

‘It’s really useful to know that stuff’: Student teachers’ access to their mentors’ tacit knowledge.

Abstract

This article draws upon four pairings of mentor and student teacher, following four post-lesson interviews which placed the student teacher in the role of interviewer aiming to uncover the mentor teacher’s experiential knowledge [referred to throughout as tacit knowledge]. The interviews were carried out for two reasons: One, to see if the mentor teachers’ tacit knowledge was able to be elicited in this manner and, two, to examine the method as having potential to allow student teachers to take a more agentic role in the post-lesson conversation process. Findings show the observable teaching actions had underlying reasoning which was elicited via dialogue between student teacher and mentor. The benefits of student teachers being central in asking questions that matter to them and developing an active stance towards their own development are highlighted. The potential for this type of post-lesson conversation to become more pivotal in uncovering a reservoir of, often untapped, professional knowledge is discussed.

Keywords

agentic, interview, mentoring, post-lesson conversation, student teacher, tacit knowledge.

Introduction

Over thirty years ago Anderson et al. (1988: 41) highlighted the importance of mentors allowing their mentees to ‘observe them in action and [convey] to them reasons and

purposes behind their decisions and performance'. Seven years later, Brown and McIntyre (1995: 14) observed that 'the wheels of teaching have to be reinvented by each new generation [because the] reservoir of professional knowledge is generally untapped'. Twelve years further on, student teachers were reported as being expected to understand the reasons behind complex decisions made without access to inquiry together with their mentor (Bradbury and Koballa, 2007) and, at the beginning of a recent study into educative mentoring practices, participating mentors 'expected student teachers to learn merely by watching' (Standis et al., 2018: 12).

Two things stand out from the paragraph above. Firstly, there is a level of consensus that gaining access to mentor teachers' professional knowledge is an important element in student teacher learning and, secondly, this aspect of mentoring practice is still not being consistently demonstrated. The 'diversity of organisation and nomenclature within schools' (Punter, 2007: 12) with regard to mentoring systems has been said to add to an idiosyncratic approach which can be 'haphazard and left to chance' (Hudson et al., 2013: 285). This school level factor could be one of many leading to significant disparities in mentoring provision for student teachers; on a range of scales different people have different ideas of what mentoring is and this translated into varied practice (Kemmis et al., 2014). In a meta-analysis of research into mentoring strategies for shared reflection and student teachers' professional learning, Hobson et al. (2009: 213) comment on the research evidence as being 'notable by [its] absence'. There is, however, evidence of the possibility and learning potential for eliciting professional craft knowledge (PCK) from mentor teachers. Identified as being largely tacit, PCK was revealed through an interviewing process in a study which added greatly to the understanding of how mentors can illuminate teaching for student

teachers (Hagger, 1995). Hagger's work, also drawn upon and published later in Hagger and McIntyre (2006: 129), revealed student teachers were given the opportunity to elucidate what was usually taken for granted:

'There was [...] a broad consensus among the teachers that the conversations with the students had enabled them [as mentors] to make accessible what they generally took for granted in their teaching and the planning and reasoning that underlay observable teaching'.

The knowledge under investigation

Tacit knowledge can be seen as elusive and diffuse (Toom, 2012), has acquired a wide variety of meanings (Eraut, 2000) and can be referred to in other ways: informal know-how, sub-conscious and personal, for example. Tacit knowledge has been defined as the 'cognitive resource which a person brings to a situation that enables them to think and perform' Eraut (*ibid.*: 114). This definition is specifically developed for teachers, stating that as they cope with the 'overwhelming demands of making so many swift decisions, tacit knowledge systems are used to sub-consciously store micro-strategies for teaching' (Dudley, 2013: 109).

Teachers have 'complex, usually tacit, knowledge that informs and is embedded in their sophisticated and everyday practice' (Burn *et al.*, 2007: 430) and this knowledge is said to be of great importance as experienced teachers have reached the point where they trust a 'knowing in action' (Schön, 1983: 50), confirmed by Martin (2007: 152) who states, 'the knowing is tacit, implicit in the action, and interactive with both action and outcome'. This

embedded tacit knowledge is confirmed by other authors (Eraut, 2000; Jones, 2001; Hagger and McIntyre, 2006; Parker-Katz and Bay, 2008; Velzen *et al.*, 2012) and can be valuable in learning to teach as when asked to elaborate on their teaching, teachers' responses reveal a 'another layer of thought, consisting of accumulated principles and strategies— rules of thumb about how to achieve certain goals, how to respond to certain situations' (Kennedy, 2006: 35). For teachers, there are many different situations to respond to and these cannot always be predicted and planned for; it is here where tacit knowledge can be most useful. This is a potentially difficult concept for student teachers - being able to respond to context specific situations quickly and capably.

Discussing the importance of context in teaching, Elliot (2002: 19), referring to the idea of phronesis (sharing similarity to tacit knowledge), states:

Educational research [...] has attempted to draw conclusions that held up across contexts. With the advent of Schwab's (1969) important essay on the practical, the ground shifted. Those interested in curriculum matters and in teaching began to recognize that the conditions teachers addressed were each distinctive. As a result, abstract theory about general relationships would be of limited value. [...] Each situation, even in the same classroom, was unique. It was a grasp of these distinctive features that the teacher needed, not in order to produce knowledge about teaching but, rather, to make good decisions in the classroom.

Across educational literature, referring to teachers' decision making and unveiling of personal pedagogical practice, different terms have been used. For example, some have used the term phronesis, some tacit knowledge and others professional craft knowledge. This paper recognises the similarities across all three of these terms, as follows: knowledge

which is largely experience-based, often unconscious at the time of use and essential in acting capably within distinctive, complex and practical professional settings, such as teaching.

Context

The context for the research project was the English, state-funded, secondary education system, teaching students aged 11-18 years old. There are different routes into becoming a teacher in England; school-led routes and university-led routes. This article focuses on a university-led PGCE programme, which is a full-time teacher education course for graduates, involving close partnership between the university and local comprehensive schools. The cases were taken from three different secondary schools, all of which worked with a local higher education institution (HEI) in providing a post graduate certificate of education (PGCE). The schools involved provide subject specific mentors responsible for the overall development of student teachers in working towards the national teacher's standards. Justification for the project included ongoing debate surrounding how student teachers best learn to teach (e.g. Beauchamp *et al.*, 2015) and the variability in mentoring programmes offered at school level (Kemmis *et al.*, 2014; Vanassche and Kelchtermans, 2014). The nature of mentoring dialogues can heavily influence how and what student teachers learn (Helman, 2006) and is therefore relevant and important to research. Persistent evidence, largely from student teachers, revealing the benefits of mentors who are willing to have conversations about teaching which 'lift the lid' on what they are thinking (Hobson, 2002; Burn, 2006; Jones and Straker, 2006; Aderibigbe, 2013; Winch *et al.*, 2013, Stanulis *et al.*, 2018), juxtaposed with the research evidence and professional opinion that highlights the

variability and absence of this practice (Edwards and Protheroe, 2004; Lampert, 2010; Hobson and Malderez, 2013; Loughran, 2013; Kemmis et al, 2014), fuelled the decision to focus on uncovering tacit knowledge in mentor-student teacher relationships.

Building on work by Ethel and McMeniman (2000: 87), who trialled a concept of *cognitive apprenticeship* to 'access the minds, not only the observable behaviours, of effective teachers', this study involved four interviews with three experienced teachers, post-teaching. The interviews were led by student teachers (four in total) and the questions were based around specific events which had been observed in the lesson, with the view to eliciting the mentors' thinking process at the time of the specified events. The key purposes of the research were to find out if student teachers could elicit their mentor's tacit knowledge and to evaluate the procedure as a professional learning strategy.

Research methodology

Data collection including ethical considerations

The research took place over a three year period with the first year being largely information finding, including informal discussions and a focus group with both mentors and student teachers. This was followed by an initial pilot study involving two participants (mentor and student teacher) who were able to trial the lesson observation and interview procedure. This pilot study data was eventually used as part of the overall analysis. Three further lesson observations and interviews took place over a six-month period. These interviews were audio recorded and handed to the researcher on their completion. All

interviews took place in school settings with only the student teacher and mentor present, this was to achieve as naturalistic a setting as possible.

As the researcher was closely involved in working with participants (as the collaborating university PGCE tutor) there were many ethical considerations. Particular care had to be taken to separate the researcher's dual roles: acting as the student teachers' tutor and researcher meant there were potential conflicts of interest. PGCE course related matters and research related matters had to be clarified, with the requirements of taking part in the research isolated and identified as additional and entirely voluntary. Possible negative side effects and ethical considerations (for example, time and paperwork demands) were constantly reviewed. Student teachers deemed vulnerable or at risk of failing the course were not allowed to participate and, in the eventuality, none volunteered. Imperative to the ethical integrity of this research was the iterative ethical review as the process developed. The researcher was responsible for assessing signs of any student teacher who seemed to be under pressure or struggling to deal with the different demands of passing the course and carrying out the research responsibilities. Ethical permissions from the participating universities were gained prior to starting any form of data gathering. Participants were gathered through wider informative meetings outlining the research aims, possible procedure and potential time commitments. Pseudonyms have been used throughout this article, all data was encrypted and stored on a password protected device with no cloud storage.

Participants were self-selected from a convenient population of student teachers and mentors within humanities departments. Convenience sampling was used as the participants were close by, relevant and available (Punch and Oancea, 2014). Seven

participants were selected (with one mentor agreeing to take part twice, collaborating with a second participating student teacher).

All participants carried out a stimulated recall (STR) interview. Interviews were chosen as a method to reveal mentors' tacitly held teaching knowledge, allowing the subjects to 'convey to others their situation from their own perspective and in their own words' (Kvale 2007: 11). This particular type of interview was chosen as it encourages the discussion of specific, previous events which can encourage memory structures to be recalled (Bloom, 1953). Stimulated recall can be used as a 'format [which] can be used retrospectively to construct an interpretation of already performed actions to make them intelligible' (Bertone *et al.*, 2006: 247) As a purpose of the STR interview was to see if student teachers could make their mentor's actions more intelligible.

The STR interviews followed a lesson during which the mentor taught and the student teacher observed. During the observed lesson the student teacher noted down episodes of teaching they wanted to explore later and then afterwards took on the role of interviewer. Drawing upon an 'interview guide approach' (Cohen *et al.* 2011: 413), which shares characteristics with semi-structured interviews, there were no questions provided which had to be asked. Student teachers were briefed (by the researcher) as to the purpose of the interview and the potential questions which could be asked. Research on what constitutes effective mentoring (Sandford and Hopper, 2000; Burn, 2007; Hobson *et al.*, 2009; Parker-Katz and Bay, 2008; Hudson, 2012) and the importance of self-efficacy of student teachers (Wilson and Demetriou, 2007; Brown, 2009; Buitink, 2009; Crasborn *et al.*, 2011) were used to design the interview process, encouraging agency and purpose for the student teacher. Placing the student teacher in a decisive role, leading the questioning aimed to encourage

keen observation during the lesson and allowed the questions to be designed around issues of interest to them. The interview process aimed to focus on mentors discussing reasons and purpose for their actions; removing or reducing the likelihood of evaluative feedback or 'judgementoring' (Hobson and Malderez, 2013: 89).

As the concept of accessing the minds of teachers related very closely to the aims of the research, Ethel and McMeniman's (2000) study was useful in designing the interview method. Ethel and McMeniman's work revealed successful outcomes in terms of allowing the tacit knowledge of an expert teacher to become more explicitly available. A quote from their research findings highlights how useful the student teachers considered the process:

'It's like peeling away layers and a light goes on in my head when he says something and it makes sense, I understand that's why he did that. I didn't get that from just watching his teaching' (ibid.: 93).

Mentors are said to be often 'unaware of the knowledge they have developed through the years and, as a consequence, it is hard for them to put this knowledge into words' (Zanting *et al.*, 1998: 17). In Ethel and McMeniman's (2000) research, identification of specific lesson events encouraged the mentor to 'open up' and talk in detail about the selected events in a way which unpacked the knowledge in action at the time of use. Encouraged by these findings, this study used interviews involving the observation and interviewing of experienced teachers. This was in order to allow shared pedagogical moments to be verbally explored further. Whilst sharing a similar format to Ethel and McMeniman's cognitive apprenticeship intervention, including student teachers observing an experienced teacher, the STR interview followed within this research was different in the following ways:

- The student teacher was physically present in the classroom during the observed lesson
- The student teacher recorded pedagogical moments on paper in order to explore later
- The student teacher designed the specific questions to be asked and took on the role of interviewer

Data analysis

Thematic analysis of the interview data was carried out by the researcher. Thematic analysis is a method of 'identifying, analysing and reporting patterns within data' (Braun and Clarke, 2006: 79) and has similarities with other forms of qualitative analysis looking to decipher meaning, purpose and concepts. The process took the following steps (as outlined by Braun and Clarke, 2006: 87):

1. *Familiarisation with the data*: reading and re-reading the data.
2. *Coding*: generating succinct labels that identify important features of the data relevant to answering the research questions.
3. *Searching for themes*: examining the codes and collated data to identify significant broader patterns of meaning; collating data relevant to each candidate theme.
4. *Reviewing themes*: checking the candidate themes against the dataset, to determine that they tell a convincing story that answers the research question. Themes may be refined, split, combined, or discarded.
5. *Defining and naming themes*: developing a detailed analysis of each theme; choosing an informative name for each theme.

6. *Writing up*: weaving together the analytic narrative and data extracts; contextualising the analysis in relation to existing literature.

As an approach, thematic analysis was used as a tactic for reducing and managing large volumes of data without losing the context, for organizing and summarizing, and for focusing on the interpretation (Mills *et al.*, 2010).

An initial cycle of analysis involved an annotation process to establish a greater sense of what information was 'carried' in the data, the next step being to pick ideas out and find similarities where possible. Key points, questions and ideas relating to the research aims were collated together into categories – termed codes in Braun and Clarke's (2006) second stage. With various codes appearing these were then examined and organised into broader patterns of meaning (potential themes); for example, 'clarifying ambiguous teaching events' and 'returning to otherwise taken for granted teaching ideas'. Cross checking of the transcripts for further data to support each of these broader themes was carried out to enable refining, combining and discarding where relevant. This attended to validity concerns over the development of the themes. Therefore, themes were developed out of iterative reading and familiarisation, supported by the annotation and coding from the early stages. The guiding principles for whether or not an aspect of the transcript was deemed worthy of inclusion or consideration were:

- relevance to the key research aims; and
- repetition within or across transcripts

Limitations are recognised, with a second or third lens for iterative reading, systematic coding and shared decision-making being a suggestion for improvement. In addition,

multiple data sources would have added strength in validity to the thematic and concluding knowledge claims.

Findings

Drawing on three of the main themes emerging from the interview data, this section presents and discusses each theme, using examples from the mentors and student teachers.

Reasoning linked to teaching goals

The STR interview was an effective way of enabling the student teachers to probe into the reasoning underlying their mentor's teaching. One student teacher (Adam) asked for reasoning and clarification over his mentor's choice of a teacher-led style and the use of a ten minute video clip. Adam was keen to understand why the lesson had been directed in a teacher-led style.

Adam: Why did you decide to lead the lesson, rather than getting them to lead it?

Stephen: It was their first time learning about an earthquake. I was just trying to get the foundation knowledge in there for them. So the teacher talk was to build a foundation and then afterwards other lessons allow them to do it themselves, more pupil led learning, that sort of thing.

Stephen's underlying reasoning which was revealed here allowed Adam to see that a teaching approach can be chosen with a purpose in mind. Accessing the tacit knowledge which underpins the teaching approach chosen could play a useful role in realising that, for example, certain types of teaching approach are best suited to particular subject matter or

particular pupils. In the example above, Stephen explained that his didactic approach was chosen for the introductory section of the topic on earthquakes as a way to provide a knowledge base for pupils. This type of information could be useful in enabling student teachers to make sense of when to use different teaching styles and strategies. Without this information student teachers could replicate a teaching approach inappropriately, not fully understanding the pedagogical implications (for example, why didactic teaching or group work may not be most suitable in certain situations or with certain subject matter). Uncovering teachers' reasoning can have an important role in understanding how to achieve different subject specific teaching goals.

One participating mentor, Claire, working in a co-educational, comprehensive school, taught a Year 8 geography lesson. The lesson was observed by a student teacher (Will) who then interviewed Claire afterwards, asking about several of her teaching decisions. Will was able to access Claire's tacit knowledge which had been guiding her teaching throughout the observed lesson. He described features of the lesson from his own observations and asked Claire to elaborate on specific aspects; for example, how Claire was using her voice. Claire's reasoning was clearly evident throughout the interview and her reasoning was linked to teaching goals, including how and why decisions had been taken at particular points. For example:

Will: So I noticed that when you were giving those warnings you maybe change your voice.

Claire: You tend to go deeper. So if you're just talking in general I find I might have a bit of a softer voice or more of a projected voice if I wanted to give them instructions. Then if I'm not happy with the noise levels, the voice deepens a little bit, even though

it's hard to note my voice deepening. But the tone changes and it becomes more assertive and slower [...] It's like saying without actually having to say I'm not happy.

The shared teaching experience facilitating the stimulated recall aspect of the interview was successful in pinpointing particular teaching episodes or events, leading Claire to reveal what she had been thinking at those specific times. Generalised comments, or descriptive recounts were kept to a minimum, instead explanations and reasoning for teaching actions were provided.

Throughout the STR interviews the use of specific lesson incidents was an encouraging factor in accessing mentors' reasoning.

Here are two of Will's questions highlighting specific lesson incidents:

- *I notice that you have the objective written on the board. It's sort of the first thing that you do when the class come in. Why did you do that?*
- *So in the starter activity [...] they were having a class discussion and you were always saying - when they give an answer- you were always saying 'why'. Why did you keep asking why?*

Mentors were able to respond to all of the questions posed with specific and reasoned answers, which justified and elaborated what they had been thinking at the time of teaching. Observable teaching actions were elucidated for the student teachers, enabling a level of insight which may have otherwise not been accessed. As one student teacher put it:

It's just having that experience created over years to realise what works when and what doesn't and with which classes...that's kind of really behind the scenes but it's really helpful to know that.

Taken for granted knowledge

Common teaching decisions which mentors may otherwise take for granted, due to their cumulative experience, were able to be focussed on further as the student teacher took charge of the agenda for discussion. Previous work on tacit knowledge (Eraut 2004) highlights that as teachers gather classroom experience, many of the decisions and actions they take become routinised and not explicitly considered. In this study, one mentor, Claire, speaks as if her teaching actions are obvious. However, this is not the case for the student teacher interviewing and by asking the questions, he had more influence over the information gained. The following example shows Will wanting to know why Claire had asked a pupil to recap after she had already told the class what to do:

Will: Why do you get pupils to recap when you've given them instructions?

Claire: Yes, I do try to do it as often as possible. Very simply, the reason why I get them to recap is sometimes I may not have given an instruction clear enough for every single person in there to understand it and pupils are better at explaining in their own language what needs to be done. So for that reason and secondly it makes sure that everyone is listening. I've told them once, possibly twice, then I've got someone else to tell them. They've had at least two possibly three explanations of the same task that they have to do, making sure that they all understand.

Here, Claire is very clear and persuasive about the need for the repetition. This may have remained undisclosed had Will not had the opportunity to question in the STR interview. Claire outlines why asking a pupil to repeat the task is a useful tactic (accessible language,

everyone should listen) and confirms that instructions may need to be repeated (here, up to three times) for all in the classroom to fully understand. This echoes the work of Hagger and McIntyre (2006), where nuances revealed through questioning would, potentially, have been taken for granted by the mentors had the student teachers not had the opportunity to question as they did.

Clarifying ambiguity

A recurring theme was that of the student teachers not being clear as to why their mentor had acted in particular ways during the observed lesson. One student teacher (Rosie) asked questions which sought to uncover why her mentor (Sam) had responded to similar pupil behaviour differently at different times. These issues were then elaborated as Sam explained why his responses varied:

Rosie: You gave Jake a warning. Why was it particularly at that point [...] rather than earlier on? Did you put it off before that, as he was shouting stuff out earlier?

Sam: Yeah, I may have put off a few of his shoutings out, but at the same time I think at first it was quite low level and it wasn't as majorly disruptive at that point. I felt like it was beginning to escalate further, not just from Jake but from everybody else. So, in a slightly unfair way, I've used him as that benchmark.

Having the opportunity to question led to another student teacher (Laura) returning to a particular point to clear up seemingly ambiguous teaching decisions. Here, regarding the application of behaviour management strategies:

- *I noticed at the start of the lesson it was maybe you waiting for the class to be quiet...but then towards the end it was getting more, you'd raise your voice a bit more, trying to quieten them, why?*
and later;
- *At one point Ed was shouting comments [...] did you choose to ignore it on purpose for time reasons?*

The mentor in this case (Ben) was able to elucidate his thinking. Here, in response to the last question (above):

It's not done for time reasons; because of Ed as - that sort of pupil - he seeks attention for a lot of the lesson. So I purposely choose to ignore him, because if I give him attention then it very quickly can escalate into a loss of time as he will try and have a classroom argument or have a discussion or try and find a way to get other people involved to try and kill time or get my attention.

The student teachers used their role as interviewer to understand, more fully, seemingly ambiguous teaching and to ask the questions that mattered to them.

Discussion and implications

The place of tacit knowledge in mentoring beginning teachers

Valuable teaching knowledge, which may have been otherwise undisclosed, was revealed and explained; benefitting the student teachers growing understanding of classroom teaching. The explication of often 'taken for granted' or tacit knowledge which has been developed over time can become a focus for attention in the mentoring of student teachers; and as Loughran (2013: 62) sees it:

If teaching is to be understood as complex, interconnected, dynamic and holistic; and, if teaching about teaching is to make all of this apparent, then teacher educators need to develop ways of making the tacit explicit.

The instinctive 'know-how' of experienced teachers is a valuable resource for early and ongoing professional development. The recognition and importance of tacit knowledge is pertinent to student teacher learning and the organisation of mentoring programmes.

The potential for eliciting tacit knowledge

Major considerations in the literature concerning tacit knowledge include the methods of and potential for accessing it. Eraut (2000) points to the difficulties in getting respondents to describe their personal knowledge or 'know-how' and Fugill (2012: 2) confirms this inaccessibility stating: 'we possess expertise that may have originally been learned verbally and explicitly, but has subsequently become tacit, an unacknowledged part of our [...] practice'; suggesting that, 'articulation of such knowledge rarely takes place and can be difficult'. It is largely agreed that there will always be an element of knowledge or understanding which will remain personal and ineffable (Brown, Collins and Duguid, 1989; Fenstermacher, 1994; Elliot, 2002; Dudley, 2013); however, this study has shown that tacit

knowledge can be discussed in an explicit manner and that there are deliberative ways to access it. Other suggestions for explication include using mediating objects, e.g. picture or video; regular mutual consultation; a relationship within which explanations are expected; and, an informal relationship where work based issues can be discussed outside of a formal setting where 'riskier' comments may be possible (Eraut, 2000: 120).

Whilst tacit knowledge may be used subconsciously by teachers in the act of teaching we may expect that they are able to reflect on their functioning (Calderhead & Gates, 1993); however, the methods of reflection and extent to which this happens are not well researched. The nature of the actions that mentors take to transform their knowledge is 'a missing aspect of our knowledge of mentoring' (Parker-Katz and Bay, 2008: 1260) and could be usefully explored further.

Going beyond observation

This study shows student teachers were able to observe and lead a post-lesson discussion successfully explicating their mentor's tacit knowledge further. At the beginning of a PGCE student teachers often have little prior teaching experience and this can make deciphering complex classrooms challenging. The lack of classroom experience, and therefore lack of conceptual framework of practical teaching, may result in student teachers struggling to gather meaningful learning from observation of experienced teachers. It was clear through the interviews that the student teachers were not always sure why their mentor had acted in particular ways. Student teachers may not be sure of what to look for during observation and mentors may struggle to pitch their explanations at the right level. Where 'novices do not know what there is to be learned, nor how they can learn it; experienced teachers take

their tacit, intuitive expertise for granted' (Hagger and McIntyre, 2006: 78). Therefore, in order to enlighten student teachers as to what is happening 'under the surface' of classroom observations, a focus on explicating mentors' tacit knowledge is beneficial. Insight into why mentors do and say things at particular times in the classroom can prevent student teachers from 'mindlessly imitating or from misinterpreting their mentor's lessons' (Zanting *et al.* 1998: 18). The process of STR interviewing made tacit knowledge available as an explicit source of knowledge and can support STs to get 'under the surface' of classroom observation.

The shared teaching experience facilitating the stimulated recall aspect of the interview was successful in pinpointing particular teaching episodes. The lesson observation was a useful starting point to anchor specific questions, which led to a high level of recall and mentors could reveal what they were thinking in situ during the teaching episode. Having jointly experienced the lesson (one teaching, the other observing), there was great clarity over what was being discussed (e.g. an action, statement or pupil behaviour).

Mentors are often in the position of observing and providing feedback on student teachers teaching and the STR interviews reversed this; instead encouraging the mentor to provide justification for his/her own teaching. The lesson observations which took place facilitated the post-lesson discussions and proved to be a strategy which enabled shared reflection and an opportunity for professional learning, both identified as notably absent (Hobson *et al.*, 2009). Reversing more traditional roles (e.g. where the mentor observes and gives feedback) may also be empowering for the student teacher and engender empathy within the mentor; both of these aspects (empowerment and empathy) have recently been raised

as having positive outcomes for reducing tension and resolving problems within a mentor - student teacher relationship (Hudson and Hudson, 2018).

Observe and interview: procedural evaluation

Previous research has shown that mentors' feedback conversations do not always provide opportunities for student teachers to 'appropriate the practical knowing which might assist their later interpretations and responses' (Edwards and Protheroe, 2003: 230) and there can be perceptual confusion about when to enact certain types of response to different classroom scenarios. Student teachers need support to develop 'problem solving strategies for dealing with the practicalities and complexities associated with contextual school' (Hudson, 2012: 72). Providing this type of support is said to be challenging for mentors (Wang, Odell and Schwille, 2008). In this study, encouraging mentors to disclose their tacit knowledge in collaboration with student teachers altered the way in which mentoring was practiced; and the way mentoring is practiced is said to 'reproduce and transform [...] both mentor and mentee' (Hobson *et al.*, 2009: 157). For example, where mentoring is seen as supervisory, a mentor is likely to be seen as the supervisor and the student teacher is likely to develop the disposition of compliance. During the interviews, mentors' tacit teaching knowledge was the focus of attention, rather than any form of appraisal. The STR interview data reveal that where the focus was on student teachers actively seeking to uncover reasoning from their mentors, the conversations were more non-directive, in Harrison *et al.*'s (2005) terms, as the student teachers were central in asking the questions. A non-directional style is a more flexible approach, one which encourages reflection (Crasborn *et*

al., 2008) and includes 'guiding to develop alternatives' (Harrison, 2005: 174); discussions focused on uncovering a mentor's tacit knowledge could be part of this guiding.

An active stance was promoted as a result of the student teacher being in the position of interviewer, with the questions being driven by them. The questions, which were guided by the requirement to uncover the mentors' tacit knowledge, were crucial in directing the flow of conversation. The student teachers were autonomous in deciding what questions to ask and which teaching aspects they felt it would be useful to know more about. It has been suggested there are 'active' and 'passive' student teachers (Buitink, 2009: 125). Those who take on a passive approach to their learning will rely on external factors in promoting their development as teachers. External factors (e.g. taught PGCE sessions and mentors' feedback) are available to all; however, the difference being those student teachers who are active in their learning will ask questions, of themselves and others, seek out particular opportunities and create longer term development plans (*Ibid.*). Here, in the STR interviewing, student teachers were the central actors in transforming their own understanding, agents of their own learning, asking questions that mattered to them (Carr and Kemmis, 1986).

Conclusion

This article has focussed on student teachers explicating the tacit knowledge of their mentors and has highlighted a way in which this is possible. Mentors' tacit knowledge holds valuable experiential understanding which can enable a greater awareness, for student teachers, of complex classroom situations. Where tacit knowledge is recognised as a form

of knowledge which can be accessed it can play a role in student teacher learning and can also influence the way mentoring operates.

This article has shown that student teachers, where given the opportunistic structures, can ask specific questions based on observation of teaching, designed to explicate tacit knowledge from their mentors. Mentors were shown to provide reasoning and further explanation to elucidate their teaching.

These findings are important for student teachers, mentors and ITE more widely. Accessing the tacit knowledge of mentors can inform the student teachers' knowledge base (Anderson et al., 1988) and encourage a 'why-centred' discussion around reasoning and decision-making, rather than a 'what-centred' discussion, focussed on practicalities and process [both types of discussion have their place in ITE school experience].

To define tacit knowledge, to recognise its importance in ITE and to develop strategies for student teachers to engage with tacit knowledge in schools would be valuable. Awareness of if and how tacit knowledge can be a focus within mentoring is important as: 'if tacit knowledge cannot be codified and can only be observed through its application and acquired through practice, its transfer between people is slow, costly, and uncertain' (Grant 1996: 111). To return to the opening paragraph, it is a lingering issue and one which could be elevated in terms of significance among mentoring programmes and within ITE.

As for further research, it would be useful to find out from student teachers to what extent tacit knowledge explicitly discussed proves useful in subsequent teaching. More research into the extent to which explication of tacit knowledge could, or should, be a focus for student teachers is also suggested as not all of what teachers say or do can be regarded as

wisdom or knowledge (Leinhardt, 1990). The way in which mentoring is envisaged and enacted can influence student teachers' self-identity (Hobson and McIntyre, 2016) and their attitudes to ongoing professional development (Richter *et al.*, 2013; Ingersoll and Strong, 2011). Additionally (and crucially), with poor retention rates in teaching linked to a lack of self-efficacy (Wilson and Deaney, 2010), insight into ways student teachers can be more pivotal in the questioning process (as exemplified here) leading to more resilient and active teachers (Buitink, 2009), would be a useful avenue of study.

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