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Synthesising affect and cognition in teaching and learning

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Abstract Teachers often approach teaching with an energy and enthusiasm to inspire their students with their skills and knowledge. However, when faced with students who are not fully engaged in their learning, teachers sometimes find it difficult and frustrating to communicate the subject knowledge. This paper looks at the importance of teachers reflecting regularly on their teaching with thoughts not just about the communication of subject knowledge, but combining this with the emotions and affective experiences of themselves and their students. We interviewed 11 new secondary science teachers about their first 3 years of teaching and in particular, questions were directed at their relationships in school, communication with students, the ideal lesson and reflection. Our findings revealed that teachers who were most successful when faced with adversities in the classroom, were those who appreciated that, as well as communicating subject knowledge, there is also a need for affective communication with the student. Many of the teachers we spoke to emphasised the importance of establishing a rapport with their students, and especially when they were disengaged and disinterested in learning. The data highlight the importance of conceptualising teaching and learning as encompassing both affect and cognition in order to have a balanced and healthy view of teaching, learning, the student and the school.

Keywords Affect · Cognition · Newly-qualified · Interview · Teaching

> There can be no knowledge without emotion. We may be aware of a truth, yet until we have felt its force, it is not ours. To the cognition of the brain must be added the experience of the soul. Arnold Bennett (1867–1931)

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1 Introduction

More often than not, teachers approach their first few months of teaching with gusto for the subject that inspired them to become teachers. This initial enthusiasm is also extended to the students who in turn they want to inspire. Somewhere along the line however, many teachers realise that, as well as sharing their knowledge, there is a need for affective communication with the student. This fine balance between the thinking and feeling sides of teaching is often transcended by the pressures and demands of teaching.

This paper looks at the importance of teachers reflecting regularly on their teaching with thoughts not just about the communication of subject knowledge, but combining this with the emotions and affective experiences of themselves and their students. We focus on the roles played by affect and cognition in the context of teaching and learning. Effective teaching and constructive learning are often regarded solely as cognitive processes, and with often little regard given to the feeling and emotional aspects of teaching and learning. Educationalists such as Dewey, have advocated the merits of being aware of and incorporating the emotional sides of teaching. We begin by looking at the roles played independently by affect and cognition within teaching and learning and also the ways in which they compound teaching and learning when they are brought together. We illustrate our thesis with data taken from interviews with teachers in their first years of teaching. In particular, these data emphasise the importance of conceptualising teaching and learning as encompassing both affect and cognition in order to have a balanced and healthy view of teaching, learning, the student and the school.

2 Affect in teaching and learning

Affect, like the adjective *affective*, refers to the experience of feeling or emotion. The term *affect* can be taken to indicate an instinctual reaction to stimulation occurring before the typical cognitive processes considered necessary for the formation of a more complex emotion. Dewey (1895, 1916) originally propounded the social conditions for learning, emphasising the importance of sharing in one another's activities and experiences because they have common ends and purposes. Others similarly have regarded affect as a crucial component for learning in the classroom. Rogers (1951) believed that personal growth is tied to the evident support of a caring person.

Chickering and Gamson's (1987) *Inventory of Effective Faculty Behaviours* lists the seven habits of highly effective faculty, tying effectiveness directly to the affective or interpersonal aspects of the teaching–learning relationship. Noddings (1992) has underlined the need for caring teachers; whilst Goleman (1996) considered students' EQs (emotional quotient) to be as important as their IQs and especially when confronted with breakdowns in classroom communication. Goleman (1996) also described various programs designed to teach students how to resolve conflict, deal with emotions, and argue effectively. Some have noted that, as teaching involves human interaction, it is paramount that it has an emotional dimension (e.g. Nias 1996). Through designing courses and assessing curricula, Diamond (1989) introduced the importance

of the affective component of classroom interactions. And others (e.g. McCombs and Whisler 1997) have linked student motivation directly to affect.

Some researchers have found discrepancies in the role of emotion within primary and secondary school teaching. For example, Hargreaves (2002) examined the emotional dynamics of teachers' relations with their colleagues through responses to interviews with 53 primary and secondary teachers in 15 schools that included teachers' descriptions about critical incidents of an emotionally positive and negative nature involving their colleagues. Whereas primary teaching was found to be characterised by physical and professional closeness, creating greater emotional intensity, secondary teaching involved greater professional and physical distance leading teachers to treat emotions as intrusions in the classroom.

A flurry of research in 2005 has highlighted the importance and relevance of the study of emotions in understanding teaching and teachers' professional lives. A mixed-methods research approach was adopted by Lasky (2005) in order to examine the influences of school reform on the identity of the secondary school teacher, and how this identity impacts on their feelings of vulnerability particularly in relation to their teaching. A case study by van Veen et al. (2005) examined the emotions of a secondary school teacher as he encountered school reforms that he disagreed with. Analysis of these emotions reveal the inevitable impact of the situation on his professional identity. Zembylas (2005) also presented a single case study of a teacher in which he explored the role of emotions in her teaching over a 3-year period and a further follow-up with the same teacher 4 years later. The study showed that a teacher plays a part in her own emotional control and that a teacher's identity is constituted in relation to the emotional rules in the context in which she/he teaches. A qualitative study by Schmidt and Datnow (2005) showed the range of emotions that arise when teachers are confronted with school reforms and how these impact on their teaching. In addition, Hargreaves (2005) examined primary and secondary school teachers' emotions in the context of school reform and found that age, career stage, generational identity and attachment determine how teachers respond to educational change.

3 Cognition in teaching and learning

Cognition can be defined as "the mental acquisition of knowledge through thought, experience, and the senses" (Oxford English Dictionary 2005). Theorists such as Piaget considered affect and intellect to be opposite sides of the same coin, and have sided principally with the cognitive component.

Reflection is a cognitive process that helps teachers to gain insight into the 'big picture' and rethink their practice, learn from their experiences and help them to cope with similar situations in the future. Fullan (1993, 1999) argued that it is only through reflection at the personal, group and organisational levels that teachers will begin to question their practice and think differently about teaching and learning. Such notions of reflection originated in the writings of John Dewey as a way of thinking about a problematic situation that needs to be resolved, as 'the function of reflective thought is, therefore, to transform a situation in which there is experienced obscurity,

doubt, conflict, disturbance of some sort, into a situation that is clear, coherent, settled, harmonious' (Dewey 1933, p. 195).

Reflection, as described by McIntyre (1993), is a primary means for teachers to sustain learning throughout their careers. Much of the practice of experienced teachers is automated or intuitive, shaped by understandings that are not usually articulated. Therefore, learning is dependent on bringing to consciousness and examining the assumptions and values behind their actions as teachers. So that arguably, without reflection, teachers cannot change their practice in a controlled or deliberate way. McIntyre (1993) also advocated the importance of reflection for the continued learning of experienced teachers so that they have extensive repertoires of past experiences on which to draw on in order to respond constructively to problems they face. Such teachers, he argued, tend to have a well-developed capacity for thinking creatively and modifying practice.

When new teachers find themselves in awkward and troubling situations, a source of help might be to understand the situation by 'stepping-away' from it and considering notions of becoming and being a teacher in terms of the process and the development of self. McLean (1999) asserted that the most powerful self-image for a new teacher is one that captures the self as the author of the teacher that he or she is becoming.

Becoming more self-aware involves developing a reflexive capacity, although conceptualising the self from a 'self-critical' position can lead to the new teacher internalising problems and leading to self-blame.

4 The synthesis of affect and cognition

As early as 1890, William James described the intimate connection between the emotional and cognitive, suggesting that they are inextricably related and perhaps never entirely separate, distinctive, nor pure. Emotion and cognition are understood by some researchers to be inextricably interconnected and inseparable (e.g. Frijda 2000; Nias 1996). The claim that is made by such researchers on teachers' emotions is that taking emotions into account will provide more complex understanding of teachers' learning and thinking.

From early on, our emotional development is inextricably intertwined with our acquisition of knowledge. Psychological research has revealed similarities between human cognitive and emotional processes. Such attempts to build bridges between the domains of social and cognitive development have resulted in a direct behavioural link between cognition and emotion in that our thoughts affect the way we feel about stimuli and vice versa. Whereas cognition *acts*, affect *energises*, so that the understanding of another's feelings for example may be motivated by our own affective responses to them. Bowlby's (1958) attachment theory and the wealth of research that it has inspired, develops the theme of a secure attachment relationship providing children with a sense of themselves as effective agents in their interactions with the world. Children's security of attachment in infancy and the resulting social and emotional skills have been linked to various aspects of their cognitive development over the preschool years (e.g. Cassidy 1999).

Still in the field of developmental psychology, Piaget (1981) used metaphor to encapsulate the interaction of affect and cognition: "affectivity would play the role of an energy source on which the functioning but not the structures of intelligence would depend. It would be the gasoline, which activates the motor of an automobile but does not modify its structure" (p. 5). Piaget (1981) thereby placed affect and cognition in separate but interacting categories in his genetic model of knowledge. "For a student to solve an algebra problem or a mathematician to discover a theorem, there must be intrinsic interest, extrinsic interest, or a need at the beginning. While working, states of pleasure, disappointment, eagerness, as well as feelings of fatigue, effort, boredom, etc., come into play. At the end of the work, feelings of success or failure may occur; and finally the student may experience aesthetic feelings stemming from the coherence of his solution . . . (p. 3).

Other researchers have attempted to synthesise affect and cognition. Among them, Hoffman (1975) in the field of empathy, who considered the empathic process to be predominantly affective in nature, introduced an integrative account of empathy in his theoretical model of empathy. This stressed the idea that the subjective experience of one's vicarious affective response to others is enhanced as one develops a cognitive sense of others and becomes capable of understanding the causes of the other's condition. In Hoffman's view, as a result of instinctive mechanisms, the ability to be aroused vicariously may not only precede the development of the cognitive sense of others, but may actually contribute to its development by alerting the child to others' affective arousal. Hoffman's (1982) developmental model of empathy therefore encompasses cognitive, affective, and motivational components. Within this approach, empathic behaviour is primarily affective but subsequently becomes transformed as the cognitive system develops. Still in the realm of empathy, Feshbach's (1978) amalgamation of the two components suggests that empathy is an emotional response that incorporates cognitive skills such as the ability to label another's emotional state. Feshbach promoted her argument for integration through her explanation: "when empathy is defined solely in cognitive terms, it appears to have little theoretical utility beyond that contributed by the cognitive functions themselves; that is, empathy becomes a concept without surplus meaning or special theoretical properties" (1978, p. 7).

In an attempt to describe the relationship between emotion and cognition, Zajonc (1980) suggested that affective reactions can occur without extensive perceptual and cognitive encoding, and can be made sooner and with greater confidence than cognitive judgments. Conversely, other theorists (e.g. Lazarus 1982) considered affect to be post-cognitive, so that affect is thought to be elicited only after a certain amount of cognitive processing of information has been accomplished. The 'thought of the heart' was coined by Hillman (1981), whose work explored the role of emotion in teaching and learning and in his exploration of how thinking and learning involves both mind and emotion. Bloom (1981) developed a taxonomy of the affective domain, which attempts to describe how individuals' affective reactions are the basis for cognitive shifts and notes also that cognition can trigger affective reactions. Nias (1996) notes that both cognition and emotion cannot be separated from the social and cultural forces which help to form them and which are in turn shaped by them. The Conceptual Change Model as propounded by Stepans (1996) places students in an

environment that encourages them to confront their own preconceptions and those of their classmates, then work towards resolution and conceptual change.

Such theories have sparked much debate in the realm of teaching about the roles of affect and cognition and the relationship between the two. Zembylas (2002) showed that the emotions of science teachers influenced how they organised their curriculum and teaching. He claimed that teachers' emotional experiences and their reflection about their emotions are inextricably linked to their pedagogy.

A study by Gulnar (2003) examined the degree to which science teachers' affect and cognition influence their practice. The study observed and interviewed a physics and a chemistry teacher and audiotaped their classes. In order to understand their intimate feelings and thoughts, the teachers were shadowed. Such a design enabled the teachers to express their feelings and thoughts about the events and their personal lives. Of the two teachers, the physics teacher used significantly more instructional strategies, varied his strategies and was more metacognitive about his instruction than the chemistry teacher. The teachers treated the mismatch between their expectations and their observations differently. Realising that his students were below his expectations, the physics teacher lowered his expectations, slowed down his instruction and used more repetition. This teacher strongly believed in building healthy relationships with his students and he constructed his practice accordingly, making jokes, using humour and tolerating misbehaviours. Conversely, the chemistry teacher became upset, angry, frustrated and discouraged, making little progress with the students.

An investigation was conducted into the balance between affect and cognition in teaching by Baird et al. (2007). They involved 33 teachers and more than 2,000 students from six schools and examined the impact of various features in the classroom context on teaching and learning. Their findings revealed the importance of a balance between affect and cognition for effective teaching and learning. Rather than purely trying to communicate the facts in a rote fashion, teachers who incorporated more emotion and expression in their teaching, thereby making it more interesting and enticing, were more successful in communicating the subject matter and keeping students engaged. Moreover, the affective means by which teachers communicated their subject resulted in students becoming more interested in the subject and consequently being more successful at it.

In contrast to the aforementioned quantitative study, a longitudinal qualitative approach was taken by Logan and Skamp (2007) who investigated the reasons why children's interest in science declines with age. The study traced 20 students over the course of 2 years and revealed the importance of the teacher's pedagogical approach and classroom environment in determining the extent to which students were in engaged in the subject. Moreover, and not unrelated to this finding, the importance of listening to and heeding the student's voice, emerged as a crucial factor in addressing the decline in students' attitudes and interest in science.

The aforementioned studies emphasise the importance of incorporating both affect and cognition when considering aspects of teaching and learning. However, despite a wealth of discussion and emphasis on the importance of combining thought with emotion, there is a paucity of research in the area. Emotion in particular is the least investigated aspect of research on teaching, although it is probably the aspect most often mentioned as being important and deserving more attention. The literature on

teaching often emphasises the importance of teachers' feelings and their impact on teaching and learning (e.g. Hargreaves 2000; Nias 1996). Despite this, little has been done to incorporate the affective component in research on teaching and learning.

The research that has been conducted suggests that cognitive scaffolding of concepts and teaching strategies are held together by emotionality (Hargreaves 1998), and that the brain does not separate emotions from cognition (Caine and Caine 2001). Palmer (1998) spoke about the separation of the head from the heart as contributing to an educational system filled with broken paradoxes that result in "minds that do not know how to feel and hearts that do not know how to think". The paucity of research in this area and the increasing importance and relevance of this to teaching prompted us to investigate the subject further.

5 The present study

The original study from which the data are taken concerned the retention of newly qualified secondary school science teachers. Science teachers who had obtained their PGCEs from 1997 to 2003 from The Faculty of Education at the University of Cambridge participated in the study. These 305 teachers who ranged from relatively newly qualified to being in the profession for 8 years, completed a questionnaire about aspects of teaching (see Appendix 1). Reading through the questionnaires revealed some poignant accounts by new teachers, some of whom had found their early experiences of teaching to be difficult and challenging, to the point that some had decided to leave the career completely. These findings prompted us to select a small sample of teachers to interview. The 11 teachers that were chosen were affiliated to the Gatsby-funded project and had maintained close ties with the Faculty of Education. Some of the teachers were Newly Qualified Teachers (NQTs) and some were Recently Qualified Teachers (RQTs). Whilst some of these teachers took up posts in Cambridge and Cambridgeshire, others had started their teaching careers in London and the surrounding counties. We now focus on the views of 11 new secondary science teachers who were interviewed about their first 3 years of teaching. Many of the questions were directed at their relationships in school, communication with students, the ideal lesson and reflection (see Appendix 2).

Relationships with colleagues and students

Arguably, one of the most important factors that enables a new teacher to progress well in any school is the need to establish good relationships with both colleagues and students. Many of the teachers in our study emphasised the importance of establishing and maintaining a good rapport within a school and especially in the first year. In particular, they mentioned the significance of feeling akin to other teachers and forming an empathy with students.

> Relationships are very important. Without supportive colleagues and interesting and interested students, my first year would have been much harder. (female)

> Colleague relationships were essential. The more effort you put in the more help and support you receive. (male)

> It is important to be more social with the staff—this helped greatly later when dealing with difficult classes/pupils, or simply for moral support. (female)

> Relationships are very important. For self-confidence, one needs positive feedback from pupils (even unspoken) and, to avoid having to reinvent the wheel, one needs ideas and materials from colleagues. (male)

> Relationships are very important, without the support of the department, I may have questioned my choice of profession. (female)

For some teachers, investing time in extra-curricular school life resulted in the formation of solid relationships between staff and students alike:

> I chose a school with a strong extra-curricular life and I have never looked back. My involvement in activities outside of the classroom enabled me to get to know pupils and staff quickly. (female)

The consequences of encouraging students through affirming what they do well was thought to be important:

> Good relations with the students are crucial. If they don't think you like/believe in them, they won't bother. (female)

> It's important to be positive with your pupils—praising them encourages them to perform to their best ability for you. (female)

Although, some teachers appreciated that there was a fine balance between befriending students and discipline:

> Getting to know the students generally helps with motivation, but can make discipline harder. (male)

For some teachers, patience proved to be a virtue as relationships often took time to develop:

> A good relationship with the students took time to develop. It took me a while to find my way with them and to be happy with my own role. Equally with colleagues, it takes time to build meaningful and good working relationships. (female)

Some negative feedback was relayed by teachers whose relationships with others broke down, either through assertive and uncooperative superiors or through feeling that they were not in control of their emotions:

> I left Cambridge full of enthusiasm and ideas that a fantastic PGCE had given me. In my NQT year that was knocked out of me by a bullying head of lower school science. (male)

I show my emotions too much. I am sensitive to how students and staff perceive me and this affects my relationships with them. (male)

Communication with students

Communicating effectively with students featured prominently in teachers' thoughts about aspects of their teaching. Teachers commented on the importance of acknowledging that it is not always possible to get through to all students with the subject knowledge, but that other aspects of learning, such as developing confidence and social skills were equally important and should be taught as a package.

For me the teaching is all about the children and developing their skills and personalities. (male)

I love my subject (biology), and want to share my passion … I've got a responsibility for that. As an experienced adult I do not underestimate my role as pastoral tutor though. (male)

Importantly, teachers who were progressing well appreciated that it was not always possible to communicate all information to all of their students and that they should not necessarily blame themselves for such failures. Moreover, confident teachers acknowledged that sometimes, it was necessary to transfer 'blame' to the students if some lessons didn't go as planned. This is not to say that teachers are infallible, but that they should realise their limitations and not take things to heart when plans go by the wayside. The ramifications for teachers who do take on such responsibilities is that the burden is overwhelming and may lead to developing a low self-esteem and self-concept.

A bad lesson doesn't mean that you are a bad teacher. (female)

I'm usually quite self-critical. Sometimes I'm quite happy to blame it on the students, and I think that sometimes people shy away from doing so. Sometimes the students turn up and it doesn't work … and it's not necessarily that the lesson was bad or not pitched in the right place. So I think I can be quite self-critical but I'm also willing to blame the students if I think it is their fault. (male)

Many teachers begin their careers striving for perfection. But how realistic is this? It seems that admitting to oneself that one is fallible and realising it is essential:

I realise I can't be perfect, but I can set myself boundaries and try my hardest. (female)

If I could start my NQT year all over again, I would not care so much if every lesson wasn't perfect and didn't go exactly to plan. You develop a very 'thick skin'! (female)

You should never be afraid to get something wrong. (male)

I think it is important to laugh at your mistakes. (female)

> Perfection is not always possible. (female)

Setting the scene for a good lesson was also thought to be important:

> Shouting at pupils is not effective. It is much more effective to remain calm and quietly WAIT for students to settle down. (female)

> Enthusiasm for the subject is vital to being inspirational. (female)

> The classroom environment is set by the teacher, but it takes skill and hard work to get it how you actually want it to be! (male)

> You really do control the good and bad behaviour of students by good and bad practice. (female)

> It's important to be able to think on your feet, be adaptable and patient. (male)

> Ultimately you need to be left on your own and find your own method. Every class is different and you need to be able to change your approach slightly. (male)

Teachers appreciated the importance of communicating a vibrant and energetic lesson, and above all, maintaining a sense of humour:

> Personality is very important—being lively, enthusiastic and energetic inspires pupils so that you can do almost anything irrespective of knowledge/planning. (female)

> You have to be organised, resilient and capable of dealing with many stressful situations and retain a sense of balance and good humour in the face of adversity. (male)

And adhering to their own styles of teaching was viewed as crucial, in order to communicate a genuine self that can be appreciated by the students:

> During teacher training you see so many teachers and their styles, but during the first few weeks you try to work to your own style, which isn't the same as anybody else's. Mine is quite relaxed with most of the classes. (male)

> My teaching style comes naturally. I didn't set out and say 'I'm going to be the nice teacher'—it just happened. I stand at the door and get to know them all. And cos I'm walking round I do listen in on their conversations and join in for 5 minutes, rather than say 'shut up and get on with your work'. I join in, get to know them and ask them about themselves. (male)

> I think I've stuck to a tried and tested method of teaching and not really veered off the beaten track. But that's not something that I would want to change. I needed to keep that—to have tried all the whiz-bang techniques would have put too much pressure on me (male).

> Just to be yourself. Use others' styles of teaching but don't try to force to be them because you will find yourself working to be them rather than be yourself. Just do whatever comes naturally. (male)

Realising that some students are unpredictable and sometimes unmotivated is also important when reflecting on the dynamics of a lesson.

> I was surprised by how different students can be from lesson to lesson and 1 week to the next. (female)
>
> Never underestimate the power of children. Children can be different from day to day. (female)
>
> It is important to find a common denominator on which to establish communication and relationships with difficult or unmotivated students. (male)

The ideal lesson

For many of the teachers who responded to our questions, an ideal lesson was one in which they were able to be themselves with a teaching style that came naturally, even if this style was very different from the styles of other teachers in the same school. These teachers felt that, conforming to others' practices and styles would feel unnatural and consequently come across as awkward and ineffective. Teachers also related that their more successful lessons were those that were more creative and spontaneous. Such lessons proved to be more enjoyable and yield greater results, both in terms of the learning achieved and the rapport between the teacher and students.

> I think the lessons that I've come from feeling that they have gone really well have been the more creative lessons. Occasionally practical lessons have been good and improved with time—early on they were a bit slap dash. (male)
>
> An ideal lesson was one where we had fun, but didn't blow up the lab … ! (female)
>
> One that the students and I enjoyed—even if it didn't go to plan! (female)
>
> Where the learners met their learning outcomes whilst enjoying themselves. (female)
>
> Best lesson was teaching GCSE electricity to a top set—lots of role play and discussion—no writing all lesson! (male)
>
> One which had a balance of different activities, which kept the students interested, whilst getting over a complex idea. (male)
>
> One that passed without behaviour incidences, when the timing was perfect and the students learned and had fun. (female)

Sometimes a refreshing change to the normal course of a lesson provides inspiration to both teacher and students:

> A couple of times if a kid asks me a question and other kids have picked up that a question has been asked and asked other questions, and I just stop the lesson

> and say 'well shall we do a lesson on this instead of what we are going to do?' … you can't do this sort of thing all the time or you won't teach the things you're meant to, but once in a while it is quite nice. (male)

Reflection

Our teachers discovered that making time to relax and reflect enabled them to collect their thoughts about their approach to teaching, their relationships with others, and importantly, how they themselves fitted into the whole scheme of school. As a direct consequence of reflection about different aspects of school life, teachers who considered reflection to be important were those who were able to cope with the obstacles they encountered and as a result remained in teaching.

> I am more self-confident as a person. I have learnt to manage myself and my time and really relax when I get the chance. (female)

> When things didn't go as well, I tried to be reflective and evaluative without dwelling too much on the bad aspects and tried to learn from mistakes. (female)

> I made time for myself and often talked with other NQTs. Reflection really helps and so does talking about your experiences. (female)

> We all need to share and reflect on good practice and good lessons—time should be made for this. (female)

> I don't reflect as much as I used to … reflection is the source of evaluation and improvement. (female)

> I have done lots of self-evaluation with colleagues and friends. I feel like I am still learning all the time. (male)

> I have become much more patient and reflective. I can reach even the most challenging student if I persevere. (male)

When teachers did not make time to reflect and think about their own needs and state of mind, often the consequences would be debilitating and, in some instances, irreversible:

> I have very high personal expectations, which unfortunately cannot always be met. You have to separate your professional role and give yourself time limits. (female)

> I didn't spend enough time looking after myself, so I got depressed. (male)

Putting teaching into perspective was also considered to be important, and to realise that, as well as being a devoted teacher, it is crucial to balance social and family life with that inside school:

> It's important to stay in contact with your friends, or else you get lost in teaching. (female)

> I would not let teaching take over my life and spend more time with family. (male)
>
> I suppose I expected the kids to be grateful, but really teaching is self-sacrifice so balancing this with having a life outside teaching is essential. We can't all be saints. (female)
>
> It is very important to maintain a good work/life balance—it makes you a better teacher. (female)
>
> Teaching is a tougher job than I had imagined but rewards can outweigh the problems. The trick is to keep on top of it all during the day and forget it once you are at home. (male)

Such comments highlight the importance of setting time aside to think about the school day; although equally important is the need to attribute quality time to concentrate on things other than teaching. Many of our teachers were able to reflect on such issues and appreciated the importance of constantly revisiting them in order to improve the quality of their life both at school and at home.

6 Conclusion

All too often, teachers ignore or underestimate the emotional component of teaching. This is especially the case when unrealistic expectations can potentially create disappointment and teachers fail to resort to tapping into and communicating with emotion. It seems that the affective responses of teachers can influence their decisions regarding classroom approaches and strategies. Our own research further corroborates the thesis of this paper. The data taken from interviews with secondary school science teachers in their first years of teaching, emphasise the importance of conceptualising teaching and learning as encompassing both affect and cognition in order to have a balanced and healthy view of teaching, learning, the student and the school. Many of the teachers we spoke to emphasised the importance of establishing a rapport with their students, and especially when they were disengaged and disinterested in learning. The teachers who talked to us about their early years of teaching encountered a range of relationships—some more supportive than others; communicated to different degrees with their students; some felt they had achieved the 'ideal lesson', whilst others felt they still had a long way to go; and engaged in reflection in different ways. Teachers who were successful in their relationships, communicating and achieving their ideal lesson, were those who took time to reflect on all these aspects of their teaching. This process of reflection came naturally and was seen as a necessary and integral part of school life. Furthermore, these teachers incorporated both affect and cognition, both verbally and actively, in their daily routine.

Despite being equipped with high expectations for the success of their students, some teachers soon realised that some students were not always engaged and motivated to learn their subject. Whereas some teachers became disheartened seeing this as a failure on their part and without thinking through the reasons why these students were disengaged, other teachers reflected, communicated with colleagues and

attempted to empathise with and engage their students using alternative strategies. Such methods synchronised both the affective and cognitive components of communication and teaching. Moreover, it was found that using emotion in teaching was a source of communication that helped to captivate the student's interest and activate their learning.

Such instances highlight the power of emotions in the conceptual framework of teaching. Taking a step back from teaching and giving the students space to express themselves proved necessary and invaluable, thereby emphasising the importance of incorporating the emotions of teachers into the conception of teaching. By helping and encouraging teachers to think reflectively about their own and their students' emotions, it is possible to restrict negative emotions from obscuring teachers' rational thinking and then to apply models such as the Conceptual Change Model to the pedagogical conceptions of teachers. In order to become more effective in nurturing conceptual change, teachers should seek to understand students' naïve conceptions so they can be addressed directly by instruction. Niaz et al. (2002) concluded that if students are given the opportunity to argue and discuss their ideas, their "understanding can go beyond the simple regurgitation of experimental detail" (p. 523). Such suggestions imply that teacher preparation courses and professional development opportunities for experienced teachers should include attention to both the theoretical background of conceptual change, as well as instructional methods that nurture conceptual change. While theorists continue to debate the process of conceptual change, teachers can nurture conceptual change by creating the conditions that promote it.

Our data have shown that teachers feel and experience a range of emotions. Such emotions include joy, despair, delight, frustration and hope. Encouraging newly qualified teachers to acknowledge that it is healthy and necessary to experience such emotions, and to continue to be reflective about their experiences and emotions requires time, support and a focus and can be enhanced through learning conversations; peer observations and classroom focused developmental work. Both affect and cognition are essential components of teaching and occur automatically within its context. Perhaps less commonly experienced and observed is the interaction between these two concepts in the everyday lives of teachers.

Increasingly and in many spheres of life, emotions play a crucial role. Moreover, the interplay of emotion with cognition is regarded as an important and vital balance. Not least, the field of education has begun to acknowledge the importance of emotional intelligence and encourage a focus beyond that of the acquisition of content knowledge. Teachers' work includes dealing with students' affective, as well as cognitive, response to the subject matter being taught as teachers frequently need to anticipate students' emotional responses to specific topics and tasks. Educational scholars from a wide variety of disciplines have affirmed that emotions have a prominent presence in the learning process. There seems to be agreement among researchers that affect is much more complex and difficult to describe than cognition (e.g. Boler 1999; Zembylas 2002).

Most educational theorists and researchers tend to ignore or underestimate the emotional components of teaching and concentrate instead on developing information-processing models of cognitive systems. As we have seen, such oversights can be detrimental to both teaching and learning. Following on from Dewey's belief that successful teaching and learning is the result of an integration of emotion and

cognition, it is increasingly evident that we need to focus on both of these factors in order to sustain healthy and progressive teaching environments and to ensure that the years of training undergone by teachers are put to good use, so that there is a balanced and healthy view of teaching, learning, the student and the school.

Research in fields as diverse as cognitive psychology (Bandura 1997; Vygotsky 1997), neuropsychology (Damasio 1994; LeDoux 1989), critical theory (Giroux 1997), feminist studies (Boler 1999), and educational philosophy (Noddings 1992) suggests that cognition and emotion cannot be adequately understood as separate phenomena. To Dewey again, who was already advocating the merits in 1933:

> When the teacher fixes his attention exclusively on such matters as these [the acquisition of skills and knowledge], the process of forming underlying and permanent habits, attitudes and interests are overlooked. Yet the formation of the latter is more important for the future (p. 58).

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Appendices

Appendix 1: The questionnaire

Your Early Career Years

1. Why did you choose teaching as a profession?

Adjusting To School Life

2. Did you find it easy to fit in to school life?
3. How much in control did you feel?
4. What was out of your control?
5. How important would you say are relationships with students and colleagues in the first year of teaching?
6. If you experienced difficulties, whom did you seek help/advice from?
7. What support did you receive? Was it too much/too little/inappropriate?
8. What changes could be made in schools that might make new teachers lives easier?

Your Teaching

9. What was for you an ideal lesson?
10. Do you think that you communicated well with your students?
11. What did you do when things didn't go as well as you had planned?
12. How well prepared did you feel when you started working as a teacher?
13. What surprises did you encounter?
14. Is there anything that would have been helpful to know in advance?
15. Did you have concerns about the following? [please tick as appropriate]

Maintaining discipline in the classroom
Time/workload
Parents
Self-confidence
Classroom management
Attainment
Marking
Subject knowledge
Assessment
Discipline
OFSTED
Staff relationships
Student relationships
Meeting demands of job
Mentor

Please expand on any of these points if you can.

16. Do you agree or disagree with the following statements and please explain your reasons.

A teacher really can't do much because most of the students' motivation and performance depends on external factors.

.....
.....
.....

If I tried really hard I could get through to even the most difficult or unmotivated students.

.....
.....
.....

17. What have you learnt about yourself/about teaching?
18. Did you find time for reflection (i.e. examining your beliefs, rethinking your practice and learning from experience as to the best ways of coping in the future)?
19. If you could start your NQT year all over again, what would you do differently?
20. What is the most important thing you learnt during your first year of teaching?
21. Do you agree or disagree with the following statements and please explain your reasons.

I was first and foremost a teacher of ..... (subject).

I was first and foremost a teacher of children who happened to teach ..... (subject).

Have You Changed Career Again?

22. What are the main reasons do you think that led you to stop teaching?
23. Did you foresee any of the problems that you encountered with teaching?
24. What are you doing now? Is it in any way teacher-related?
25. Do you think that you would ever reconsider a career in teaching?
26. What would you like to be doing in 3 and 10 years time?

Please feel free to expand on any of these questions or to add any other comments and thank you very much for taking the time to complete this questionnaire.

Appendix 2: The interview

Why did you go into teaching in the first place?
Have you found it easy to fit in?
How prepared did you feel when starting work as a teacher?
Do you think that you cope well?
How much in control do you feel?
How much is out of your control?
If there is a problem, whom do you seek help/advice from?
What support do you receive? Is it too much/too little/inappropriate?
How important would you say are relationships with students and colleagues in the first year of teaching?
What for you is an ideal lesson?
Do you think that you communicate well with your students?
Do you have concerns about?

- Maintaining discipline in the classroom
- Time/workload
- Parents
- Self-confidence
- Classroom management
- Attainment
- Marking
- Subject knowledge
- Assessment
- Discipline
- OFSTED
- Staff relationships
- Student relationships
- Meeting demands of job
- Mentor

Do you agree or disagree with the following statements and explain your reasons?

- A teacher really can't do much because most of the students' motivation and performance depends on external factors.

- If I try really hard I can get through to even the most difficult or unmotivated students.

What surprises have you encountered?

What do you do when things don't go as well as you had planned?

Is there anything that would have been helpful to know in advance?

What have you learnt about yourself/about teaching?

Do you find time for reflection (i.e. examining your beliefs, rethinking your practice and learning from experience as to the best ways of coping in the future)?

Do you wish you had more time for reflection?

If you could start your NQT year all over again, what would you do differently?

What is the most important thing you have learnt during this year?

Which of the following statements do you agree with and why?

- I am first and foremost a teacher of xxxxxx (subject).
- I am first and foremost a teacher of children who happens to teach xxxxxx.

What changes would you make for teachers going into teaching for the first time?

Have you felt welcomed by colleagues in your department and the school as a whole?

Could the structure and nature of the department have been improved to make you feel more welcomed?

Do you feel a part of the school and fully involved/integrated?

Is there anything that could be done/said to make you feel more 'at home'?

Have there been times when you have felt the need to manufacture or suppress emotions when circumstances seemed to demand it?

Can you recall in detail vivid moments and experiences of positive and negative emotions in relation to interactions with colleagues, students, parents and administrators?

Have certain aspects of identity (e.g. gender, age etc.) affected your own experiences and expressions of emotion; and have these emotional phenomena manifested themselves among people with whom you have interacted from different age-groups, cultures or genders?

What would you like to be doing in 3 and 10 years time?

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