The socially skilled teacher and the development of tacit knowledge

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Skilled interpersonal relations are crucial for effective teaching and learning but much professional knowledge here is tacit and thus not easily communicated. This article presents the results of a study that examined the tacit knowledge of trainee and experienced teachers in relation to various problematic interpersonal aspects of school life. Trainee ($n = 501$) and experienced ($n = 163$) teachers in secondary schools were presented with a series of hypothetical vignettes and asked to rate each of 128 potential response options. Trainees completed the survey at the beginning and end of their professional training year. It was found that experience appeared to be related to the capacity to identify 'bad' responses, but there was little difference in relation to the identification of 'good' responses. Further differences between novice and experienced teachers in relation to preferred strategies are reported. Implications for teacher education and for future research are identified and discussed.

Introduction

Studies of teacher competence and effectiveness often emphasise subtly differing components, yet most recognise three key domains: subject knowledge (expertise in the subject being taught), pedagogical knowledge (expertise in approaches to teaching and learning) and a third that is concerned with a variety of professional characteristics (including social competence and the inculcation of positive relationships) (Whitty, 1996; Torff & Sessions, 2005; Malm & Löfgrer, 2006).

Clearly, student teachers at the outset of their professional training should not lack requisite academic subject knowledge within their field of specialism. Indeed, if they have been selected carefully, one would anticipate that their expertise in this respect should arguably be more up to date than that of many experienced teachers. In contrast, one would normally expect the novice teacher's pedagogical skills to be

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rudimentary at the outset, but reflect significant growth in their professional learning as they progress through their period of training. But what of their interpersonal competence, their ability to relate and respond to significant others within the school context? To what extent would one expect novice teachers to bring to bear competencies developed in their prior life experiences (with both adults and children) to aid them in dealing with challenging situations in school? Will they be able to transfer their existing interpersonal competencies to school in ways that render their performance little different than that of their more experienced colleagues? Or, alternatively, are the complex relationships of the school context, with the particular contrast between the exercise of adult authority and power, and the building of student autonomy and independence (Alexander, 2000), so unlike those of life elsewhere that student teachers approach this aspect of their professional lives as virtual novices?

Despite the fundamental importance of the social and emotional climate of classrooms (Marzano *et al.*, 2003; Jennings & Greenberg, 2008), for many teachers, the creation of positive relationships with students is perceived to be the most demanding aspect of their work (Johnson & Birkeland, 2003). More recently, this challenge has been compounded by changes to the nature of authority in western, and increasingly, traditional, societies that have led teachers to rely increasingly upon the exercise of their professional skills rather than upon the legitimising basis of traditional authority (Pace & Hemmings, 2007; Elliott & Tudge, 2007). It is hardly surprising, therefore, that trainee teachers are typically considered to have much to learn about the management of student behaviour and the creation of positive classroom environments. In addition, at the outset of their training year, many trainees have limited experience of dealing with teacher colleagues within school-based hierarchies, a phenomenon that becomes increasingly salient to them as they progress through their first years of teaching (Beach & Pearson, 1998; Hobson *et al.*, 2008). It is unsurprising, therefore, that trainees' development as teachers has been found to be greatly impacted by the quality of the professional relationships that they are able to develop with their colleagues in school (McNally *et al.*, 1997). A further interpersonal sphere involves relating to parents. However, trainees rarely have significant training in working with, or relating to, parents. Given the current focus upon high-performing and 'failing schools' so prevalent in the mass media, and a greater tendency for the public to challenge the work of those in the traditional professions, it is understandable that parents appear to be increasingly prepared to question teachers' competence and authority (Maclure & Walker, 2000).

Current approaches to teacher training in many countries reflect the belief that professional craft knowledge (as opposed to specialist subject knowledge) is often best learned *in situ* under the guidance of professional teacher mentors (Wang & Odell, 2002). Thus, student teachers typically learn both within traditional university settings and also 'on the job' as part of extensive school placements, although, in the UK, a small proportion of programmes is almost wholly school based.

The school-based model of teacher training is based upon a belief that mentors are able to render their knowledge and skills accessible to the trainee. While this is

relatively unproblematic for many routinised procedures and functions, difficulties emerge when the focus involves more complex professional knowledge, for much of this is tacit and thus not easily made explicit as a set of guiding rules for action (Schön, 1983; Sternberg & Horvath, 1995). The concept of tacit knowledge was conceptualised by Polanyi (1966), who discussed its relationship both to perception and to scientific thinking. Arguing that 'we can know more than we can tell' (p. 4), Polanyi (1958, 1966) described how, when we use a tool, such as a hammer, we tend not to be consciously aware of how the physical sensations we receive correspond to the tool's actions. While the individual draws upon sensory feedback to use the tool more skilfully, articulating this information is almost impossible. Polanyi (1958) stressed the experiential nature of tacit knowledge whereby much of this is passed on implicitly by demonstration, example and practice. Much examination of the role of tacit knowledge in professional contexts has been undertaken by Sternberg and his colleagues (Sternberg *et al.*, 1995, 2000; Sternberg & Horvath, 1995; Sternberg, 1997; Grigorenko *et al.*, 2006; Sternberg & Hedlund, 2002). For Sternberg, tacit knowledge is conceptualised according to three main features.

Firstly, it is acquired without a high degree of direct input from others. Learning takes place not primarily from instruction from others but, rather, results from the individual's experience of operating within a given context. In these situations, such knowledge may not be easily understood or communicated.

Secondly, tacit knowledge is essentially procedural in nature; it concerns how best to undertake specific tasks in particular situations. As is the case with procedural knowledge, this often serves to guide action without being easily articulated (Anderson, 1982). Tacit knowledge is more than a set of abstract procedural rules, however; it is context-specific and concerns appropriate action in given situations.

Thirdly, the utilisation of our tacit knowledge is intricately bound up with one's own goals. Thus, we may be instructed on procedures to adopt in a given situation (e.g. how to react when a student is abusive to the teacher) but our own circumstances, dispositions (Damon, 2007) and personalities may lead us to take a different approach that may seem more effective in serving our own personal goals and agendas. However, it does not appear that tacit knowledge scores are closely related to measures of personality (Wagner & Sternberg, 1990).

Although tacit knowledge for teaching has been shown to be related to professional effectiveness (Grigorenko *et al.*, 2006), as it has for several other occupations requiring high-level expertise (Sternberg *et al.*, 2000; Cianciolo *et al.*, 2006), there is some debate about the extent to which tacit knowledge can be made explicit. However, a number of researchers (e.g. Argyris, 1993; Wenger, 1998; Sternberg *et al.*, 2000) have argued that because expertise is acquired as a result of experience, its development is likely to be facilitated by approaches that encourage thought, reflection and discussion about what one is doing and why (Cianciolo *et al.*, 2006).

While mentoring trainee teachers in respect of pedagogic and administrative procedures is a far from easy task, assisting them to manage the challenges inherent in the interpersonal domain of school life is often an even more challenging and problematic activity, particularly when this is considered in the form of post hoc examination. Not

only are teachers often unaware of the skills they bring to bear in such situations, but also, the complex dynamics of a particular interpersonal encounter are hard to examine after the event when highly subjective, often defensive mechanisms, operate (Elliott & Stemler, 2008).

Given such difficulties, it would be helpful to have a clearer and more explicit picture of what exactly differentiates the skilled from the less skilled teacher in relation to the management of difficult interpersonal encounters. One possibility is that, confronted by a potentially challenging situation, the skilled teacher is more likely to select from a range of strategies or tactics the most appropriate way to respond. For example, a teacher observing a student throwing a book across the classroom must select the most appropriate response. The range of possibilities is often large, including, in this instance, grabbing or striking the child (both inappropriate of course), shouting, complaining, pleading, ignoring the event, sending the child from the room, or summoning the help of a colleague. In another scenario, a teacher may feel that a colleague is belittling or undermining her. Amongst the many available options, she might complain to her colleague, challenge him, ignore the behaviour altogether or speak with a senior member of staff.

One can imagine that selecting the most appropriate actions is often a difficult task for the trainee teacher. However, whether trainees differ substantially from their more experienced colleagues and how they develop over time is currently unclear. Thus we were interested to examine whether differences were demonstrable on entry to teacher education courses, and whether a year of professional teacher training, much of this based in schools, would result in significant changes to novice teachers' choices about best reactions to situations such as those identified above. Would one anticipate a significant shift during this training period towards a profile that would be obtained from experienced teachers? These questions underpinned the study reported in this article.

Our focus is upon teachers' tacit knowledge concerning how best to relate to significant others. To examine this, we constructed a measure following procedures described in detail in Sternberg *et al.* (2000). This involves the utilisation of a tacit knowledge inventory using vignettes relevant for the context under examination that can lead to differentiated responses that vary in terms of their adaptability (Sternberg *et al.*, 2000).

Tacit knowledge inventories, utilising a situational-judgement format, are widely employed in studies of highly domain-specific tacit knowledge (McDaniel & Nguyen, 2001; Weekley & Ployhart, 2006; Cianciolo *et al.*, 2006). Using this approach, informants are presented with a number of short vignettes, each of which presents a practical problem that needs to be solved. The respondent is presented with a list of possible responses and is asked to rate the appropriateness of each using a Likert scale. Such an approach permits comparison between the scores of a target group and those adjudged to be experts.

The focus in the present study is upon teachers' practical skills in relating to significant others. Using the situational-judgement approach, we examined interpersonal competence by presenting teachers and student teachers with a series of hypothetical

school-related scenarios in which an interpersonal difficulty or challenge is presented. These scenarios, together with a list of possible responses, were derived from interviews with experienced teachers (see Stemler *et al.*, 2006; Grigorenko *et al.*, 2006, for full discussion of our procedures) and thus should be recognisable, if not familiar, to most teachers. In line with findings from content analysis of the initial interviews, seven differing types of strategy, applying across a wide range of situations, were identified: comply, consult, confer, avoid, delegate, legislate and retaliate. Each of these strategies has attendant advantages and disadvantages for any given interpersonal interaction and there appears to be no strategy that is uniformly superior in all situations.

Table 1 presents the key characteristics of the seven strategies, identifies why these might be used in a given situation, and identifies a number of possible advantages and disadvantages of each. It should be noted that the focus is on actions, rather than cognitions, and thus strategies are defined in terms of observable behaviours which may be driven by a variety of different underlying intentions and emotions.

The purpose of the present study

The goals of this study were: (a) to examine the degree to which scores on the Tacit Knowledge Inventory—High School (TKI-HS) differed between experienced teachers and novice teachers, and (b) to examine the extent to which student teachers' scores on the TKI-HS changed over time as a result of one year of professional training. The point of this investigation was to determine the extent to which the development of teachers' tacit knowledge in relation to interpersonal action happens naturally over time as a result of experience in schools. Because tacit knowledge is theoretically implicit and not easily taught directly (Wagner & Sternberg, 1985; Sternberg & Horvath, 1999), one might expect novices to become more like experts not only via formal articulation from school mentors and university tutors but also as a result of their immersive training experiences.

Methods

Participants

A total of 522 student teachers from two university teacher training programmes and two small school-based teacher training programmes in the north-east of England made up the initial sample (Time 1). Of these, 21 participants were excluded from analyses because they were missing more than 10% of the response data for the inventory. Consequently, the resultant sample size for the Time 1 sample was 501 students. All participants were training to work with school students in the age range 11–18 years. Forty per cent of the sample reported themselves to be male and 55% reported themselves to be female (an additional 5% did not report their gender). Participation was wholly voluntary and no material inducements or incentives were offered.

Table 1. Key characteristics of the seven strategies

Strategy	Defining characteristics and behaviours	Appropriate use/potential advantages	Inappropriate use/potential disadvantages
Comply	• Actor does whatever is asked of him or her, regardless of who is asking • Actor takes action that can be interpreted as actively condoning behaviours of others in the situation	• Actor agrees with what he or she is being asked to do • Short-term compliance has long-term benefits (e.g. choose your battles)	• Actor fears emotional consequences of non-compliance • Short-term compliance leads to negative long-term consequences
Consult	• Actor appeals to an external source for advice • Actor asks people to work together to solve the problem	• Actor wishes to capitalise on other people's expertise	• Actor will be perceived as incapable of solving his or her own problems
Confer	• Actor engages in verbal discussion with source of interaction • Conversation takes place in a private, one-on-one setting and is characterised by rational explanation of the actor's point of view	• Actor wishes to increase awareness and communication • People are more apt to change when reasons for requests are revealed	• Revealing too much leaves actor vulnerable to being used as a pawn by others • Rational discussion of each decision takes too much time to be practical
Avoid	• Actor avoids, delays, or puts off dealing with a situation or problem • No action is taken at all, or actions that are taken do not deal directly with the situation	• Actor believes that the situation or problem could resolve itself	• Actor avoids action in order to put off emotionally difficult decisions
Delegate	• Actor either implicitly or explicitly delegates responsibility for taking action to someone else • Actor absolves him or herself of responsibility for action	• Actor recognises his or her own lack of expertise for dealing with situation	• Actor is capable of dealing with situation him or herself
Legislate	• Actor explicates rules governing future actions of self and others	• Actor is interested in procedural justice • A certain class of situations comes up frequently	• Actor creates too many policies • Policies are too situation specific • Impossible to remember all policies
Retaliate	• Actor reacts physically or verbally in direct response to a situation. • Direct response is often like for like in nature or involves punishment	• Other strategies have failed • Antagonist does not respond to rational discussion	• Actor retaliates as an instinctive reaction • Actor retaliates as an act of revenge without a strategy for changing antagonist's behaviour

Follow-up retesting at the end of the training year (Time 2) was undertaken with 254 (51%) of the original participants. The loss of almost 50% of the sample reflected high absence rates in the final weeks of their training programmes, a time when the students had recently completed their final teaching practicals, and many were absent at interviews for teaching posts, working independently on their portfolios or, for a variety of other procedural reasons, were unavailable on those occasions that the second survey was conducted. The demographics of the two groups (Time 1 and Time 2) were very similar (see discussion below) and there was no reason to suspect that the nature of the sample had changed as a result of any systematic or structural factors (see Table 2).

The experienced teacher group (n = 163) comprised two staff cohorts from comprehensive schools serving children from a wide range of socio-economic backgrounds in the north-east of England. The proportion of those staff completing the measure was in excess of 95%. Of this group, 48% reported their gender as male and 48% as female (4% did not report their gender).

Table 2 presents demographic characteristics separately for both the novice teachers and the experienced teachers. The results reveal that the characteristics of the sample of novices who took the test at both time points closely mirrors the demographics of those who took the test at Time 1 only.

Procedure

All students were invited to complete the Tacit Knowledge Inventory for Teachers—High School (TKI-HS), a measure designed by the present authors (Stemler *et al.*, 2006), in the opening two weeks of their professional training (Time 1).

Table 2.   Descriptive statistics for the sample

	All experienced teachers	Senior staff (5+ years' experience)	Junior staff (3 or fewer years' experience)	Full sample of novices	Novices completing the survey at T1 and T2
n	163	108	39	501	254
Gender (%)					
Male	47.9	55.6	25.6	39.7	39.4
Female	48.5	41.7	71.8	54.7	55.9
Missing	3.7	2.8	2.6	5.6	4.7
Age					
Mean	38.7	43.5	28.6	26.8	26.6
SD	12.0	10.4	9.4	6.8	6.6
Years of teaching					
Median	8.0	14.5	2.0	0	0
Mean	12.6	17.3	1.9	0	0
SD	11.5	11.0	1.0	0	0

At this time, the students had been given opportunities to observe classroom practice for a brief period (primarily in primary school settings) but had not yet been given any professional responsibility within schools. In each setting, the initial session of survey completion was conducted prior to a whole-group lecture, given by the first author, who was not known to the students prior to the session. The timing of this was selected deliberately as in each institution the lecture was very likely to be well attended. Given the presence of these large cohorts, the administration of the measures was relatively easy to organise and monitor. As it was important that respondents provided their own perspectives uninfluenced by their peers, the measures were completed independently in quasi-examination conditions. The voluntary nature of the procedure was emphasised and students were free to withdraw from the activity at any time. Participants were invited to give their names in order that we could match their responses to those at Time 2 but were reassured that no details about their responses would be made available to others, and all identifying details would be destroyed once data gathering was complete.

In the final two weeks of the training programme, some nine months later, the students were asked to complete the survey once more (Time 2). At this time, they had recently completed their practical training and were finalising programme documentation, seeking employment, and preparing for departure. Thus, organising the testing and ensuring a high response rate proved to be rather more difficult than for Time 1.

Unlike the student group, the experienced teachers completed the survey on just one occasion. For both school staff groups, testing was conducted in the school halls at the end of the school day. As was the case for the students, examination conditions pertained and participants were asked to respond without conferring with colleagues. A small payment was made to each school to compensate for the time utilised for the study. However, participation was again wholly voluntary.

Survey materials

The TKI-HS is a situational judgement test that presents 12 written scenarios of problem situations typically encountered by secondary school teachers. Each of these related to one of the following four categories: (i) relating to students, (ii) relating to other teachers of similar status, (iii) relating to senior teaching staff in management roles, or (iv) relating to parents. Each scenario provides several response options stating what the principal actor in the scenario 'should do'. Participants were asked to rate the quality of each of a total of 128 response options, using a 1–7 Likert scale (1 = strongly disagree, 7 = strongly agree).

Response options were designed from the outset to fit one of seven categories: *comply* (do what is asked of you by whomever asks), *consult* (ask someone else for advice or to mediate), *confer* (raise the issue with the source of the problem), *avoid* (ignore the problem or avoid the situation), *delegate* (pass the responsibility for dealing with the problem onto someone else), *legislate* (institute new policies for dealing with situations like the novel one being encountered), or *retaliate* (act toward an

aggressor the way you perceive he or she acted toward you) (see Stemler *et al.*, 2006 for further details). Each strategy was represented by at least one response option for each of the 12 scenarios. Their distribution is presented in Table 3. Figures 1–3 provide example scenarios with response options.

Table 3. Distribution of response options by strategy

Strategy	No. of items	% of items
Comply	17	13
Consult	19	15
Confer	22	17
Avoid	19	15
Delegate	21	16
Legislate	12	9
Retaliate	18	14
Total	128	100

The head of department at Mr Jackson's school has asked all of the teachers in her department to put together a portfolio illustrating their accomplishments as a teacher this year. The project has a very short timeline, and is in addition to his usual teaching tasks, but it is required by the department. Mr Jackson really wants to do a great job, so he spends time working on it after school and during the weekend, and is proud of the final product he submits. When he receives his evaluation, it says only that his portfolio was 'satisfactory', as opposed to 'excellent' or even 'good'. Mr Jackson feels that it deserves a higher mark, especially given the amount of time he put into it.

Given the situation, please rate the quality of the following statements.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

1. [LEGISLATE] Mr Jackson should simply ignore any future remarks on his portfolio, good or bad, from the head of department.
2. [COMPLY] Mr Jackson should try to put more effort into future projects.
3. [CONSULT] Mr Jackson should talk to the head of department privately about his concerns.
4. [DELEGATE] Mr Jackson should ask a colleague to advocate for him.
5. [AVOID] Mr Jackson should continue to do what he has been doing and put this unfortunate event behind him.
6. [AVOID] Mr Jackson should talk to a few trusted colleagues about how angry he feels and then drop the matter.
7. [CONFER] Mr Jackson should talk to the head of department and tell her that he does not feel appreciated.
8. [AVOID] Mr Jackson should not make an issue out of it.
9. [CONFER] Mr Jackson should ask to see the grading rubric or an example of an 'excellent' portfolio.
10. [RETALIATE] Mr Jackson should persuade his colleagues to oppose any other extra assignments from the head of department in the future.

Figure 1.   Example scenario from the Tacit Knowledge Inventory for High School Teachers (Dealing with Senior Colleagues)

Mr Moore is teaching a Year 10 class this year. For the most part, the students are interested in the topics and listen to what he has to say. Some of the students in the class understand new topics easily, while other students have difficulties understanding basic concepts and ask questions that show they don't understand the content. William, one of the brighter students, is obviously bored with the pace of the class, so has begun to laugh and make fun of the students who ask questions.

Given the situation, please rate the quality of the following statements.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

1. [RETALIATE] Mr Moore should tell William, in front of the class, that any further disruption will be punished.
2. [AVOID] Mr Moore should ignore William's inappropriate behaviour.
3. [DELEGATE] Mr Moore should send William out of the classroom until he is ready to treat everyone with respect.
4. [RETALIATE] In front of the whole class, Mr Moore should tell William that he must treat the other students with respect.
5. [CONSULT] Mr Moore should speak with William's other teachers to see if he is above average in other subjects, and if this has led to disruptive behaviour elsewhere.
6. [RETALIATE] Mr Moore should talk to William after class and then give him detention.
7. [LEGISLATE] Mr Moore should go over his rules with the class, emphasising the importance of respect.
8. [COMPLY] Mr Moore should talk to William in private and tell him that he recognises how intelligent he is and will try to find assignments that will really challenge him.
9. [DELEGATE] Mr Moore should assign a group project to teach William how to work with his classmates.
10. [CONFER] Mr Moore should speak to William privately about his rudeness in class.
11. [DELEGATE] Mr Moore should send William to the head of year.
12. [AVOID] Mr Moore should give William a more difficult problem to work on while he is teaching the other students the regular lesson.

Figure 2.   Example scenario from the Tacit Knowledge Inventory for High School Teachers (Dealing with Students)

Because the TKI-HS does not have any objectively 'correct' or 'incorrect' answers, there are a variety of approaches that may be used to score the responses (e.g. Sternberg *et al.*, 2000; Grigorenko *et al.*, 2004). For the purposes of the present study, we elected to use an 'expert profile' based scoring approach.

In determining which teachers in our sample should serve as experts, we chose to use length of experience as the key criterion (see Discussion section below for reflections upon this). According to Darling-Hammond (2000), 'While many studies have established that inexperienced teachers (those with less than three years of experience) are typically less effective than more senior teachers, the benefits of experience appear to level off after about five years, especially in non-collegial work settings'. Consequently, for the purposes of the current study, we first computed the mean, median, and mode of all items for the 108 currently practising teachers in our sample

Patricia, a Year 9 student, is often disruptive in Mr Brown's class. Patricia talks to her friends while Mr Brown is trying to teach, and when he asks her to be quiet, she often snaps back with a rude remark. As her teacher, Mr Brown decides to call Patricia's parents to talk about this situation. When he explains the situation, Patricia's mother becomes very aggressive, saying that he is a bad teacher and not good enough for her daughter. She tells him that at home Patricia is polite and friendly and she would never be disruptive in class. Furthermore, Patricia's mother questions Mr Brown's competence in judging her daughter.

Given the situation, please rate the quality of the following statements.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

1. [CONSULT] Mr Brown should end the conversation as quickly as possible and go to consult his head teacher.
2. [RETALIATE] Mr Brown should tell Patricia's mother that if she doesn't start to treat him with more respect, he is going to be obliged to hang up the phone.
3. [AVOID] Mr Brown should accept that he will not receive much support from Patricia's mother and recognise that he will have to tackle the disruption himself.
4. [LEGISLATE] Mr Brown should institute a set of rules that specify what the consequences of disruptive behaviour will be (and what constitutes disruptive).
5. [COMPLY] Mr Brown should let the mother explain her view and when she has finished, try to find some point they agree on.
6. [RETALIATE] Mr Brown should tell the mother that if her daughter's behaviour does not stop, she will be removed from his class.
7. [CONSULT] Mr Brown should suggest a meeting with the mother, the daughter, and the head teacher.
8. [CONFER] Mr Brown should ask the mother to meet in person so they can talk about the topic in a calm and polite way.
9. [DELEGATE] Mr Brown should end the conversation and ask the assistant head teacher to deal with the situation.
10. [CONSULT] Mr Brown should ask a colleague for advice.

Figure 3.   Example scenario from the Tacit Knowledge Inventory for High School Teachers (Dealing with Parents)

with five or more years of teaching experience and we called this group of experienced teachers 'senior staff'. We then computed the mean, median, and mode on all items for the 39 teachers with three or fewer years of experience and called this group 'junior staff'. Staff with exactly four years' experience ($n = 16$) were excluded from these analyses.

The goal of our scoring approach was to create two composite subscale scores. We labelled the first subscale, 'the capacity to detect a good response' (this comprised the 'Good Response' scale). A response option was included on the 'Good Response' scale if it had a mean of 5.5 or higher and a mode of 6 or 7. Eighteen options, from the total of 128, were classified by experienced teachers as excellent responses (i.e. belonging to the 'Good Response' scale). Next, we calculated a 'Good Response'

subscale score for each trainee by summing the ratings they had provided for each of the 18 responses relating to this 'Good Response' scale.

A similar approach was used to create a second subscale, which we called 'the capacity to identify a bad response' (i.e. the 'Bad Response' scale). Again, all 128 items were evaluated and an item was added to the 'Bad Response' scale if it had a mean of 2.5 or lower and a mode of 1 or 2. Nineteen items out of 128 were classified by experienced teachers as poor responses (and thus these comprised the 'Bad Response' scale). Participant scores for this subscale were then created by summing their ratings of all items categorised as belonging to this subscale. All other response options, those not classified as belonging to the 'Good Response' or 'Bad Response' scale, were considered to be neutral items.

Results

Cronbach's alpha estimates of internal consistency reliability were computed for each subscale (i.e. 'Good Response' and 'Bad Response' scales) for each of the three samples (see Table 4). The results show that all scales exhibited acceptable levels of internal consistency reliability. Note that each of the 12 scenarios had at least one item that was classified as belonging to either the 'Good Response' or 'Bad Response' subscale, and some scenarios had multiple items classified onto one or both of those scales.

Do novices and experienced teachers differ in their tacit knowledge?

In undertaking this analysis, we also included a further group consisting of (junior) teachers with teaching experience of three years or fewer. (NB, recall, in undertaking the analyses, we use the term 'senior' to describe teachers with five or more years' experience, rather than as a reflection of their managerial/hierarchical status.)

Table 4.   Cronbach's alpha values on 'Good' and 'Bad' scales for each sample

Scale	Total sample of experienced teachers in the two schools	Senior staff in the two schools	Novice teachers— Time 1	Novice teachers— Time 2
Good Response scale				
No. of sample	155	104	488	250
No. of response options on scale	18	18	18	18
Cronbach's alpha	0.73	0.76	0.64	0.64
Bad Response scale				
No. of sample	150	99	488	248
No. of response options on scale	19	19	19	19
Cronbach's alpha	0.71	0.71	0.65	0.67

Our analysis involved comparison of 'Good' and 'Bad' responses identified by each of three groups: novices, junior and senior teachers. First, we created a further set of 'Good Response' and 'Bad Response' scales based on the responses to the TKI-HS that were given by the novice teachers at Time 1. We used the same classification procedure as previously described (e.g. items with modes of 6 or 7 and means greater than or equal to 5.5 were classified as 'Good Response' items). We then repeated this process to create another pair of scales based on the responses of the junior teachers. We then compared the proportion of items on the novice 'Good Response' scales, corresponding to each of the seven strategies, with those of the junior and senior staff's 'Good Response' scales. The same process was conducted for the 'Bad Response' scales. The results are presented in Figures 3 and 4.

The data reveal that the senior teachers selected 'confer' strategies as Good Responses more frequently than did the novices (39% vs. 32% of items), whereas novices tended to endorse 'consult' as a good strategy (45%) more often than senior staff (39%). This latter finding is understandable, given the novices' relative lack of experience and the important role in the training programmes for school-based mentors to assist trainees in their practice. Interestingly, the scores of the less experienced (junior) teachers were sandwiched between the other two groups for both strategies.
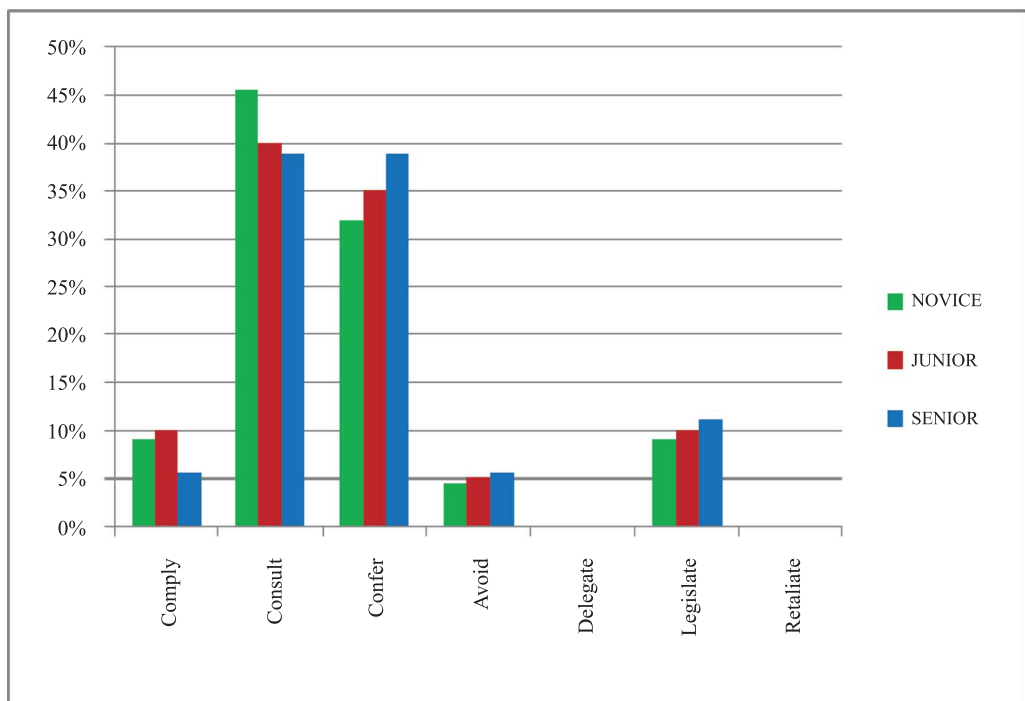

Figure 4. Novice/junior staff/senior staff differences in terms of strategies underlying responses classified as 'Good Responses'
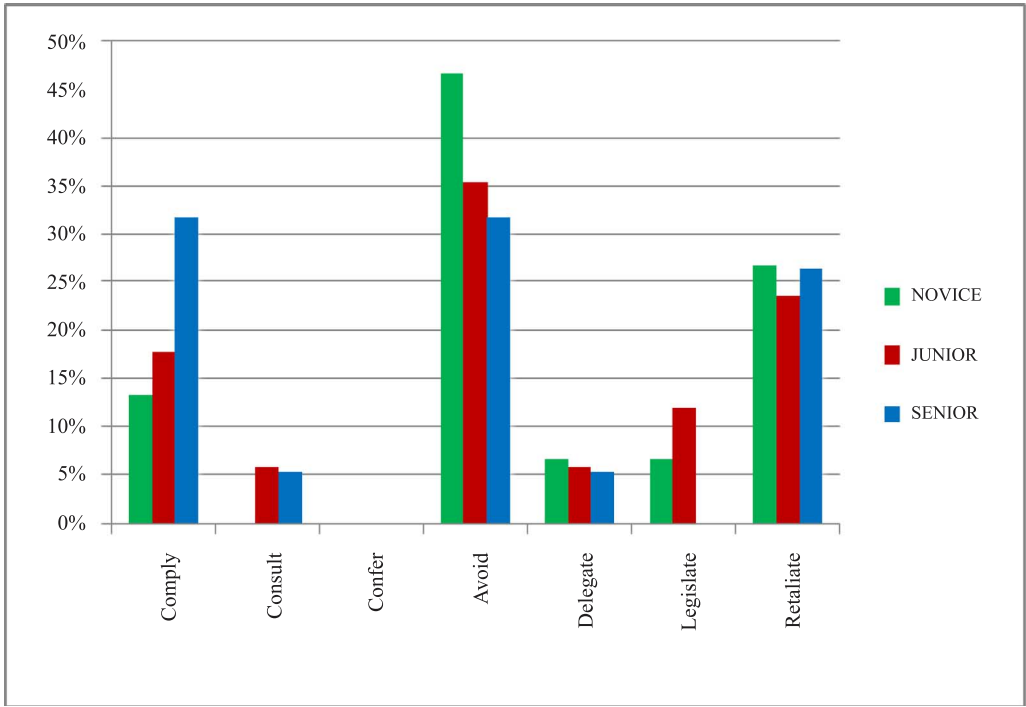
Figure 5.   Novice/junior staff/senior staff differences in terms of strategies underlying responses
classified as 'Bad Responses'

Senior teachers were more than twice as likely as their novice counterparts to iden-
tify 'comply' strategies as Bad Responses (32% vs. 13%). Conversely, novices tended
to identify 'avoid' strategies as Bad Responses (47%) more frequently than did senior
teachers (32%). Interestingly, here the responses of the junior teachers were closer to
those of the novices.

Despite the fact that junior staff often obtained scores between those of novices and
senior staff, suggesting a developmental trend, chi-square analyses subsequently indi-
cated that these differences were not statistically significant. Thus, no inferences can
be made from these data that meaningful differences exist.

Do novice teachers acquire tacit knowledge during their year of professional training?

In order to address our second research question about the extent to which tacit
knowledge changes over time, we first examined differences on the 'Bad Response'
and 'Good Response' subscales by demographic group and by sample.

(a) *Bad responses*. No statistically significant associations between scores on the
    'Bad Response' scale and background variables such as gender, age, or years of
    teaching experience were found for the full sample of experienced teachers.

Gender was also not significantly associated with scores on the 'Bad Response' scale within the novice sample; however, age was significantly associated with scores on the 'Bad Response' scale at Time 1 for novices (r = −.09, p < .05), but was not significant at Time 2. The direction of the finding aligned with the expectation that as age increases, scores on the 'Bad Response' scale go down, suggesting that older students are sometimes better able to identify bad responses.

(b) *Good responses*. On the 'Good Response' scale, there was a statistically significant gender difference observed in the novice sample (t = −2.2, p < .05), with females tending to outperform males on the 'Good Response' subscale. However, there was no significant difference on this scale based on age. No significant associations were observed between scores on the 'Good Response' subscale and background variables such as gender, age or years of teaching experience for the full sample of experienced teachers.

In proceeding forward, we conducted a MANCOVA comparing the novice teachers at Time 1 (n = 501) with the full sample of experienced teachers (i.e. all members of the teaching staff in the two schools who completed the survey; n = 163) on each of the two scales, using gender and age as covariates. The results showed that although the qualified teachers (M = 97.3, SD = 8.9) scored slightly higher than novice teachers (M = 96.4, SD = 8.1) on the 'Good Response' scale (i.e. capacity to detect a good response), the difference was not statistically significant (F = 0.74, p = .39). However, the differences on the 'Bad Response' (i.e. capacity to identify a bad response) subscale were statistically significant (F = 7.26, p < .01), with novice teachers scoring approximately half a standard deviation lower on this scale (Cohen's d = −0.42) than the experienced teachers, a moderately large effect size difference.

Next, the Pearson correlation coefficient between subscale scores for novices at Time 1 and Time 2 was computed. The correlation was r = .53, p < .01, for the 'Good Response' scale and r = .62, p < .01 for the 'Bad Response' scale, indicating the moderate stability of these constructs over time. This level of association reflected our expectation that professional experience in classrooms over the course of their training year would impact upon respondents' views as to appropriate responses. However, in order to address our second research question about the extent to which novice teachers became more like experienced teachers over time, a dependent means t-test was conducted to examine the overall change in Good Response and Bad Response subscale scores from Time 1 to Time 2. The results showed that, as a group, the scores of novices improved significantly over time (n = 254, t = 5.1, p < .01) with respect to their capacity to identify bad responses. Specifically, the scores on the 'Bad Response' subscale increased more than one-quarter of a standard deviation (Cohen's d = 0.28) from Time 1 (M = 44.8, SD = 9.6) to Time 2 (M = 41.9, SD = 10.8) on this scale. No significant changes on the 'Good Response' subscale were observed (n = 254, t = −.06, p = .95).

Discussion

The results of this study provide some insight into the nature and development of teachers' tacit knowledge. Perhaps most surprising is the finding that experienced teachers and novices do not differ significantly in terms of the capacity to identify good solutions to situational problems, but rather, they differ significantly in their skills at identifying poor solutions to these same problems. This finding suggests that tacit knowledge in this particular domain is not so much a matter of learning how best to approach a problem so much as it is about learning how to avoid making a really bad decision. One possible explanation is that there may be a variety of helpful solutions to interpersonal problems (at least those posed in the TKI-HS) whereas poor solutions to any given problem become clearer as one gains in tacit knowledge.

In addition, the data suggest that even one year of teacher training reduces many of the differences between the experts and the novices, at least with regard to identifying poor solutions. Overall, the pattern of results shows that the mean scores of novices become more like those of the experienced teachers in terms of their capacity to identify bad solutions over a one-year training period, but they did not show much change in their capacity to identify good solutions. The question remains as to whether even greater gains could be made if teacher training programmes were to focus explicitly on developing practical interpersonal skills in teachers (see also, Jennings & Greenberg, 2008). Future research looking at experimental interventions may be necessary to address this question adequately.

While not reaching statistical significance, the results of the descriptive analyses of strategies underlying the items selected as 'Good Responses' and 'Bad Responses' by novices, compared with experienced teachers, suggest some potentially valuable lines of enquiry. The results from the analysis of the experienced teachers' selections indicate that 'comply' and 'avoid' are identified as bad responses a similar proportion of times. The novices, however, saw 'avoid' as the more problematic. Perhaps this is because trainee teachers, anxious to establish and maintain their authority, may prefer to reframe a challenging situation as acceptable (by legitimising it, it no longer represents such a challenge) than appear to be avoiding the issue altogether. Given a choice of these options, experienced teachers appear more likely to consider that there are some circumstances where avoidance may be preferable to compliance, even though neither of these is widely adjudged to be a good strategy. Further analysis of this distinction, perhaps using detailed observational and interview techniques, may prove enlightening.

One of the difficulties with studies of tacit knowledge concerns who should serve as experts (Edwards & Schleicher, 2004). As Sternberg has repeatedly pointed out (Sternberg *et al.*, 2000; Sternberg & Hedlund, 2002), while related to experience, tacit knowledge is more dependent upon the capacity to learn from that experience. Thus, our experienced teacher group may not necessarily be expert practitioners. One way to circumvent this problem is to consider only those with greater seniority who, it may be assumed, have demonstrated their competence. Such a solution is advocated by Edwards and Schleicher (2004), who found that inter-rater reliability

was higher for tacit knowledge judgements made by senior, compared with junior, academics. However, other researchers have found that when scoring situational judgement tests, even a large enough group of novices tend to respond, on average, in a similar fashion to the average responses of experts (Legree *et al.*, 2004).

An alternative approach is to obtain external evaluations of teacher competence. While this is a procedure that we are currently employing in a large cross-cultural study, obtaining evaluations of teachers' performance is very difficult in England, given the heightened sensitivities that result from pervasive teacher and school inspection and evaluation mechanisms.

It is important to recognise that selection of an appropriate strategy in response to an identified problem is only one aspect of skilled interpersonal practice. Indeed, as Kounin (1970) has highlighted, in relation to classroom management, the skilled teacher can often prevent problems from occurring in the first place by the exercise of their professional skills. Skills such as 'withitness' (the ability to demonstrate awareness of events taking place in the immediate environment), overlapping (the capacity to manage multiple events concurrently), the skilful use and regulation of voice, the subtle deployment of non-verbal behaviour, sensitivity in the control of spoken communication patterns, are just some of the skills that teachers use to demonstrate expertise and authority in their dealings with students and with other adults (Elliott, 2009; Elliott & Stemler, 2008). Such skills tend to be more prevalent in experienced, rather than novice teachers (Van Tartwijk, 1993; Stough *et al.*, 1998). However, for practically all teachers, interpersonal challenges, whether with students, parents or colleagues, are an integral aspect of daily life and while the skilled teacher might respond to some of the situations outlined in our survey by noting that they would have hoped to have prevented them from developing to such a point, there will be times when they will find themselves facing such predicaments, either personally, or as advisors and mentors to other colleagues.

In considering responses to interpersonal problems, our study has examined strategic rather than dynamic aspects of action; yet skilled interpersonal performance requires not only the selection of an appropriate strategy but also, once determined, the capacity to carry this out effectively. Thus, two teachers may both decide to confront a student who is acting inappropriately in class, even to the extent of choosing to adopt exactly the same approach; yet one may be far more skilled in actually carrying out this set of behaviours (e.g. in the use of authoritative, non-inflammatory, non-verbal communication, the choice of words, and the tone in which the teacher expresses his or her perspective). In addition, the capacity constantly to evaluate how an ongoing interaction is proceeding and to recognise the need to change one's strategy and the tenor of one's communication are aspects that our measure cannot tap. Thus, it is conceivable that, in addition to selecting a good course of action and avoiding a crass strategy, what most characterises the expert teacher is the ability to undertake a selected course of action with a high level of interpersonal competence, and to adjust one's own behaviour in accordance with the unfolding nature of the situation.

Both strategy selection and its execution may be compounded by the presence of anxiety or stress. Thus, a further component of teacher expertise is likely to involve

the capacity for self-regulation, particularly with regard to strongly emotional issues (Jennings & Greenberg, 2008). Teachers comment that they often respond to school-based problems in ways which they consider to be inappropriate (e.g. shouting at students), usually because of frustration or other forms of heightened emotion. Thus, teachers may differentiate between sound/poor strategies yet not necessarily act in accordance with their judgements. This may explain why there is little evidence that responses to teacher questionnaires will predict the actual classroom behaviour of teachers (Berliner, 2005). Nevertheless, one would expect knowledge to precede action so that the assessment of tacit knowledge may be one important step toward understanding the components of skilled teaching. Indeed, we would argue that if one does not even know what the correct course of action to take should be, then one would have almost no chance of correctly executing such a course of action. In other words, we view tacit knowledge as a necessary, but not a sufficient, condition in the development of teacher expertise. It is one of many important components. In the end, it seems clear that future studies attempting to identify teachers with expert interpersonal skills should incorporate measures of tacit knowledge alongside measures of self-regulation.

As we note earlier, tacit knowledge is necessarily bound up with one's goals, beliefs and values, and differences between teachers on these dimensions will have an important bearing upon what is perceived to be appropriate. Differences will emerge about not only what actions will lead to a preferred outcome but also to disagreement about what outcome is most desirable. Aristotle (1999) contrasted *phronesis* with *craft knowledge*. While craft knowledge typically concerns how best to achieve effectively a desired outcome (e.g. how to maintain order in the classroom, raise reading test scores), phronesis involves reflection underpinned by moral purpose. Somewhat akin to Sternberg's notion of wisdom (Sternberg, 2001a, b), it involves a strong personal component that may sometimes (and may often, appropriately) result in the rejection of externally imposed practices or priorities (Birmingham, 2004). Our sample of experienced teachers will necessarily differ in many of these respects and it would be an error to suggest that by drawing upon a relatively large sample, a set of ideal responses would emerge. Rather, we seek to identify which courses of action are generally seen as sound or poor by a particular group of practitioners working in secondary schools in one region of England. Clearly, very different perspectives may emerge in other contexts and cultures.

The research reported here has relied upon a traditional survey approach, albeit with an innovative situational judgement component. However, there are obvious difficulties that result, not least in respect of the physical and psychological distance that is inherent in such measures and the somewhat decontextualised nature of the scenarios. We are, therefore, in sympathy with researchers such as Taub *et al.* (2001), who have called for novel approaches to measure tacit knowledge 'that are more sensitive to the context in which the behavior occurs, as compared to paper-and-pencil tests' (p. 941). One potential approach for teachers would involve conducting assessment while the respondent responds to an unfolding multimedia scenario. This approach would permit assessment not only of the respondent's preferred initial

strategy, but also gauge the extent to which sensitivity and flexibility are demonstrated in the light of events. Such a task offers many challenges but also much promise for those researchers and teacher trainers who continue to grapple with the task of findings ways to make tacit knowledge accessible to trainee teachers.

It is not surprising that teachers have long lamented the paucity and effectiveness of training for behaviour management (Jones, 2006). Articulating what it is that great teachers do in their everyday interactions to ensure sound relationships in school has long proven a difficult task for even the most skilled practitioners. However, surely such a task must be a core component of teacher education programmes. The present study describes one approach to accessing and examining the nature and development of teachers' tacit knowledge in this highly complex domain which, it is hoped, can provide meaningful insights for both research and professional practice.

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