A case study of inter-examiner feedback from a UK context: Mixing research methods to gain insights into situated learning interactions

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This research project explores professional senior examiners' emerging practices when feeding back to examiners under their supervision in a new technological environment. Activity theory is used to explore feedback communication mode choices.

Three methods are used; video observation with stimulated recall interviews, surveys of practice, and telephone interviews.

Research outcomes highlight the complexities of senior examiner decision-making, showing how the affordances of communication mode at times influence choices around how to feedback. The outcomes also show that inter-subjective concerns also have an influence on senior examiners' feedback communication mode choices.

Keywords: Activity theory; feedback; assessment; affordance; marking; technology

Introduction

Large scale awarding bodies[2] in the UK are increasingly «digitising» students' paper examination scripts, i.e. transforming the paper scripts that students complete in an examination into digital objects. From the perspective of the student this process leaves their examination experience unchanged, but for awarding bodies it has involved the development of new digital data management systems as well as changes to the conditions in which examiners mark examination scripts.

These changes link to a number of enhanced marking quality assurance benefits. One such benefit is that the information from digitally marked scripts can be transferred efficiently between participants in the marking process. It is usual for large scale assessment systems to include quality assurance mechanisms, sometimes involving the monitoring of examiners' marking by more senior examiners (referred in this study context as

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2. Awarding bodies are organizations that are recognised by the government appointed regulators in England, Wales and Northern Ireland as being eligible to award school, college and workplace qualifications.

Team Leaders). Traditionally, UK paper-based marking systems relied on single copies of scripts being physically transported between examiners in bulk, meaning that much of the marking process remained atomised with Team Leaders only accessing final marking outcomes at the very end of the marking process. Digital marking systems allow Team Leaders to access real-time, ongoing data about the marking performance of examiners under their supervision and facilitate intervention into the marking process if there are concerns about an examiner's marking quality.

The introduction of new technology into an environment is likely to lead to changes in the behaviours and roles of those working in such a context. Gibson's (1979) concept of affordance suggests that individual behaviours are influenced by the attributes of the environment and what it allows or makes possible. According to Conole and Dyke (2004) one important affordance of new technology is its potential to influence communication and collaboration: «New technologies have opened up the possibility of new forms of dialogue and communication. ICT offers the potential to develop new forms of online communities and new means of communicating and sharing information» (Conole & Dyke, 2004, p.117).

In the case of digital marking systems, facilitating the communication of marking information between examiners also affords the opportunity for Senior Examiners to give feedback to examiners on their marking decisions. Moreover, such feedback has the potential to perform a developmental function, allowing examiners to discuss their decision-making and refine their understandings around how to apply a mark scheme appropriately under the guidance of more expert Team Leaders.

This project was commissioned by a large UK-based awarding body to explore the interactions taking place between examiners as part of the quality assurance process. For this particular awarding body, quality assurance processes involve a variety of examiner marking standardisation and monitoring arrangements. Before being allowed to mark students' examination scripts (referred to as «live» scripts), examiners have to demonstrate that they can mark to an acceptable standard. This involves examiners marking and submitting practice and standardisation scripts for evaluation by a Team Leader. Once these scripts are reviewed and an examiner is cleared to mark, the Team Leader uses special «seed» scripts to monitor an examiner's ongoing live marking. These seed scripts have already been given «definitive» marks by a panel of Team Leaders. When marking, examiners are aware that there will be one seed script within each batch of 20 scripts that they download to mark, but they are not aware of which scripts are seed and which are live. This process is shown in Figure 1.

At a conceptual level, and in line with Conole and Dyke (2004), the introduction of technology to the marking and monitoring arrangements would be expected to influence Team Leaders' practices due to there being a greater availability of information to Team Leaders on examiners' marking decisions, and more opportunity to give frequent feedback on those marking

decisions. Moreover, there are expectations set out in the UK government appointed regulator's Code of Practice (Ofqual, 2011) that awarding bodies need to have quality assurance mechanisms in place to take corrective action where examiner marking falls below an acceptable standard. Feedback on marking is one such measure that helps to fulfil this quality assurance function.

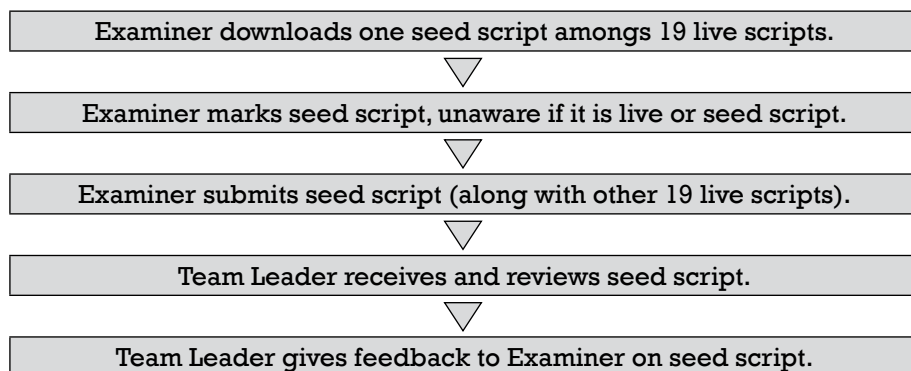| Examiner downloads one seed script amongs 19 live scripts. |
| Examiner marks seed script, unaware if it is live or seed script. |
| Examiner submits seed script (along with other 19 live scripts). |
| Team Leader receives and reviews seed script. |
| Team Leader gives feedback to Examiner on seed script. |

Figure 1: The process for marking and reviewing seed scripts

As a consequence, this research project was commissioned to investigate the nature of Team Leader/examiner interactions in the new marking environment. In particular, the study had two related research questions: «what is the nature of feedback communication?» and «how does this impact on examiners' communication mode choices?»

These questions involve phenomena with different characteristics and have implications for the methods chosen for analysis. On one hand the questions involve consideration of examiners' professional role-related practices that are open to direct observation. These observations would include data about the directionality, modes and linguistic characteristics of examiners' interactions. Gee and Green (1998) outline the way that meaning making is unavoidably situated, both physically and temporally, with individuals assembling images or conjuring up patterns from communicated messages on the spot and in light of their past experiences. The linguistic components of these interactions can be gathered and analysed as sequences of utterances.

Whilst these data can be presented and analysed quantitatively, treating interaction as purely observable phenomena fails to capture its social essence. Interaction is an exchange that is constituted by participants within a situated experience. This exchange is the process of participants actively constructing intersubjective meaning, wherein meaning making is «an interactional achievement» (Stahl, Koschmann, & Suthers, 2006, p.8). This means that participants' own subjective interpretation plays a key role in how communication works. Research needs to take subjectivity into account

because it has social significance, reflecting the honoured sociological maxim that where people define situations as real, they are real in their consequences (Thomas & Thomas, 1928). Data gathering therefore needs to be able to consider the interplay between those phenomena that can be directly observed on the social plane, and those that have subjective qualities and can only be «observed» indirectly.

At the time of the study the awarding body's instructions to Team Leaders suggested that there was a degree of discretion about which channels of communication Team Leaders might use to communicate with examiners, although the integrated electronic messaging (email) function or telephone modes were expected to be the most common approaches used.

A cultural historical activity theoretical (AT) model was adopted to explore the interaction and feedback issues in this study. AT was chosen as a frame for the research because it theorises that joint interaction within a network leads to participants learning through the development of a professional culture.

Whilst there is a good deal of overlap between AT and Actor Network Theory (ANT) e.g. both consider the significance of material artifacts within the interactions of networked participants, there are significant differences. Miettinen (1999) argues that AT is distinct from ANT because it proposes that development and learning within a network relies on dialectic processes. Miettenen also points out that the role of culture is central to AT. The development of a professional community network relies on situated interaction which both reflects and builds a culture using communication tools and artifacts that are ascribed meaning through their employment in joint activity (Bakhurst, 1997). This joint activity is the context for understanding how participants perceive their roles, make sense of their interactions, and the way that they use tools. Importantly, AT also recognises that ruptures (blocks, breaks or gaps in the intersubjective understanding and flow between participants) can disturb the progress of joint activity.

AT has evolved through a number of generations with the aim of developing conceptual tools to better understand multiple perspectives. Engeström, (2001) and others have built on the earlier work by Vygotsky (1978) which considered the way that tools (e.g. language) mediate the actions of individuals. Engeström notes that this conceptualisation represents the first generation of AT and that the later work of Leont'ev (1977, 1981) augmented this mediated action model to incorporate other important social and structural features. Leont'ev's work was the foundation for the second generation of AT, which is conceptualised in Figure 2. Second generation AT demonstrates how the outcome of a subject/object interaction (e.g. a Team Leader [subject] interacting with a marking task [object]) is influenced by multiple relationships – such as the tools available, the examining community within which the activity sits, how labour is divided between community members, and the rules and traditions that help organise and influence participants' behaviours.
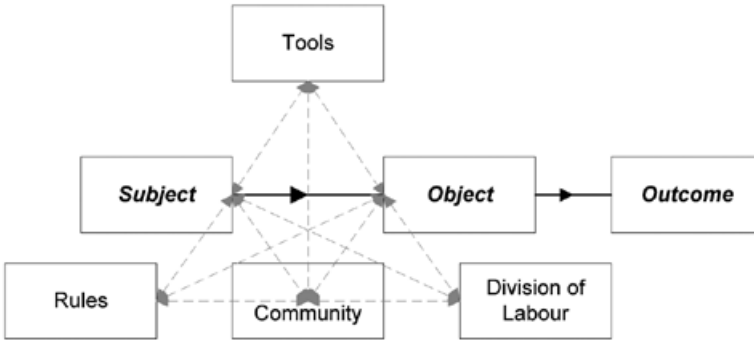
Figure 2: The structure of an activity system (Engeström, 2001)

In essence an activity system is an object-oriented community which possesses multiple points of view, traditions and interests. According to Kaptelinin, Nardi, & Macaulay (1999) the system represents a general conceptual approach which supports a dynamic model of analysis rather than a highly predictive theory. When applied to the context of this study, it appears that the conditions of the particular quality assurance arrangements could conform to the basic framework of an activity system. The Team Leader and examiners share a focus on attaining an outcome of high quality marking. The object of the Team Leader is to give feedback to an examiner to help attain the goal of high quality marking, and it would be anticipated that the mode of communication would be the tool through which this objective would be reached.

Figure 3 outlines this conceptualised activity system structure, suggesting that the nature and impact of Team Leader feedback would be influenced by the communication modes available to the Team Leader (shown by the bold line connecting the Team Leader to Feedback via the Communication Mode dimension).
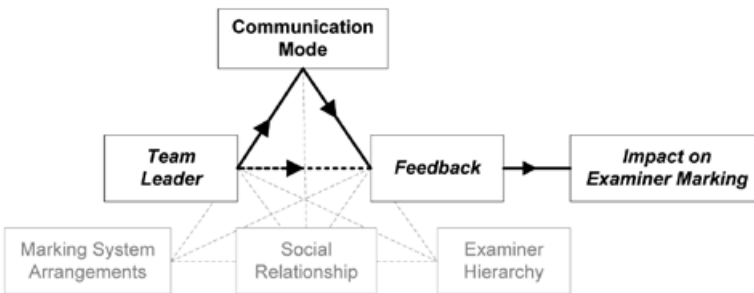

Figure 3: The anticipated structure of an assessment activity system (adapted from Engeström, 2001)

In the digital marking context it might be anticipated that the affordances of speed, efficiency and convenience would be key influences on Team Leaders' feedback communication mode choices. The integrated email function in the marking system allows messages to be crafted and submitted whilst simultaneously viewing an examiner's marked script. These messages appear in an examiner's inbox almost instantaneously, and this allows them to integrate the Team Leader's message into their thinking as they continue marking.

There is also research literature to suggest that the affordances of ease and speed of transmission are not the only influences on choices around communication mode use. Media channels can differ according to their «richness» (Trevino, Lengel, & Daft, 1987; Pfaffman, 2007), and this might influence choice of use. For example, face to face interactions have a large «bandwidth» and are considered to be very rich, allowing the synchronous conveyance of non-verbal cues which can support the transmission of detailed information (Whittaker, 2003a). This aspect of communication mode affordance might also help to partly explain why individuals choose different communication media according to the purpose of their communication (Cameron & Webster, 2005). The implications of the research literature about communication mode choice might be important since it gives insight into the some of the complexities around how «what» is being communicated relates to «how» it is being communicated. The potential influence of social relationships on communication mode choice is raised by Waldvogel (2007), who cites research which suggests that some of the potential shortcomings of otherwise «lean media», such as email, can be mitigated where participants have a well-established relationship.

Finally, it is important to note that Figure 3 also outlines other key relationships that reside within the system. Marking activity takes place within established structures of divided labour (e.g. Team Leaders and examiners), which are stipulated by rules outlined by the government appointed national examinations regulators (i.e. Ofqual). These stipulations are in place to maximise the reliability and equity of marking outcomes. The system also suggests that there is potential for social/inter-subjective relationships to exist between examiners and Team Leaders. The broader notion of inter-subjectivity is an interesting area for assessment as it alludes to the way that language interpretation is linked to the positional perspective of an individual. Importantly, these social/inter-subjective relationships are not anticipated to be a legitimate influence on the link between Team Leader feedback, communication mode and impact on marking outcomes.

Method

The context in which the marking, reviewing and feedback processes take place in this study is both localised and distributed. Examiners and Team Leaders access the secure digital marking system remotely and at those times which suit their own work schedule. Therefore, investigating the nature of interactions between Team Leaders and examiners presents a number of methodological challenges.

The use of AT has implications for methods choices because the phenomena of interest reside within the context of the joint interactions that take place in distributed geographical and temporal locations. In this way, contexts are constituted by the what, where and when of the things that people do (Erickson & Schultz, 1997) and is «not limited to portions of single, isolated sentences» (Frake, 1997, p. 34).

The use of an AT approach requires that research methods are adopted that can consider as many aspects of the activity context, and its intrinsic multiple perspectives, as possible. The study of examiner interactions involves analysis of a number of potential data sources. Feedback interaction includes:

– *Team leader feedback crafting practice*: considering any objects attended to whilst messages are developed;

– *Feedback message content*: considering the sequence of discourse, time sequences, and linkages between transcriptions beyond single instances;

– *Reflections on the impact of feedback*: including ruptures in understandings that occur within the activity system. Engeström et al. (1997, p. 374) argue that such ruptures «are found by interviewing and observing the participants outside or after the performance of work actions»;

– *The gathering of multiple voices around a shared activity*.

An additional contextual challenge pertains to the problems of capturing data about interactions that are distributed across geographical space and time. There has been a tradition in UK examinations research to avoid interfering with live marking processes. This practice has been established to avoid the problem of the observer paradox (c.f. Landsberger, 1958; Labov, 1972), and mitigate ethical concerns that examiners' involvement in research might influence the assessment outcomes for some students.

A mixed methods research approach can help to overcome some of the challenges of eliciting and integrating the objective and subjective elements contained within behavioural, artifactual, and interview data sources. According to Tashakkori and Cresswell (2007) mixed methods research is «research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry» (Tashakkori & Cresswell, 2007, p. 4). For the current study, a mixed methods approach offers a number of affordances. Gathering information via different, mixed methodological approaches allows a fuller understanding of phenomena to be built (Johnson, Onwuegbuzie, & Turner, 2007), and this helps to «produce a more complete picture by combining information from complementary kinds of data or sources» (Denscombe, 2008, p. 272). According to Lund (2012) mixed methods research is more able to answer certain complex research questions than qualitative or quantitative research methods in isolation and may lead to extra reflection or revised hypotheses where results converge and/or diverge. The impact of this is that more «sophisticated analytical conceptualization» can sometimes be accomplished (Fielding, 2012, p. 2).

Three Advanced GCE[3] assessment specifications were chosen for the study (Critical Thinking, Chemistry and Geography). These assessment specifications all included subjectively marked questions, and all had previously been marked in the digital environment in previous examination sessions. These factors were considered important since they provided contexts where it would be anticipated that Team Leaders would need to interact with examiners around questions of mark scheme application. The chosen contexts would also allow the study to avoid problems of capturing data corrupted by learning effects since the Team Leaders were already familiar with the system and would be expected to have established stable behaviours when working in the digital environment.

A convergent parallel research design was adopted for the study (Creswell & Plano Clark, 2011). This type of design gathers qualitative and quantitative data concurrently, with both strands being given equal status, and with integration of the data being carried out during the interpretation phase. Cresswell and Plano Clark (2011, p.78) note that this type of approach to research design is efficient as it capitalises on the potential for different types of data to be gathered simultaneously, whilst allowing these data to be analysed through the techniques that are traditionally associated with each data type. Figure 4 outlines the project research design, which included four data gathering phases.
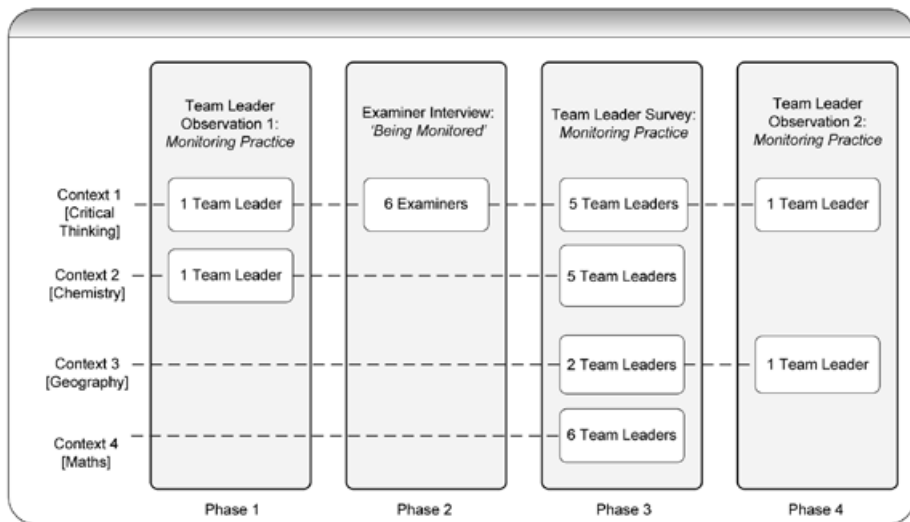

Figure 4: Project Design Phases

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3. The Advanced General Certificate of Education (GCE) is usually studied over a two-year period and is widely recognised in England, Wales and Northern Ireland as being a standard entry qualification for assessing the suitability of applicants for academic courses in UK Universities.

In the initial and final data collection phases four Team Leaders from across three subjects were observed as they monitored examiners in their team. These Team Leaders, three male and one female, were selected on the recommendation of the awarding body on the basis that they would be likely to agree to the intrusion into their working process.

Morae usability software (TechSmith, 2011) was used to remotely observe and record the Team Leaders' on- and off-screen behaviours (Figure 5). Video observation technology was used because of its ability to unobtrusively record Team Leaders' behaviours, as well as the circumstances surrounding those actions, in real-time. This affordance is reflected on by DeCuir-Gunby, Marshall and McCulloch (2012), who note that «video data is increasingly being used in classroom research because it allows the capturing of both verbal and nonverbal behavior, which can be analyzed from both quantitative and qualitative perspectives» (DeCuir-Gunby et al., 2012, p. 199). This capture of situated, rich data is also beneficial as it can support observed participants' metacognitive recall. Using video as a «reflective modality» (Hadfield & Haw, 2012) allows Team Leaders to recollect their concurrent thinking whilst producing feedback.

This affordance of video-based methodology is supported by observations from video elicitation interview studies. Henry & Fetters (2012) note that interview participants typically recall the thoughts, beliefs, and emotions they experienced during the playback of an observed action, leading them to «reflect on their thoughts and actions» (Henry & Fetters, 2012, p. 119). An additional benefit of the use of video observation technology is that it can also allow the researcher to engage in reflection during the observation session, rather than engaging in the technicalities of manually recording observation data (Knoblauch, 2005).

Hindmarsh, Luff and Heath (2010) note that a key benefit of video technology is that it allows multiple researchers and participants to subject activities to detailed scrutiny. Repeated viewing also provides opportunities for checking the reliability of analyses through dual coding (Haidet, Tate, Divirgilio-Thomas, Kolanowski, & Happ, 2009). The use of video observation methodology can also help to satisfy validity claims because it has the potential of capturing (and opportunities for analysis to recognise) multiple factors that surround a social interaction (Hadfield & Haw, 2012). Video based methods support integrated analysis, allowing multiple factors to be considered in relation to each other (e.g. temporal relations between feedback messages and particular features of examiner performance). In the case of this study it was possible to segment the observation sessions as individual feedback events. This allowed analysis to consider whether there were any patterned behaviours with regards to the objects attended to by each Team Leader during each feedback session (e.g. mark schemes and notes), and whether there were any anomalies with regards to anticipated and actual Team Leader actions.

Analysis of this observation data involved the use of a coding framework that had been adapted from an earlier study (Johnson, Hopkin, & Shiell, 2012). This framework allowed two researchers to jointly record all of the Team Leader's movements whilst working in the digital monitoring environment. This process generated a graphical representation of the time-related flow of Team Leader activity.
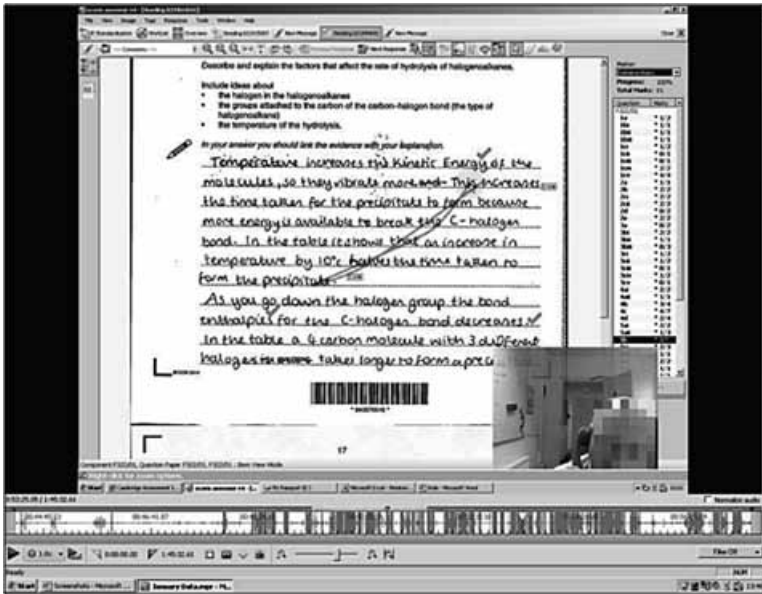

Figure 5: Screenshot of Team Leader observation view

This data collection phase also involved the Team Leader and two researchers jointly viewing the recording of the monitoring session. The objective of this was to use the video playback as a form of stimulated recall which, according to Gass and Mackey (2000), is one of a set of introspective methods which elicit data about an individual's thought processes whilst carrying out a task. The provision of prompts, in this case a video and audio playback to Team Leaders of their own performance, acts as a tangible reminder of their behaviour and stimulates recall of the mental processes that were in operation during the task. This process led to a qualitative coding layer which allowed the researchers to start to identify and discuss any common patterns of motives for the different observed behaviours across the different Team Leaders.

The second data collection phase involved interviews with six Critical Thinking examiners. These examiners were chosen through a probabilistic sampling method from across the whole group of examiners who had marked the assessment immediately prior to the research study. The sample of examiners, four female and two male, had marked this assessment for, on average, 4.5 years, with individual experience levels ranging

between 1.5 and 7 years. Half of the examiners had worked with their current Team Leader in the past, whilst the other half of the sample had not.

The examiner interviews were carried out over the telephone and were structured so that the examiners could talk through, in chronological order, their interactions with their Team Leader. The data captured included the nature of any communication, an indication of who instigated the interaction, the channel of communication used, and the perceived impact of the interaction on the examiner. Each audio recorded interview lasted around 40 minutes and was transcribed prior to analysis using MAXQDA qualitative data analysis software (VERBI Software – Consult – Sozialforschung GmbH, 1989).

The first element of interview data analysis looked to consider the main messages that were emerging for each area of the interview, with particular emphasis being placed on the data relating to the feedback that the examiners had received. Analysis of feedback considered the reasons for feedback, the qualitative effect of feedback (positive or negative), and the consequent actions that were linked to the feedback. Each of these pieces of data were tagged to evidence from the interview transcript. The final element of analysis involved the generation of overarching themes that were identified in the data. One researcher was responsible for this process, sharing the outcomes with the second project researcher through discussion and validation.

Data from the Team Leader observation and examiner interview sessions were then used as a basis for the third data collection phase, which was an online survey of Team Leaders. A review of the awarding body examiner database identified a group of 18 Team Leaders who had monitored around 108 examiners in total across the four subjects in the assessment session immediately prior to the start of the research project. The survey probed a number of themes that either described Team Leader monitoring practice or seemed to be a potential influence on such practices. Where possible the survey used forced response items to gather quantitative data. In some cases the data being gathered were qualitative in nature and these were captured through open response items. Two researchers separately analysed the survey data. The themes identified through these analyses were then compared and differences resolved through consensus discussion.

Findings

An in depth outline of the particular findings of the observation phase of this study are reported in Johnson & Black (2012). Because this current paper seeks to outline the broader project findings (i.e. the outcomes of the observation exercise alongside those outcomes gained through the additional research methods) a brief outline of the observation outcomes is explained below.

The first outcome of the observation exercise was that it appeared that all Team Leaders' monitoring processes followed a three-part structure

of *evaluation*, *diagnosis*, and *feedback*. The Evaluation phase involved the Team Leader spending time trying to determine the root of any marking discrepancy between the examiner's script and the seed script. This activity involved the Team Leader reconstructing the marking rationale for both scripts in order to reach a reasoned evaluation. The inherent cognitive demand of this phase was evident through the incidence of Team Leaders' experiencing «working memory collapse», where they were seen to «lose the thread» of their action and to restart a process. This phenomenon is described by Alloway (2006); «the capacity of working memory is limited, and the imposition of either excess storage or processing demands in the course of an on-going cognitive activity will lead to catastrophic loss of information from this temporary memory system.» (Alloway, 2006, p.134)

The second «diagnosis» monitoring phase was the culmination of the evaluation phase and involved the Team Leader fixing on a decision about the reason for an observed mark discrepancy. There were three principal diagnoses that Team Leaders reached: the Team Leader considered the examiner's mark to be correct; they considered there to be a grey area in the mark scheme; or they considered the examiner mark to be incorrect. The final monitoring phase involved the Team Leader generating feedback based on their diagnosis. Five feedback behaviours were observed: Team Leaders could explain the definitive mark to the examiner – this being a mark already agreed on in advance by a panel of Team Leaders; they could interpret the student response for the examiner; they could re-state the mark scheme; they could omit to feedback; and they could provide an overview of the examiner's marks.

Data around the timings of different coded aspects of the Team Leaders' observed monitoring behaviours allowed further insight into the complexity involved in the phase when Team Leaders gave feedback. Team Leaders were observed attending to a number of actions during their feedback sessions. These actions included:

– *Recording*: making written notes about the examiner's marking

– *Preparing to feedback*: writing a preamble prior to giving the substantive feedback message

– *Viewing the examiner script*: spending time looking at the seed script marked by the examiner

– *Viewing live script*: spending time looking at other (i.e. non-seed) scripts marked by the examiner

– *Viewing definitive script*: spending time looking at the seed script that contains the definitive marks agreed by a panel of Team Leaders

– *Viewing digital workspace*: spending time looking at the part of the digital system that contains a quick overview of an examiner's marking data

– *Viewing system reports*: spending time looking at the reports generated by the system which give an overview of an examiner's marking data

– *Viewing mark scheme*: spending time looking at the mark scheme for the exam paper

– *Submitting feedback*: sending a digital feedback message

– *Submitting comment*: sending a message to the digital system with an overview of actions completed.

Figure 6 plots the amount of time each Team Leader spent on particular actions in the monitoring process. These data show that Team Leaders spent the greatest amount of time either making a written record of the information that would inform their feedback (an average of 156 seconds per Team Leader per script / 26% of overall monitoring process time) or actually preparing and writing the feedback (144 seconds per Team Leader per script / 26% of overall time).
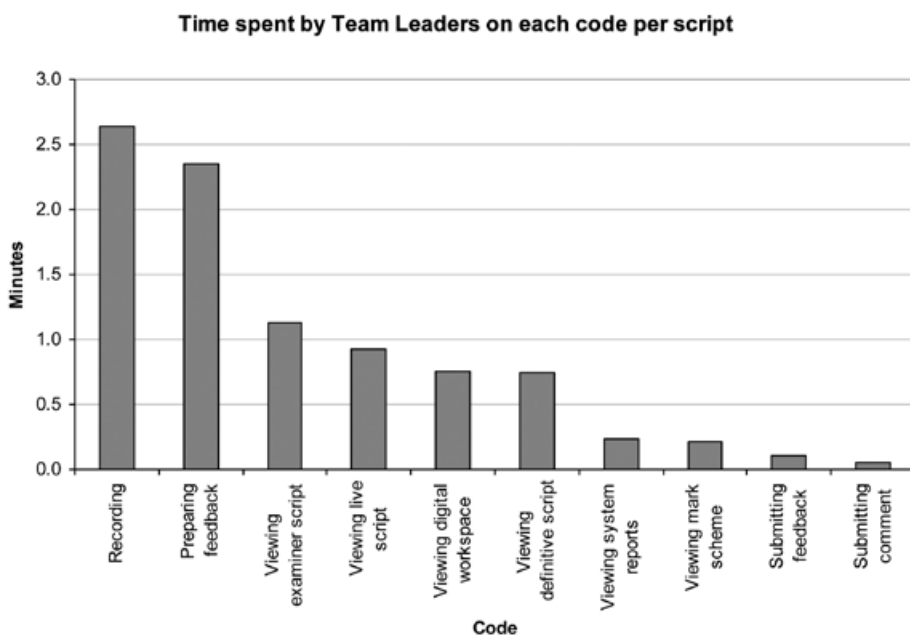

Figure 6: Time spent by Team Leaders on each coded action per script

The interview and survey data allowed insight into the methods chosen by Team Leaders to complete this final feedback phase. Figure 7 shows the results from the survey data and these suggest that most Team Leaders reported that they always used the integrated email system. It is also notable that this response was not uniform across Team Leaders. Nearly all Team Leaders claimed to use the telephone and/or their personal email systems on occasion.

Feedback Communication Modes
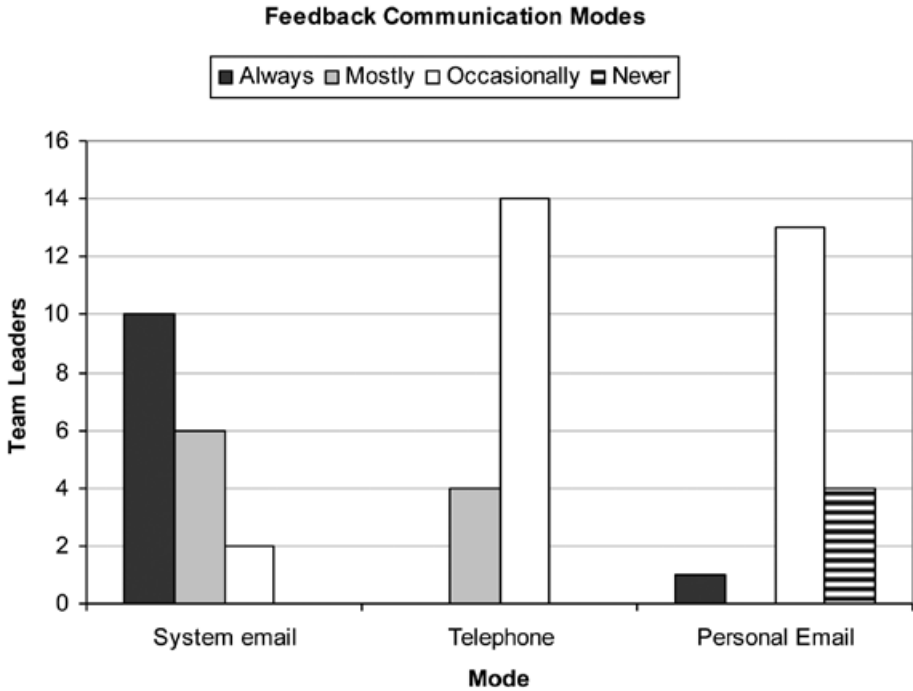
■ Always ▪ Mostly □ Occasionally ▬ Never

Figure 7: Feedback communication modes

Analysis of the qualitative examiner interview and Team Leader survey data allowed consideration of the motives behind the different communication mode choices made by Team Leaders. As anticipated the affordance of efficient and speedy communication was reported by five Team Leaders when justifying their choice of the integrated email system, e.g. «whatever is easiest: e.g. if they send an email, I reply via that means etc.» (Team Leader 6), and «Speed, time of day/night» (Team Leader 10).

Another consideration was around the nature of the feedback message and the affordance of the mode to allow clear understanding of a message to be understood. In some cases Team Leaders suggested that the telephone could help to overcome limitations of email communication, e.g., «I use the telephone if it's clear that misinterpretations are still happening after email» (Team Leader 1), and «If examiners are repeating the same mistakes, I will have to telephone them. Or my messages might become a little more direct» (Team Leader 10).

Synchrony is a dimension of remote communication (c.f. Whittaker, 2003a), but this can be unpacked in at least two ways. Team leaders report using the email system to capitalise on the synchronous «transfer» link between script submission and reception in a single line of communication (i.e. the submitted examiner script has a direct link to the Team Leader feedback message that connects with it). In this way the email system is convenient and time effective.

On the other hand, synchrony can be conceptualised in terms of its semantic dimension. Where Team Leaders chose to use telephone communication it was because this allowed greater personalisation of the feedback communication; allowing reflexive discussion to take place and to reinforce the semantic link between message intention and reception. A common example of this practice was the remote co-viewing of scripts on screen with simultaneous discussion taking place on the telephone, e.g. «I would phone if the marker and myself needed to look at a particular script together both viewing it [remotely on computer screen]» (Team Leader 2). It has been found in other contexts that the absence of simultaneous co-presence can disrupt meaning making (Ruhleder & Jordan, 1999; Whittaker, 2003b; Ducheneaut & Bellotti, 2003). Telephone communication allows the messenger to recognise the perspective of the recipient and to adapt the communication reflexively.

The concern around the limitations of email to support rich communication was also mirrored by an examiner (i.e. feedback recipient) who stated, «It is just that they don't put enough words in the email… They need to write more because what they have written is too little and it is unclear what they are trying to say» (Examiner 5). A consequence of this limitation was also that it sometimes left examiners feeling frustrated, e.g., «He sounds very teacherish in this one: ‹What is wrong with 9B2? Why have you not awarded the strengthen and weaken mark?› I don't like this» (Examiner 1).

It was noteworthy that some Team Leaders tended to equate telephone feedback with more accurate examiner marking outcomes, e.g. «Interestingly, [my most accurate examiner] has phoned me more [than other examiners] during the standardisation process» (Team Leader 1), and «long conversations on the phone have enabled drifting marks to be controlled» (Team Leader 2). A potential reason for this equation appears to correlate with comments about the relative «richness» of the different communication modes. Some Team Leaders suggested that dialogue was facilitated over the telephone in a way that was not possible via email, e.g., «If I have a lot to say I find it easier over the phone. It also gives the examiner time to ask you questions that they might have not bothered with» (Team Leader 8), and that this was especially useful if there were significant amounts of information to be conveyed, «I would phone if there were big problems or something was easier to explain in speech» (Team Leader 9), «The more serious or repeated the problem, the more likely the telephone will be used» (Team Leader 10).

Some Team Leader comments also highlighted how communication mode might link with the nature of the relationships between communicating partners, with concerns that the mode of delivery might impact on message reception. This consideration implies that some Team Leaders possess a heightened awareness of the potential effect of the feedback message on the message recipient; implying an inter-subjectivity which involves «being in the head» of that recipient.

Intersubjective awareness was manifest in the way that Team Leaders reported tailoring their messages to individual recipient examiners. For example, «I try to be as sensitive and tactful as possible to everyone, but in a slightly different way» (Team Leader 10); «I find it important to respect the individuality of each examiner» (Team Leader 14). Comments also suggested that there was longitudinal aspect to the feedback discourse. Team Leaders suggested that working with examiners over time helped to build their picture of particular examiners and how to deal with them appropriately, «I find it important to respect the individuality of each examiner. Prior knowledge is helpful in helping me deal with examiners sensitively» (Team Leader 14); and, «You know the [feedback] approach which will have the most effect [on a particular examiner]» (Team Leader 17).

There was also a sense in the survey data that Team Leaders were concerned with building and managing positive working relationships with their examiners through a virtual space, e.g., «To get the best out of any individual in my experience you have to work with their personalities. Some like a chatty relationship; others want to be business-like. Some lack confidence; others can be overconfident» (Team Leader 13). As a consequence, the nature of feedback tended to reflect concerns about maintaining good relationships and delivering feedback that was appropriate, in the view of the Team Leader, to the characteristics and needs of the examiner, e.g., «Where I find they are very sensitive, I try to feed back more thinly than I might and make sure to be as supportive and positive as I can» (Team Leader 1), «Some are very anxious about mistakes so I am careful how I report, and others react very well to praise» (Team Leader 9). In other contexts this aspect of practice has been termed «articulation work» (Schmidt, 2011). This describes the type of work that professional engage in «in order to get the job done», rather than the actual work itself. The recognition of Team Leaders' engagement in articulation work helps to represent some of the aspects of the complexity of their professional practice.

Discussion

One intention of this paper was to explore how the mode of communication influenced the types of feedback messages that passed between Team Leaders and examiners, with an AT framework being used to justify a mixed methods approach to data gathering and analysis. Analyses suggest that the role of the Team Leader is a complex one, with the decisions around what to feedback and how to do this being cognitively demanding.

Lund (2012) articulates the benefits that pertain to the adoption of a mixed methods research approach; including the increased ability to answer complex research questions and gain extra reflection on social phenomena. In this project the use of a mixed methods approach has allowed insights into the complexity of Team Leaders' professional roles, including their «articulation work» (Schmidt, 2011) and their management of different dimensions of synchrony. In so doing, analyses have been able to present some of the tangible and quantifiable aspects of Team Leader practice (e.g. representa-

tions of the time spent on particular actions) whilst also getting «under the surface» to reflect on the underlying motives for, and effects of such actions.

An assumption of this project is that the affordances of the communication modes available to Team Leaders influence their choice of mode and the nature of the messages communicated. This assumption is based on the notion that the affordances inherent to new technologies can lead to new practices (Conole & Dyke, 2004). There is evidence in the data to support this assumption; with Team Leaders stating that the factors of speed and the efficient transfer of textual data underpin their tendency to use the integrated email system when feeding back to examiners. Similarly, the affordances of communication mode also influence the way that Team Leaders sometimes choose *not* to use this email system.

Findings from the observation and survey data triangulated to suggest that the Team Leaders were managing the synchronous dimensions of their communication. Team leaders tended to use email to capitalise on the synchronous transfer link between the examiners script and the feedback message. On the other hand, Team Leaders chose to use telephone communication on those occasions when they wanted to reinforce the synchronous semantic link between message intention and reception, with the telephone feedback mode allowing more reflexive communication to take place between participants. Team Leaders suggest that the telephone allows more direct communication with examiners and that this is important at times where there is a need to have more discursive and synchronous interactions. These types of interactions are often connected with the need for Team Leaders to understand the reasons for misaligned judgements between themselves and their examiners, with the telephone providing a richer channel of communication than is available via email.

These analyses suggest that the initial AT premise of the project – that the form of the communication tool mediates the nature of Team Leader feedback – is appropriate. At the same time, the wider theoretical framework also alludes to the existence of other factors that might influence the Team Leader feedback processes. The data suggest that communication mode choice is influenced by factors in addition to concerns about the specifics of the text being delivered, and that considerations around relationship management are also an influence. At times it appears that intersubjective concerns steer Team Leaders decisions on the form and mode of feedback (e.g. adjusting the degree of formality in the message, or choosing the mode which leads to the desired impact depending on the Team Leader's perception of the examiner's needs).

The AT framework appears to have explanatory potential in the case of the examiners in this study. Feedback is simultaneously «work» (i.e. communicating a message that conforms to the rules and protocols of a hierarchic division of labour) and «relationship building» (i.e. communicating intersubjective data that helps participants to relate to each other). The simultaneous and dialectic association between these two message properties

influences the form of communication tool used (i.e. system email, personal email, or telephone). The learning potential of feedback is related to the interrelationship of these network features (subject, object, community, rules, and roles).

Although the original assumption of the project was that the nature of the tools used to communicate, along with their availability, would impact most on the way that Team Leader feedback was given, it is possible to go further to suggest that the factor of interpersonal relationships (and their management) also influences the nature of feedback in this system. It appears that the initial conceptualisation of the assessment activity system model outlined in this paper was able to partially explain the influences on Team Leaders' assessment feedback, but data analyses suggest that it needs to be further enhanced. Figure 8 shows an enhanced version of the originally anticipated assessment activity system model.
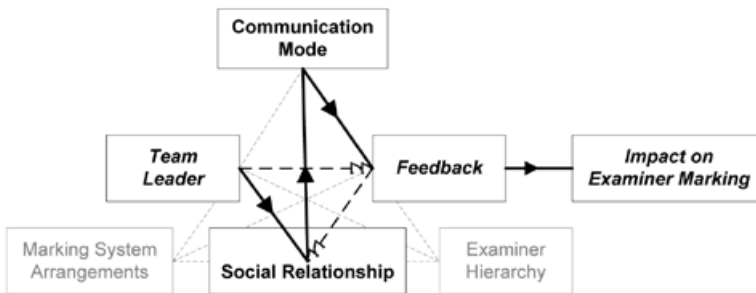

Figure 8: The observed structure of an assessment activity system (adapted from Engeström, 2001)

Prior to choosing the mode of feedback it appears that Team Leaders sometimes consider the nature of the relationship that they have to manage with their examiner to attain the ultimate task of reaching acceptable marking outcomes. As a result, Team Leaders will base their decision about the appropriate form of feedback on considerations of both the type of message that they want to deliver as well as the basis of the relationship that they have with the examiner.

In conclusion, it appears that the data gathered through the use of mixed research methods (legitimised through the adoption of an AT framework) allow insights into the nature of interaction. In the case of this study, the methods and framework adopted allowed insights into some of the complex factors that can influence Team Leaders' feedback interactions to examiners, with «relationship» sometimes appearing to be an important factor.

Implications

This project considers a situation where technology is introduced into a set of interactions that centre on a shared activity. In such situations it is inevitable that new practices are forged, leading to an opportunity to explore how such interactions are affected and whether the new practices are functioning in desirable ways. Insights gathered through these explorations can then allow guidance to be developed to support those who are developing new practices.

In the case of this study it is possible to articulate the strengths of the different communication modes that are available to Team Leaders, with such articulation allowing awareness to be raised about the merits of the different options. The study also helps to articulate how relationship building and management is a factor in the communication of feedback; a dimension of Team Leader expertise that needs also to be considered alongside more tangible considerations of the content of feedback.

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