Emotions Matter in Learning: The Development of a Training Package for Teachers in Higher Education

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Abstract

Emotions and the intellect interact and affect the quality of learning significantly, for better or for worse. This is often ignored or seen as irrelevant for teaching practices. A training package for teachers of older students was constructed to support kinds of practice which took emotions into account in planning and the classroom. In the spirit of design research intended to solve a practical problem, the package went through several iterations, each being informed by user evaluations of the preceding iteration. The outcome was a tool to support professional development. Notably and as useful, the process provided insights about diverse students' and teachers' attributes, variation in contexts, package adaptation to accommodate these, and areas of further research.

Keywords: Professional development; Enhancing learning; Teacher/ Lecturer training.

Introduction

We deceive ourselves if we think our actions are governed entirely by the intellect: emotions play a big role in how we think and what we do. Often emotions are seen as impediments to good thinking, and something to be suppressed or ignored in classrooms (e.g., Cong-Lem, 2023). But, as Mordka (2016) has put it, 'We learn mainly under the supervision of emotions'. While it is true that there are times when emotions can obstruct purposeful thought (Newton & Newton, 2018), they can motivate and support particular kinds of thinking (Newton, 2016). As teachers, regardless of the phase of education or the discipline, we can put emotions to good use.

The consensus is that emotions evolved as an *automatic*, self-preservation system which rapidly appraises situations and prepares us to respond to them. The appraisal assigns *valence* (positive to negative) and *intensity* (strong to weak) to situations, while experience 'names' the emotions as, for example, interest, boredom, or awe[1] (e.g., Mordka, 2016). Some emotions may be strong but short-lived, perhaps lasting minutes, like elation, or perhaps a few hours, like disappointment. Others, commonly called moods, may not be intense but may last for days, like feeling sad. Moods and emotions are commonly described as feelings because they can produce physiological changes which we notice. Anger, for instance, is likely to increase the heart rate and we feel it, while fear may take blood away from the stomach and produce the sensation 'sick with fear'. That is to say that emotions and feelings are not quite synonymous terms. While the emotional system probably evolved on the African savannah and was tuned to its events, it often functions today in very different contexts, one of which is the classroom (Newton, 2016).

Education and emotions

The role of moods and emotions in learning is a specific area of study with labels like academic, achievement, motivation, or performance emotions. These areas focus on the generated emotions of students and their teachers in the classroom. Students, however, do not arrive devoid of

[1] There are other conceptualisations of emotions, usually shaped to fit particular interests (see, e.g., Cong-Lem, 2023; Parkinson and Manstead, 2015; Scheer, 2009).

emotions, just as they do not arrive with heads empty of the products of cognition. They have lives outside schools and classrooms and these produce moods and emotions which are transferred to the classroom and impact learning dynamics. Some examples will illustrate the effects of this mix of emotions.

Strong moods and emotions

In daily practice a view of emotions as impediments to good thought is often justified when students arrive with anger, elation, depression, or grief, whatever the cause. Intense emotions may leave little mental room for deliberate thought or make it difficult because the mind keeps turning to the cause of these emotions. Too much anxiety, like other strong emotions, is generally debilitating. High stakes tests, for instance, can have this effect, as can teachers and parents who forever remind students that the rest of their lives depends on the test (Pekrun, 2006). Common classroom events can also precipitate a threat to self and public esteem, as when a mind-numbing embarrassment is generated by public performance. In language learning, for instance, students are often called upon to respond in that language. Fear of it and experience of the embarrassment can induce students to abandon the subject as soon as they can. In other subjects, such as mathematics, some students are affected by the freezing effect of anxiety (Horwitz, 2010)).

But not all strong emotions impact thought adversely. For instance, we often remember emotional events better than others because they make more mental connections (Tyng et al., 2017). An unconscious appraisal of an activity may suggest it has the potential for some reward or goal satisfaction, leading to interest, curiosity, and motivation to engage with it. The reward may be to satisfy a need for, for instance, novelty, competence, achievement, understanding, or affiliation, or to further progress to a career goal. Teachers, particularly those of older students, may neglect this valuable 'What's in it for you?' aspect of an activity.

Moods and moderate emotions

While too much anxiety often impedes learning in varying degrees if it is not very strong, a little humour can reduce it (Meany, 2007). But a touch of anxiety may make some students perform better when it prompts them to give attention and time to the task. When the promise of reward is fulfilled, a common emotion is enjoyment or even elation. Enjoyment is associated with higher academic performance while boredom tends to lower performance (Camacho-Morles et al., 2021).

There are, however, more subtle interactions. Much of the purposeful thought we want students to exercise falls into two groups (Newton & Newton, 2018). The groups are:

(i) Analytical, deductive, focused, step-by-step, logical, evaluative thought, and
(ii) Synthetic, constructive, creative thought and problem-solving.

This is not to say that any task we set students is ever purely one or the other, but a distinction between these kinds of thought is useful for considering interactions with emotions (Newton, 2015).

Feeling a little sad, gloomy, downhearted, or even just calm is known to favour analytical, careful, and cautious kinds of thought because it makes the student inclined to be watchful, careful, and give attention to detail. Some have used a forest as an analogy - in such a mood, people see the trees. While we may not feel it is appropriate to put students in negative moods, we could use emotional contagion to foster a useful calmness by our example. When using an impression with little conscious thought to judge the veracity of fake and real news, people are more inclined to accept fake news (Martel, et al., 2020). This kind of activity could benefit from a mood which favoured careful, analytical thought.

In contrast, feeling a little happy, cheerful, or pleased tends to favour flexible, synthetic kinds of thought because it helps students feel free to make connections, try ideas, be adventurous in thought, even make mistakes and try again. In terms of the analogy, people in such moods tend to see the forest, the whole, the bigger picture, rather than the fine detail. Sometimes, teachers' actions can be counterproductive. For instance, a group of new students may be given a task needing creative thought

in the belief that it will 'break the ice'. This would benefit from positive moods, but such students, not knowing each other, are likely to be in cautious moods which reduces the chance of success. A seemingly good strategy then fails.

Pekrun et al. (2023) have constructed a useful taxonomy of 'achievement emotions' generated before, during, and after an activity. For instance, there can be hope before, enjoyment during, and pride after the event, all of which are activating and encourage engagement. On the other hand, there may be hopelessness before, boredom during, and disappointment after, all tending to deactivate and discourage engagement. There are also several theoretical studies that highlight the role that emotions play specifically within adult learning, and in particular, transformative perspectives of adult learning. The work of theorists such as Dirkx (2012) and Lawrence (2022) emphasise the importance of affective ways of knowing as being central to learning, whilst brain-based theories of learning also look at the important role emotions play in memory (e.g., Feller et al., 2004) and in shaping behaviours (e.g., Wolf & Stern, 2013).

This serves to illustrate the relevance of emotions for teachers' work. Teachers at all levels need to:

(i) be *aware* of that relevance,
(ii) they should come to *know* what emotions can do for and to learning,
(iii) they should be able to *take moods and emotions into account* in their planning and teaching, and,
(iv) they should *see evidence* of useful changes in their students' engagement[2].

Accordingly, a project was designed aimed to construct a training package for teachers of mature learners that provides guidelines on the nature of emotion-cognition dynamics with the objective of enhancing their students' learning. Of course, teachers are also subject to emotions, but this study focused on the learning needs of their students. Readers will be aware that students are very diverse and while training may focus on what is broadly appropriate, some students may have emotional and cognitive conditions which it will not address and for which other approaches may be needed. For example, further work would be needed to ensure that it training accommodates neurodiverse needs, such as those that might appear in learners on the autistic spectrum. Equally, cultural differences in responses may be evident, as in the use of humour to modify a mood (e.g., Zhou et al., 2015).

Method

At the outset of developing this training package, it was noted that there was likely to be significant variability and complexity when focusing on the nature of the emotion-cognition relationship in learning and teaching. Universities are generally diverse institutions with variation in their student populations, their teachers, resources, and the governance that facilitates or constrains actions. Even within one university, teachers differ in experience, skills, knowledge and understanding, and in their notions of disciplinary norms and practices. This variability needs to be recognised at the outset and there must be a recognition of what Bassey (2001) has called *relatability*. In practice, training packages are rarely used on a one-size fits-all assumption and without some adaptation to suit specific contexts. No such package can be tested in all contexts. There were three stages in the development of this professional development package: (i) Eliciting prior notions of the interaction of emotions and thought, (ii) Constructing the package, (iii) Testing, evaluating and refining the package.

In the first stage, it is considered good practice to be aware of the conceptions and beliefs of the potential learners, that is, university teachers (e.g., Svensson, 1997). These notions were collected and sorted into groups using Marton's (1981) phenomenographic method. Briefly, this involved face-to-face, semi-structured interviews to collect responses to questions of the generic kind: 'Do students'

[2] Readers will note that this is a version of the four levels of 'Kirkpatrick's Hierarchy', often used to assess the effect of a training package (see Tamkin et al., 2002). It will be referred to again below.

moods and emotions affect their learning?' and 'If so, in what ways?' Responses were sorted and collated into coherent groups, and each group was given a descriptive title.

Newton (2014) has argued that all teachers should be educated and trained to support the emotion-cognition relationship in their practice. The problem is: how is this to be done? A training/development package is a possible solution. In the second stage, package construction was guided by Mezirow's well-known and robustly tested theory of adult learning (Mezirow, 1994; 2003). This points out that, 'much of what we know and believe, our values and our feelings, depends on the context – biographical, historical, cultural – in which they are embedded' (Mezirow et.al., 2000, p3). Mezirow recognises that adults have pre-existing assumptions and beliefs that shape their meaning-making and interpretation of their experiences. These assumptions and beliefs comprise, for example, values, attitudes, opinions, worldviews, ideologies, and paradigms. For example, transformative learning occurs when adults encounter a disorienting dilemma or a situation that challenges their existing meaning structures and creates a sense of imbalance or discomfort. Critical reflection is initiated through this, leading to a questioning of assumptions and beliefs. Conceptually, this learning theory highlights the importance within adult learning of not only developing new knowledge or skills but also of integrating these within an individual's worldview and leading to a transformation of identity and perspective. Mezirow (2003) suggests that effective adult learning is underpinned by *Instrumental learning* that constructs meaning through problem-solving and deductive reasoning, and *communicative learning* which engages social and emotional intelligence.

For the third stage, an Educational Design Research (EDR) approach was adopted. EDR is a family of related research approaches (McKenney & Reeves, 2018) intended to develop a solution to a complex problem in educational practice where no clear guidelines exist (Plomp, 2013; Van den Akker et. al., 2006). Its focus is rooted in the development of solutions for real-world contexts whilst simultaneously developing theory through practical application and offering an insight into the process of design itself. Here, this entailed iterative evaluations of the package and adjustment after each iteration. These evaluations included interviews with participants and other teachers of older students, and the application of Kirkpatrick's hierarchy (see above) to knowledge and, importantly, in its application.

Participants:

Different groups of participants were involved in different aspects, as summarised in Table 1.

Table 1: Participants in the data collection

Level of data	Initial data collection (Phenomenography)	Design evaluation data collection (Questionnaires)
Method	Face-to-face, semi-structured interviews (audio recorded and automatically transcribed).	Questionnaires (numerical and open-ended text-based questions).
Sample size	22	312
Sample population	HE lecturers working within an academic school within a post-1992 HEI in the North-East of England.	HE lecturers working across all academic schools within a post-1992 HEI in the North-East of England.
Analysis/ method	Phenomenography (analysis of nuance, rich description and variation).	Questionnaires focusing on: a) quantitative data analysis of numerical questions (descriptive statistics and data visualisation). b) qualitative analysis of open-ended questions (thematic analysis) considering identification of broader patterns across a wider sample population, identification of contradictions that may arise in relation to the primary data.
Design	Convergent parallel design, complementary data sets.	
Reporting	Primary data set reported, secondary data set reported and then compared and related to final integration of overall findings.	

Ethics

Research within UK universities is regulated by specific guidelines (BERA, 2018). These require that researchers have respect and regard for participants and conduct research without bias, discrimination and offense to participants' dignity and autonomy. Every attempt should be made to ensure the anonymity of participants. This project was approved by the relevant university Ethics Committee.

Results and discussion

Prior knowledge

The phenomenographic analysis produced five groups of teachers' notions of emotions in relation to thinking and learning. These were:

1. *Emotions as other than thinking*: In this category, emotions were seen as having no part in teaching and learning.
   e.g., 'Emotions don't enter into it. I'm there to do a job… there to deliver knowledge and explain it in a way that is understandable.'
2. *Emotions as limiting thinking*. Here, emotions were seen as being present in the classroom but they are impediments to thinking and learning.
   e.g., 'Sometimes I just wish students would be less obsessed with how they feel and just focus properly on their work.'
3. *Emotions as shaping thinking*. These notions accepted that emotions could augment or impede learning.
   e.g., 'I'm constantly aware of emotions in terms of how I respond, I pick up on [student] emotions… I'm constantly seeing what the reaction is seeing what works or what their body language looks like, how closely they're engaging, and I'll respond to that to make sure everyone is comfortable.'
4. *Emotions and thinking as integrated*. These notions go further than those of Category 3 in that there is a deeper interplay between emotions and thought which is wider ranging and more nuanced.
   e.g., '…emotion can be very helpful…it's very much an emotional response when you have a eureka moment - it's not quite happiness, but it's something like relief – a combination of different emotions. Happiness, relief, and satisfaction that you've achieved something.'
5. *Emotions as supporting evolution in thinking*. Here, emotions motivate thinking and learning and can be used to prompt deeper thought through discordant ideas.
   e.g., 'I think it is also important to create a little bit of there being something slightly uncomfortable.'

These groups raised awareness of the wide spread of sometimes opposing views that would need to be addressed and accommodated in the training. There was clearly no single base line of beliefs as a starting point, but the spread would provide a source of Mezirow's (1994) 'disorientating dilemmas' in introductory discussion amongst teachers. Here the realisation that perceptions varied so greatly encouraged teachers to question their own assumptions, ways of working and recognise potential spreads in meaning associated with aspects of practice.

The training package

The training package was to help teachers of older students create learning environments where emotions and the intellect work together productively (Newton, 2018), recognising that emotions are a powerful force in student learning and are often the reason students choose to learn at all (Immordino-Yang, 2019). The training was to provide a framework and strategies to enhance the

quality of knowledge creation through a conscious and explicit recognition of the emotional facets of their learning environment. Space does not permit a full presentation of the package, but its intention and focus is captured in Figure 1. The package was intended to lend itself to a variety of disciplines and to be suitable for those with different prior knowledge. Illustrative examples of the areas explored within the training package and examples of the considerations addressed in relation to each area are summarised in Table 2.

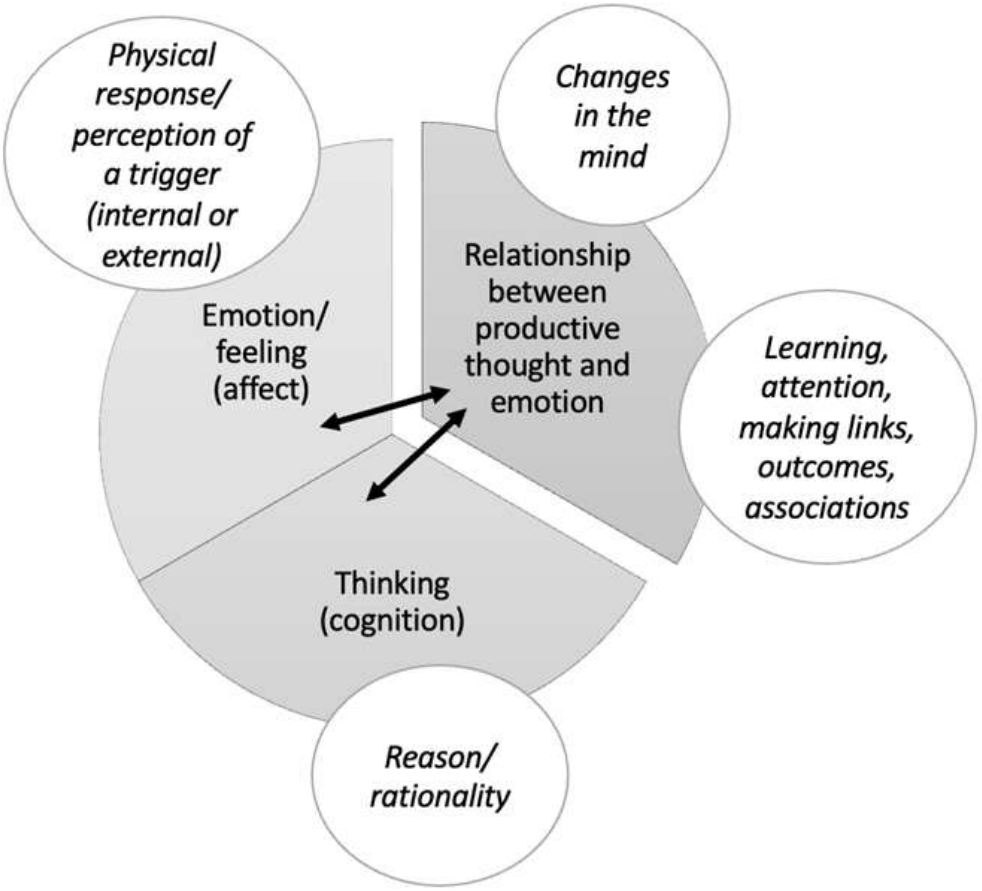

Figure 1: An overview of the relationships that the training package sought to develop.

Table 2: Examples of focus areas addressed within the toolkit.

Area of focus	Examples of development within the focus area	Examples of core underpinning literature
Framing the relationship between emotions and thinking within higher education contexts.	➢ Critical exploration of sector, institutional and subject contexts. ➢ A consideration of the specific needs of a variety of adult learning environments *(e.g., lecture environments, online learning, practical/ professional learning, self-directed learning)*. ➢ Framing the relationship between thinking and feeling within academic practice and the teaching of adults. ➢ Defining the limits in the roles of teachers to create effective links to wider institutional professional/ support services.	Newton (2016) Immordino-Yang et al. (2019)
Acknowledging and making transparent personal, professional,	➢ Exploring the academic identities of staff and of students. ➢ Unpacking learning related emotions via a shared	Newton (2016)

and academic frames.	lexicon– making the invisible aspects of the learning environment visible within the learning process. ➢ Considering shared experiences/ stories in conjunction with personal progressive journeys. ➢ Promoting reflection and reflexivity in approach.	
Making explicit productive thinking within the learning environment.	➢ Naming, defining, and signposting the types of productive thought that students are engaging in within their learning. ➢ Exploring the aggregated impact of combinations of productive thought on the overarching outcomes of wise thinking and decision making. ➢ Exploring the value of emotional thought. ➢ Linking specific types of thought to the emotional climates of learning environments to actively enhance the quality of different types of thought that takes place.	Newton (2016) Newton & Newton (2018) Immordino-Yang (2015)
Developing a learning environment that supports social and relational aspects of learning.	➢ Recognising and planning for the *stream of affect* (within and across courses; through academic advising/ personal tutoring activities, across the wider aspects of learning). ➢ Lessening threat and enhancing safety within the learning environment via a focus on building communities and establishing rapport. ➢ Exploring the characteristics of specific groups of students within the wider cohort to offer insight into the enhancement of the emotional climate of the learning environment.	Newton (2014) Quinlan (2016)
Focusing on, and embedding, the emotional design of learning and planning for emotional thought.	➢ Considering the impact of the physical learning environment. ➢ Planning for and mapping the *streams of affect* within the learning (course, module, and episode) and making this visible. ➢ Supporting and enhancing the social and relational aspects of learning (the learning eco-system). ➢ Identifying and managing the shaping and impact of activities that may give rise to *performance related emotions.*	Newton (2016) Pekrun et al., (2023)
Exploring the leadership and management of the emotion-cognition partnership in learning and teaching environments.	➢ Embedding a shared vision and a coherent and cohesive approach to the emotion- cognition relationship with learning and teaching (from faculty to course/ module levels). ➢ Building communities of practice that actively seek to address but also model the focus on the emotion-cognition relationship. ➢ Recognising and considering the emotional labour inherent in the academic role and how this can be acknowledged, supported, and mitigated within working practices, organisational structures/ approaches and via support, mentoring and coaching. ➢ Acknowledging the complexity often found in the structures of educational establishments – multiple inter-related services across physical and virtual spaces.	Mezirow (2008) Wenger (2009) Hökkä et al. (2020)

Evaluation

Survey data indicated high levels of positive engagement with the training package (91.11%, n=41), satisfaction with its structure and content (97.78%, n=44), and with its efficacy (88.89%, n=40). Table 3 provides an overview of key responses against the four levels of Kirkpatrick's Hierarchy (Tamkin, 2014, see also earlier).

Table 3: Levels of learning from the package.

Level of hierarchy	Statement for response	Respondents (n)	Strongly agree & agree (n)	Strongly agree & agree (%)
Be aware of the relevance of emotions in teachers' work…	I found the content and subject matter interesting.	45	42	93.33
	I saw the relevance of this area to my role and my subject area.	45	41	91.11
	The training allowed me to adapt approaches to my subject area.	45	42	93.33
	The training recognised the context in which I am working.	45	40	88.89
Knowing what emotions can do for learning…	The training progressed my theoretical understanding.	45	40	88.89
	I am confident in my ability to use what I learned within this training in my own teaching.	45	39	86.67
	This training has impacted the way I view the relationship between emotions and cognition in my teaching.	45	41	91.11
	This training provided ideas and practical solutions that I could apply to my teaching.	45	42	93.33
	I could apply these strategies in range of contexts.	45	41	91.11
The ability to take moods and emotions into account in planning and teaching…	I have changed the way I approach my teaching because of this training.	45	36	80
	I have applied some of the strategies learned to my teaching.	45	37	82.22
	I have been able to integrate the strategies and approaches with my existing practice.	45	40	88.89
	These strategies have helped shape the way that I view the role of emotions within my learning environments.	45	40	88.89
Evidence of useful changes in students engagement can be seen by teachers…	The professional development has positively impacted the way I work.	45	40	88.89
	I have seen improvements in my teaching following the application of these strategies.	45	41	91.11
	Students have responded positively to the approaches.	45	40	88.89
	These strategies have the capability to positively impact practice widely within my department/ school.	45	38	84.44

These responses indicated that most participants reached the higher levels of the Kirkpatrick hierarchy, that is, they put their learning into practice. This is, of course, the goal of workplace learning, and it points to the effectiveness of the package as a whole. Four key themes emerged from an analysis of responses to a text-based survey and evaluative interviews. These are summarised below. These thematic areas provide an insight into the impact of the training and its potential for further development.

Theme 1: Diversity in perspectives and practice

Participants frequently noted surprise in the wide range of views and perspectives expressed by their colleagues in relation to the role of emotions within learning and teaching: e.g., *'I didn't realise that others saw things so differently to me . . . I made a lot of assumptions there and it's been interesting to see how different views are'*. For some, the training approach was viewed as validating understandings and providing a framework. Others viewed the material as conceptually challenging but beneficial: e.g., *'this is not natural for me . . . and I've had to look at things differently . . . I've enjoyed that… I*

can change small things to make a difference'. The responses suggest that engagement moved from a focus on the adoption of immediate practical strategies to a transformation of conceptual outlooks.

Theme 2: Conceptions and absorption into identity

Participants reported valuing a focus on their personal and professional identities. The frames participants created were often revealed to be nuanced by personal experiences and their specific working contexts. There was a movement from an unconscious to a conscious recognition of the relationship between thinking and emotions so that what had been unseen became planned and deliberate: e.g., *'I think I did a lot of this [the toolkit] already and it comes quite naturally but I didn't really plan it or talk about it, and I didn't get as much from it as I could…'.* For some, the training offered an alternate perspective on the practicalities and structures of their working environment: *'this is a way of meeting the emotional needs of our students in education in a defined and boundary-ed [sic] way'.*

Theme 3: Growth through professional development

Participants expressed their own emotional response to the training as being linked to an increase in confidence which supported ownership, autonomy and adaptive decision making: *'I found the focus was not on telling us what we should do but on giving a structure to help us make choices… this gave me confidence'.* The training was noted to encourage reflection and provide a structure through which participants could explore their often, intuitive beliefs in relation to their practice. Instinctive approaches were moulded productively and given direction, solidity, and a defined theoretical grounding: *'my gut reactions and my feelings in my classroom have been given some structure and grounding… it's made me more controlled and aware…I'm not as reactive'.* Participants also reflected now had a vocabulary helped them become more confident in engaging with students in: e.g., '*discussions with students about their academic emotions which I didn't previously have a vocabulary for'.*

Theme 4: Institutional and structural challenges

Potential challenges to implementation of the training were highlighted, mainly linked to identified constraints within courses, departments, and institutional practices around the impact of an increased focus on specific metrics, institutional strategies and the availability of time and space: e.g., *'What I worry about is that the institution itself does not value things like this and is more interested in metrics and what things look like externally'.* In many ways, the emotional labour created by institutional policy was conceived to be more challenging to navigate than that created through the situational and relational aspects of teaching, e.g., managing the complex needs of students. As one participant stated: *'teaching comes as a relief from the politics'.*

The evaluation of responses to the training package demonstrated that:

- There was a movement from an unconscious (instinctive and reactive) to conscious (planned and considered) recognition of the relationship between thinking and emotions within learning; '*A lot of it [the training] is making conscious the unconscious and taking time to plan what can be planned rather than just rely on instinct.*
- Teachers recognised student responses to the implementation of training as positive. Teachers noted that learning benefited from the different avenues of discussion that arose: *'Students have responded well, and I have become much more open about the way I discuss academic emotions within my sessions and about the way I discuss different thinking skills and what these look like'.*
- There are benefits to offering a framework for teachers, defining boundaries, and providing a lexicon and strategies through which the intersection of the pastoral and the academic facets of roles and experience could be managed. This was of relevance to those coming into teaching from professional, vocational, or alternative sectors.
- Teachers saw that there is a diversity of perspectives in relation to the role of emotions within learning and this led to assumptions being challenged. This encouraged communities to be built which were reported to have a positive impact on the way individuals view themselves, work with their peers, and the way their students engage in their learning.

- There was evidence of transformational changes in teachers' beliefs. Focusing on the emotional aspects of learning may also be beneficial in fuelling a broader transformation in how education is perceived.

Taken together, we felt that the evaluation undertaken supported the approach to the construction of the training package, namely, an elicitation of prior knowledge, guidance from an adult learning theory, and the application of the iterative practices of design research. It does not, of course, mean that other approaches are ineffective, but we can, at least, recommend this one.

Wider application of the training package

Interestingly, participants spontaneously saw ways in which the package could be adapted to suit more specific contexts. For example, one said: *'I can see this becoming something we could adapt to certain parts of our course.* Opportunities were taken within the project to add breadth to the context in which it has been tested and consider its relatability (Bassey, 2001) to other settings. Field-testing took place with a broad cross-section of staff/faculty from various subject backgrounds. Likewise, the test setting can be viewed as representative of several similar higher education institutions. Within the testing of the package, appraisals of the training materials were undertaken by external experts who have suggested that the content, approach, and strategies presented could be applied to other educational environments. For example, it was noted that: *'the toolkit could be used in most educational settings, not just HE [Higher Education]'* and it *'has relevance beyond the UK education system'*.

There are some limitations to the approach taken. The theoretical basis for the training is detailed and wide (Newton, 2014) and the training itself was therefore intentionally broad. Going forward an exploration of specific elements of this whole may offer additional insights whilst further application across varied contexts and via different modes of training delivery would add nuance. The evaluation undertaken focused on interviews and surveys conducted with staff who had engaged with the training package and relied on self-report. A consideration of the impact of the training package directly within practice (for example, through observation or via exploration with students) would be beneficial. In addition, further work should now be undertaken to explore the ways in which training such as this can be dovetailed with wider institutional structures.

Some conclusions

Our educational environments are innately emotional yet all too frequently the impact of the emotions of students is overlooked. Yet thinking involves emotions and its quality and the wider experience of learning can be enhanced by recognising this and putting it to work within the classroom. This project demonstrated that it is possible to offer successful professional training on this subject that facilitates belief development and transformation and the application of new skills for teachers of mature students. This was achieved by applying the conceptual framework provided by Newton (2014), and by building the practical approach upon the foundations of context and the conceptional starting points of teachers.

So much workplace training just amounts to a transmission of information, perhaps with an assessment of facts acquired. We felt that this does not go far enough to foster understandings, reflection, and practice in applying new knowledge in contexts of personal concern. We found Mezirow's guidance in adult learning useful in the initial design with the opportunity for transformation initially built around the wide-ranging conceptual starting points of teachers. Subsequent development of the training package was, of course, based on the pragmatic evaluations of each iteration

We felt that outcomes of the evaluation of the package indicated its general effectiveness in changing practice, teaching beliefs and behaviours relating to intellect-emotion interaction. A focus on the area became more consciously considered within the practice whilst it provided a basis from which confidence could be built and perceptions explored or challenged.

Nevertheless, we should draw the reader's attention to the diversity in teachers' personal attributes. Just like students, teachers are diverse, and we cannot expect all to be entirely at ease with emotion or to develop their response the intellect-emotion relationship in predictable ways. Most teachers have been through an educational system concerned only with the intellect, in some cultures, emotional expression may be suppressed, and some teachers may be mentally inclined to avoid them. Any training package addressing the interaction is unlikely to produce the same outcome for all, and some may develop expertise more slowly than others. This serves to emphasise the importance of Michael Bassey's (2001) principle of relatability. The audience is all, and trainers need to relate what they do to reflect trainees' prior knowledge, personality, and neurodiversity. Further research may be able to make recommendations for diverse applications of the package.

This study focused on teachers' responses to students' emotions. We should not, however, forget that teaching is also emotional labour and frequently shaped by internal organisational priorities and external drivers. Research often focuses on matters of teacher stress and burn-out, but an exploration of the effects of teachers' own intellect-emotion interaction in the classroom could be fruitful, and point to another valuable provision in teacher preparation. Wider than that, and potentially more constraining, are institutional attitudes to education particularly when seen as a commodity that packages knowledge for sale. Extending this the relationship between the attitudes of the organisation and the perceptions of the teachers who operate within them are also of relevance. Research which explores the impact of diverse institutional cultures, attitudes and expectations on educational practices would be useful.

References

Bassey, M. (2001). A solution to the problem of generalisation in educational research: Fuzzy Prediction, *Oxford Review of Education*, *27*, 5-22.

BERA (British Educational Research Association) 2018. *Ethical Guidelines for Educational Research*, BERA, London.

Camacho-Morles, J., Slemp, G.R., Pekrun, R., Loderer, K., Hou, H., & Oades, L.G. (2021). Activity achievement emotions, *Educational Psychology Review*. *33*, 1051-95. DOI: 10.1007/s10648-020-09585-3

Cong-Lem, N. (2023). Emotion and its relation to cognition in Vygotsky's perspective. *European*

Dirkx, J. M. (2012). Self-formation and transformative learning: A response to "Calling transformative learning into question: Some mutinous thoughts," by Michael Newman. *Adult Education Quarterly*, *62*(4), 399-405.

Feller, A., Jensen, A., Marie, D., Peddigrew, B., Clinchard-Sepeda, L., & Campbell, E. (2004). Quadrinity online: Toward a fuller expression of transformative learning. *Journal of transformative education*, *2*(3), 219-230.

Hökkä, P., ähäsantanen, K., & Paloniemi, S. (2020). Emotions in learning at work: A literature Review. *Vocations and Learning*, *13*, 1-25.

Horwitz, E.K. (2010). Foreign and second language anxiety, *Language Teaching*, *43*, 154-67. *Journal of Psychology of Education*, *38*, 865-80. DOI: 10.1007/s10212-022-00624-x

Immordino-Yang, M. H. (2015). *Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience.* WW Norton, Manhattan.

Immordino-Yang, M. H., Darling-Hammond, L., & Krone, C. R. (2019). Nurturing nature: How brain development is inherently social and emotional, and what this means for education. *Educational Psychologist*, *54*, 185-204.

Lawrence, R. L. (2022). Imaginative perspectives on transformative learning. In *The Palgrave handbook of learning for transformation* (pp. 645-658). Cham: Springer International Publishing.Martel, C., Pennycook, G. & Rand, D.G. (2020). Reliance on emotion promotes belief in fake news. *Cognitive Research*, *5*, 1-20. DOI: 10.1186/s41235-020-00252-3

Marton, F. (1981). Phenomenography—describing conceptions of the world around us. *Instructional Science*, 177-200.

McKenney, S., & Reeves, T. (2018). *Conducting educational design research*. Routledge.

Meany, M. M. (2007). Humour, Anxiety, and Csikszentmihalyi's concept of Flow. *Creative Engagements: Thinking with Children-3rd*.

Mezirow, J. (1994). Understanding transformation theory. *Adult education quarterly*, *44*(4), 222-32.

Mezirow, J. (2000). Learning to think like an adult. Learning as transformation: Critical perspectives on a theory in progress, 3-33.

Mezirow, J. (2003). Transformative learning as discourse. *Journal of transformative education*, *1*, 58-63.
Mezirow, J. (2008). An overview on transformative learning. *Lifelong learning*, 40-54.
Mordka, C. (2016). What are emotions? *Studia Humana*. *5*, 29-44. DOI: 10.1515/sh-2016-0013
Newton, D. P. (2014). *Thinking with Feeling: Fostering productive thought in the classroom*. Routledge, London.
Newton, D.P. (2015). There's more to thinking than the intellect. In R. Wegerif, J. Kaufman & L. Li (Eds), *The Routledge International Handbook of Research on Teaching Thinking* (pp. 58-68), Routledge, London.
Newton, D.P. (2016). *In Two Minds*. ICIE, Ulm.
Newton, D. P. (2018). Emotions: Can't think with them, can't think without them. In L. Kerslake & R. Wegerif (Eds,) *Theory of Teaching Thinking* (pp. 26-40), Routledge, London.
Newton, L.D. & Newton, D.P. (2018) *Making Purposeful Thought Productive*. ICIE, Ulm.
Parkinson, B. & Manstead, A.S.R. (2015). Current emotion research in social psychology. *Education Review*, *7*, 371-80. DOI: 10.1177/1754073915590624
Pekrun, R. (2006). The control-value theory of achievement emotions. *Educational Psychology Review*, *18*, 315-41.
Pekrun, R. (2016). Academic emotions, In K. Wentzel & D.B. Miele (Eds) *Handbook of Motivation at School* (pp. 120-44), Routledge, New York.
Pekrun, R., Marsh, H.W., Elliot, A.J., Stockinger, K., Perry, R.P., Vogl, E., Goetz, T. et al. (2023). A three-dimensional taxonomy of achievement emotions. *Journal of Personality and social psychology*, *124*, 145-178. DOI: 10.1037/pspp0000448
Plomp, T. (2013). Educational design research: An introduction. *Educational design research*, 11-50.
Quinlan, K. M. (2016). How emotion matters in four key relationships in teaching and learning in higher education. *College Teaching*, *64*, 101-11.
Quinlan, K. M. (2019). What triggers students' interest during higher education lectures? Personal and situational variables associated with situational interest. *Studies in Higher Education*, *44*, 1781-92.
Scheer, M. (2012). Are emotions a kind of practice (and what is it that makes them have a history? *History and Theory*, *51*, 193-220.
Svensson, L. (1997). Theoretical foundations of phenomenography. *Higher education research & development*, *16*(2), 159-171.
Tamkin, P., Yarnall, J. & Kerrin, M. (2002) *Kirkpatrick and beyond*. The Institute for Employment Studies.
Tyng, C.M., Amin, H.U., Saad, M.N.M., & Malik, A.S. (2017). The influences of emotion on learning and memory. *Frontiers in Psychology*, 8, 1454. DOI: 10.3389/fpsyg.2017.01454
Van den Akker, J., Gravemeijer, K., McKenney, S., & Nieveen, N. (Eds.). (2006). *Educational design research*. Routledge, London.
Wenger, E. (2000). *Communities of practice: The key to knowledge strategy.* In E.L. Lesser, M.A. Fontaine & J.A. Slusher (Eds), *Knowledge and Communities* (pp. 3-20), Butterworth Heinemann, Boston.
Wolf, A., & Stern, N. (2013). Readiness and persuasion in transformative learning for sustainable responses to climate change. *Proceedings: transformation in a changing climate. University of Oslo, Oslo*, 227-236.
Yates, C., Partridge, H., & Bruce, C. (2012). Exploring information experiences through phenomenography. *Library and information research*, *36*(112), 96-119.
Zhou, C., Chemi, T. & Lund, B. (2015). A comparative study of students' perceptions of humour in learning creative design between China and Denmark. In B. Lund & T. Chemi (Eds), *Dealing with Emotions: A Pedagogical Challenge to Innovative Learning* (pp. 99-119), Brille Sense, Leiden.

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