardless of the precise task design or implementation, video annotation tools will be used by students in ways that are not anticipated.

## **7.6 Implications for policy**

In this section, I set out how my findings contribute to the policy discourse around assessment and feedback, and peer feedback in particular, established in section 1.5. I also explain how they could inform the development of new policies around video-based peer feedback in HE.

Policy discussions on assessment and feedback have sought to address relatively low student satisfaction with the clarity of assessment criteria, the timeliness of instructor feedback, and its usefulness in improving performance, as found in institutional or national surveys. This study has shown that through their use of video-annotated peer feedback, students were able to develop evaluative judgement and feedback literacy, which allowed them to internalise

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task requirements and provide prompt feedback that their peers perceived as useful. Moreover, each intervention uncovered evidence of collaborative learning, community building and peer learning, with students engaging in critical reflection and, crucially, taking responsibility for their own learning, all benefits discussed in the policy literature. In its analysis of historical approaches to peer feedback, my study exposed many of the same challenges reported at policy level: some students' unwillingness to adopt what they saw as the instructor's role in providing feedback, a reluctance to give critical comments, and a tendency to assign all peers the same mark in exchange for a high grade. In analysing the design and implementation of more culturally advanced activity systems incorporating the video annotation tool, it also highlighted strategies for mitigating these challenges, again providing evidence in favour of existing policy guidelines: monitoring by instructors, the use of rubrics to train students in giving feedback, and the positioning of peer feedback as a formative rather than summative process. Nevertheless, designing and implementing *video-annotated* peer feedback revealed the need for guidelines specific to student activity re-mediated by the novel tool. This involves strengthening existing themes from the policy literature as well as signposting new areas for consideration. I consider each of these in turn.

First, policies must promote active instructor facilitation. This should involve not only monitoring students' activity and providing second opinions, as recommended in the literature, but communicating instructor and student roles and expectations, modelling effective feedback practices, creating space for peer dialogue, and weaving discussions by acknowledging and developing students' posts. Second, policies must acknowledge that rubrics are an important, but not sufficient, and not always desirable, type of cognitive scaffolding. Depending on the sociocultural context, including students' historically accumulated feedback literacy, students may also benefit from exemplar videos and guided analysis of the recordings; hands-on practice in using the tool to post time-stamped comments, and analysis of these comments; and in-class discussions around comments they have exchanged. Third, policies must foster the design and implementation of genuinely

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formative peer feedback tasks, in which students are motivated not by a participation grade, but by the alignment of these tasks with wider learning objectives and perceived gains in confidence and performance.

In addition to developing existing themes, policies must address the social-affective barriers which may inhibit students' engagement in video-based peer feedback. This involves promoting the use of socialisation tasks to build community; recommending that instructors facilitate peer feedback in small groups, where appropriate; and emphasising the importance of scaffolding positive interaction, both online, through the use of social language, and, where possible, in person. There must be some acknowledgement that the positive learning processes promised by video software developers, such as personalisation and humanisation, do not simply emerge through students' adoption of the tool but, instead, through purposeful design and implementation. This also underscores the importance of not leaving policy guidance to the creators of a particular tool.

### **7.7 Implications for practice**

My study has implications for practice in PolyU. In this section, I connect the themes identified in the three interventions with the broader objectives of the project for the institution, outlined in section 1.4. I summarise the specific actions that should be taken by practitioners to address the central issues and ensure the project objectives for the institution are achieved.

My study has highlighted the need for instructors to adopt active approaches to facilitating video-annotated peer feedback. While these must be context-specific, tailored to students' feedback literacy levels and the learning environment (online, hybrid or in-person), such approaches share core characteristics: agreeing and managing roles and expectations, modelling effective feedback practices; creating space for peer dialogue; and monitoring and weaving discussions. Related to active facilitation is the criticality of varied cognitive scaffolding and social-affective support. Developing in these areas will require instructors to share best practices, both within module teams and



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departments and across the institution, through workshops or online channels coordinated by the Educational Development Centre. This could contribute to a sense of collaboration around the use of video and video annotation for formative assessment and communication skills development, post-Covid. It could also inspire colleagues to rethink their approach to student presentations as a form of assessment or explore ways of developing other communication skills using video. In developing expanded approaches to cognitive scaffolding, instructors could involve students in producing rubrics, exemplars, or guidelines on the interactive, efficient use of the annotation tool for peer feedback. Students, too, would be instrumental in providing social-affective support through community building. Involving students as partners in assessment would help promote more bottom-up, collaborative approaches to designing and implementing technology enhanced learning at PolyU.

One additional theme that has implications for practice is motivation, specifically, the finding that students who engaged in video-annotated peer feedback were motivated by wider learning objectives and personal growth rather than the achievement of a participation grade. Encouraging more students to engage in formative peer review tasks in other modules will require instructors to align the tasks with course or programme learning outcomes, making it explicit how their active participation can help them attain a higher overall grade, not merely a participation grade. It is also critical that instructors align video-based formative assessment with students' broader professional or personal development objectives, such as collaboration, critical thinking, evaluative judgement or building self-confidence. However, shifting culturally entrenched attitudes to formative peer feedback will also require fundamental change at institution level, so that the process is integrated into all degree programmes and not viewed as novel, unfamiliar or optional.

## **7.8 Reflections and implications for future research**

My project has fulfilled the personal motivations I had at its inception. I have achieved my underlying objectives: intervening in my local context to solve practice problems through students' use of a video annotation tool in peer

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feedback, and understanding how video-annotated peer feedback works in real contexts, building on earlier research (Gatrell, 2021; 2022). Using an interventionist approach, I have formed partnerships with instructors to realise transformational change in the design and implementation of peer feedback through the introduction of the tool. In doing so, I have contributed to a culture of ideas-sharing in the institution. It is now part of my role as educational developer to ensure that this culture, as well as the use of video-annotated peer feedback for communication skills development, becomes embedded.

My project has uncovered multiple opportunities for further research. Having highlighted the critical role of instructors in designing and implementing video-annotated peer feedback, future studies should address different active facilitation approaches or instructor roles, and how these affect student engagement in video-annotated peer feedback in diverse sociocultural contexts. This could involve thematic analysis of instructor posts, or analysis of their interactions with students and the annotation tool. The impact of alternative forms of cognitive scaffolding in different sociocultural contexts would also merit further exploration; in particular, in-class discussions led by the instructor, student-generated rubrics, or opportunities for students to practise applying the assessment criteria by evaluating exemplar videos. The effect of social-affective factors on student engagement deserves greater attention, too. In these future research projects, focus groups and interviews could shed light on students' experience of using the annotation tool.

Having studied interventions addressing the development of presentation skills, it would be valuable to investigate students' use of the tool to engage in peer feedback on procedural and interpersonal communication skills, building on previous findings (Gatrell, 2021; 2022).

In a field heavily dominated by experimental and quasi-experimental studies, I have used a formative intervention research design, underpinned by Activity Theory and expansive learning, to collaborate with seven instructors in my institution, stimulating and tracing the design and implementation of video-annotated peer feedback in three modules. In each intervention, the video

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annotation tool re-mediated an established activity system, affording new insights into the complex processes by which students use technology to learn. Future research ought to build on this methodological approach, using an even more ambitious design, such as a Change Laboratory (Virkkunen & Newnham, 2013; Bligh & Flood, 2015). This could deepen the extent of collaboration between researchers, practitioners and students, allowing all members of the learning community to shape the design, implementation and analysis of the intervention.

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## **Appendix 1**

### **Interview 1: Questioning, analysis, modelling and examination**

1. Why are you interested in trying this video-based approach?
2. Do you feel it might solve any problems? How might it benefit students?
3. How do students traditionally develop their presentation skills? What challenges do students currently experience when developing presentation skills?
4. How did this approach to learning develop?
5. What potential is there for feedback?
6. How will the video-based approach change the learning experience? What will it add?
7. How will it work in practice?
8. What challenges will students face in giving peer feedback?

### **Interview 2: Implementation, process reflection and consolidation**

1. What were your overall impressions of how students used uRewind for video-based feedback? What worked well? What did not work so well?
2. Did students act differently when using uRewind compared with traditional approaches?
3. What do you like about uRewind?
4. What would you like uRewind to be able to do that does not currently seem possible?
5. Would you like to use uRewind again? If so, what for?
6. What would you do differently to ensure the activity was successful?

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## Appendix 2

### Survey 1: Questioning, analysis, modelling, examination

Think about the activity you are going to do using video.

Based on what you have learned about the uRewind video platform and the ways video can be used for peer feedback, please try to answer these questions as fully as possible. Don't worry if you are not sure how to answer some of the questions. All of your ideas are valid.

1. What challenges are you currently experiencing in developing your presentation skills?
2. What do you think you could gain from using uRewind to observe, analyse and give feedback on other students' presentation skills?
3. What do you think you could gain from using uRewind to receive peer feedback from other students on your presentation skills?
4. What do you like about uRewind?
5. Finally, can you foresee any problems with using uRewind?

### Survey 2: Implementation, process reflection and consolidation

Think about the video-based peer feedback activity you did using uRewind.

Please try to answer these questions as fully as possible. Don't worry if you are not sure how to answer some of them. All of your ideas are valid.

1. What were your overall impressions of using uRewind and video-based peer feedback?
2. How did using uRewind and video-based peer feedback help you develop your presentation skills?
3. Did anything surprise you about using uRewind and video-based peer feedback? If so, what?
4. Did you experience any challenges in using uRewind and video-based peer feedback? If so, what?

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5. If you did the video-based peer feedback activity again, what aspects of the activity design would you change?
  6. What do you think are the current technical constraints of uRewind?
  7. What would you like uRewind to be able to do that does not currently seem possible?
  8. Finally, would you like to use uRewind and video-based peer feedback in the future? If so, what for?

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