# Emotional Aspects of Learning and Teaching: Reviewing the Field – Discussing the Issues

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**Abstract:** The introductory paper gives an overview of the international research on emotions in learning and teaching. It addresses various theoretical, contextual, practical, and empirical aspects. In the first part, the paper reflects the core concept of emotions with particular emphasis on academic and achievement emotions. Next, it reviews the impact of emotions on students' learning and achievement, as well as on the relation between emotions and instructional quality. The final part deals with academic emotions viewed in the context of different school subjects. In general, this introductory paper emphasizes the relevance of emotions for education, especially for learning and teaching in school.

**Keywords:** academic emotions, achievement emotions, learning emotions, learning, teaching, instruction, instructional quality

## Introduction

"Emotions are intimately involved in virtually every aspect of the teaching and learning processes, therefore, an understanding of the nature of emotions within the school context is essential" wrote Schutz and Lanehart (2002, p. 67) in a special issue on emotions in education in *Educational Psychologist*. The interaction between emotions, motivation and cognition in human life, especially in school and classroom contexts, is very complex. Yet this fact does not seem to be reflected enough in research.

Emotions may be seen as general evaluative reactions to experiences with a social context (Eisenberg & Fabes, 1992), with learning and instruction and with achievement demands (Pekrun et al., 2004; Ainley, Corrigan, & Richardson, 2005), outcomes and feedback (Gumora & Arsenio, 2002; Skinner et al., 2008). But emotions are influenced by the individual's personality as well (Austin & Senese, 2007). There is a need for studying emotions in education, especially in school and classroom contexts (Linnenbrink & Pintrich, 2004). Emotions influence teaching and learning in both positive and negative ways (Kochanska, Murray, & Harlan, 2000). Students' emotions play an important role in social relations as well as in learning; goal orientation, motivation and self-concept (Dweck, 1986; Götz et al., 2003). The learning processes and

outcomes are influenced by emotions but they may also evoke emotions (Valiente, Swanson, & Eisenberg, 2012). Therefore it is important to clarify how emotions are influenced by the learning environment as well as the teacher behavior and expertise (Fitzimons & Lanphar, 2011; Hargreaves, 1999; 2000). Finally, it should be discussed how learning and teaching may be provided in a more emotionally-oriented way.

Thus, the aim of this paper is to give a short (selective) overview of the research field addressing various theoretical, empirical and practical aspects of emotions in a school and classroom.

## 1 What are emotions?

Emotions are basic psychological systems regulating an individual's adaptation to personal and environmental demands. They are considered to be subjective experiences and multidimensional constructs with affective, cognitive, expressive, motivational and physiological components (Kleinginna & Kleinginna, 1981; Scherer, 1984; Scherer, Schorr, & Johnstone, 2001). Emotions are closely related to cognitive, behavioral, motivational and physiological processes, therefore they are generally important for learning and achievement. They may initiate, terminate or disrupt information processing and result in selective information processing or they may organize recall (Pekrun, Götz, Titz, & Perry, 2002).

### 1.1 Academic and achievement emotions

The term academic emotions was proposed by Pekrun, Götz, Titz and Perry (2002) as an "umbrella term" for emotions within instructional context, covering emotions that are directly tied to students' learning, classroom instruction and achievement. Students experience a variety of emotions in academic settings that influence their perceptions and behavior. Academic emotions are significantly related to students' motivation, learning strategies, cognitive resources, self-regulation, academic self-concept and academic achievement (Pekrun et al., 2002; Valiente, Swanson, & Eisenberg, 2012). Emotions have an impact on students' achievement as well as their interest, engagement and personality development in addition to affecting the social climate in classrooms and educational institutions (Pekrun, 2005).

Emotions which are directly related to achievement activities or achievement outcome are defined as academic or achievement emotions (Pekrun, 2006). For a long time, research focused on emotions induced by achievement outcomes such as fear of failure, pride and shame after performance feedback (Weiner, 1985). Research on anxiety was dominating the field for a long time (Man, Stuchlíková, & Hodapp, 1997; Seipp & Schwarzer, 1991; Spielberger, 1966; Zeidner, 1998). For test anxiety the relevance of the impossibility to control the situation is very well analyzed (Hembree, 1988). Different aspects of instruction may cause anxiety, for example unstructured learning material, lack of feedback and lack of transparency in achievement de-

mands. Test anxiety has been shown to correlate with parent, peer and teacher behavior such as punishment after a failure and competition in a classroom. Test anxiety seems to occur primarily in elementary school. Some studies document a sharp increase in mean frequency and intensity of test anxiety from grade one to grade four resulting in high prevalence in late childhood (Wigfield & Eccles, 1989). To cope with anxiety, programs for students were developed and empirically tested (Strittmatter, 1993). Individual feedback on students' ability and transparent achievement demands were found to be reassuring (Sarason, 1984; Strittmatter, 1993). Regarding further negative emotions, present studies confirm that students often experience not only anxiety but also boredom and low interest in school, especially in mathematics (Götz & Frenzel, 2010). The decrease in enjoyment of learning from elementary to secondary school was already observed twenty years ago (Helmke, 1993) indicating that tests, achievement pressure and further problematic aspects of school and education may have a negative influence on students' development.

Meanwhile there is strong evidence that students experience a variety of positive and negative emotions in school. It is assumed that instruction, parents' and teachers' value systems, autonomy, expectations and achievement goals as well as achievement feedback and its consequences have an influence on students' achievement emotions (Pekrun et al., 2002).

Emotions, particularly those experienced in academic and achievement contexts, may be characterized by the criteria of valence (positive vs. negative) and activation (activating vs. deactivating). Positive-activating emotions such as enjoyment, pride and hope, positive-deactivating (relief and relaxation), high intensity negative-activating (anxiety, anger and shame/guilt) and negative-deactivating (boredom, hopelessness and disappointment) are differentiated (Pekrun, 1992). Emotions have an evaluative relation to learning, instruction and achievement. Positive-activating emotions are expected to have a positive influence on learning and achievement, while negative-deactivating emotions should have a negative impact. However, simple linear effects may not be assumed. Instead the nonlinear effects caused by different impact of the low- and high-intensity emotions (Sallquist et al., 2009), indirect effects (moderated by effortful control; Dennis, Hong, & Solomon, 2010) and mediation via cognitive processes (Blair, 2002) are assumed. Furthermore, emotions are experienced in specific situations (state-component) and they are developed in the course of life and enduring (trait-component). In contrast to mood, emotions are time-limited feelings and they are generally related to or caused by specific events (e.g. feedback by teacher or parents).

Pekrun (2006; 2000) suggested a control-value approach to achievement emotions (Figure 1) based on appraisal theories (Smith & Lazarus, 1993), expectancy-value theories (Turner & Schallert, 2001), transactional approaches (Folkman & Lazarus, 1985), attributional theories (Weiner, 1985) and models of performance effects of emotions (Pekrun, 1992; Zeidner, 1998; 2007).

This control-value approach points out that subjective control of the learning and an achievement situation as well as the subjective value of a learning process and

achievement are crucial for students' emotional experience. For example, pleasure in learning presupposes that students experience their ability to master a task (control) and their interest in the task (value).

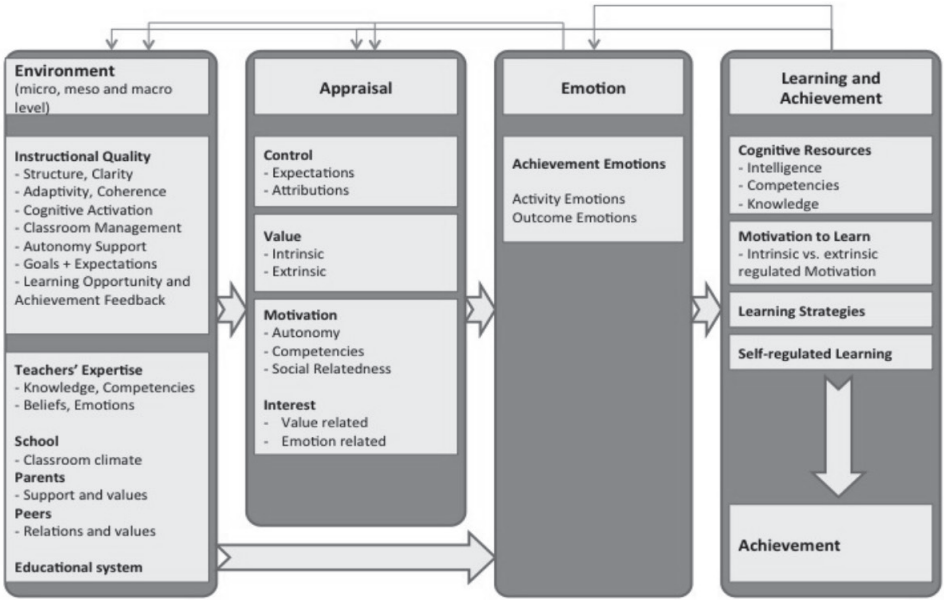


**Figure 1** Emotions, learning and instruction – a theoretical model based on the control-value approach to achievement emotions (cf. Pekrun et al., 2007, p. 17)

On the contrary, the loss of control and worrying about the sufficiency of one's performance may elicit the defensive and even maladaptive strategies of coping with learning tasks, including cheating (Stuchlíková & Vaníček, 2000; Vrbová & Stuchlíková, 2012). Students experience a variety of instructional situations and they value these situations depending on previous experiences, the social context, their personal goals, their interests and other personality factors (Pekrun et al., 2002).

## 2 Emotions and their impact on learning and achievement

Emotions have an effect on learning and achievement, mediated by attention, self-regulation and motivation (Pekrun et al., 2002), thus directing the person towards or away from learning matters in learning situations (Ellis & Ashbrook, 1989). Furthermore, it was shown that students' perceived self-regulation is significantly positively correlated with positive emotions (Boekaerts, Pintrich, & Zeidner, 2000; Carver & Scheier, 1990), whereas perceived external regulation is correlated with negative emotions (Pekrun et al., 2002). The experience of competence and au-

tonomy in learning has been pointed out to be important for self-regulation and self-determination (Deci & Ryan, 1985). Emotions are related to interest as well. The positive impact of interest on learning has been confirmed for individuals, knowledge domains and subject areas (Hidi, Berndorff, & Ainley, 2002). Interest has value-related valence as well as feeling-related valence (Krapp, 2002; Renninger, Hidi, & Krapp, 1992); it is highly correlated with intrinsic motivation and pleasure, and it is closely linked to all self-determined activity.

The impact of emotions may be positive, as well as negative in nature but the relation to learning is not so straightforward. For example, test anxiety is roughly seen as a debilitating emotion but research (Man et al., 1997; Schutz & Davis, 2000; Cassady & Johnson, 2002) shows that there are two components of the test anxiety, one that really worsens the academic performance (the cognitive component consisting of worrying about the consequences of failure), and on the other hand the so-called "emotionality" which is associated with the elevated arousal, has a nonlinear "u-curve" relation to performance and as such may facilitate learning (at least within some range) and performance.

This means that emotions influence the learning process in very different modes. In general, we can summarize these different modes under two headings – intrapersonal and interpersonal effects (Oatley et al., 2011). The interpersonal effects of emotions on learning are associated with the impact of emotions on social judgment and social perception (e.g. on comparison with mates), with the influence of social contexts on emotional expression and experience (display and feeling rules within instructions), with the role of emotions in creating, maintaining and dissolving social relationships (with teachers and peers) and with the verbal and nonverbal communication of emotion in social learning situations. Enjoyment and humor can revitalize learning climate in the classroom but when the students are in bits of laughter, it may act as a distractor for some students who cannot concentrate on the subsequent learning.

Intrapersonal effects are usually seen as the effects that emotions have on one's cognitive processing. There is longer tradition (over twenty years) of research on attentional biases (esp. related to processing of negatively emotionally valenced material), on emotion-memory congruency and on decision making being influenced by emotions. The research effort has recently shifted more towards investigation of the effects of emotion on higher-level cognitive processes like interpretation, judgment and reasoning (Blanchette & Richards, 2010). In brief, an emotion interacts with four types of essential processes of our mind which are fundamental for learning – attention, priming of concepts and knowledge structures, allocation cognitive resources to particular information and with reflective (metacognitive) processes which direct our strategic deliberative information processing.

It was also emphasized in the recent literature that it is important to distinguish between integral and incidental emotions (Blanchette & Richards, 2010). Incidental is such an affective state (or mood) that is induced by a broader context, previous situations or is related to personal (affective) traits. It means that

it is transient and not evoked by the target learning tasks or materials. On the contrary, integral emotion is induced by emotionally arousing tasks or materials that a learner is processing. A number of studies (see Blanchette & Richards, 2010 for review) show that people reason about emotional contents more logically than about neutral ones.

Integral emotion may focus attention towards task-relevant information and this could improve performance. This concept of integral emotion evokes directly the idea that instructions themselves (their structure, clarity, etc.) could elicit students' emotions. There is evidence that emotion can either enhance or impair cognitive performance, depending on the type of emotion examined, the features of the task or the interaction between the reasoning style and the requirements of the task.

The amount of literature on higher-level cognitive processes and emotion is growing very quickly (see Blanchette & Richards, 2010; Fredrickson & Branigan, 2005 for review) and will change the understanding of basic concepts of education – learning and teaching – significantly. The traditional distinction between "hot" and "cold" functions (Hofmann, Schmeichel, & Baddeley, 2012) referring to emotion and cognition respectively is being replaced with dynamic interplay between the two, with an acknowledgment that many brain structures and processes are both "cognitive" and "emotional".

Nonetheless, the term learning emotions (cognitive perspective) could be differentiated from academic emotions (a more general perspective of educational psychology). The learning-related emotions in the cognitive perspective refer more to the facilitative or disruptive role of emotional arousal in reasoning processes or memory (Linnenbrink, 2007; Isen, 2008). In such a perspective emotions could be seen as an immediate product of instructional quality (its content-specific aspects like clarity, structure, etc.) and could act as moderators of cognitive processing at the same time. On the other hand, emotions related to student's performance (and/or mastery), to academic self-concept and to social context of learning in general could be also seen as consequences of instructional quality (in the process-product perspective). Emotions could be processed cognitively as evaluative (affective) information about the quality of instruction. Such a distinction is, of course, just theoretical because in the real classroom settings emotions develop both as antecedents and as consequences of student learning.

The interaction between emotion, motivation and cognition is even more complex as emotions are intertwined with students' beliefs and actions constituting an integral part of the interpersonal processes that create classroom contexts (Meyer & Turner, 2006). Therefore, it is important to study students' emotions in instructional context (Frenzel, Pekrun, & Götz, 2007).

## 3 Academic and achievement emotions, teachers and instruction

Until recently, emotions have not been sufficiently attended to in instruction (Mayring & Rhöneck, 2003; Gläser-Zikuda et al., 2005). Although social context and school-related experiences were studied in a small number of studies, instructional quality and its relation to students' emotions have been largely neglected up to now. However, it was already proven that the combination of specific aspects of direct and student-centered instruction (e.g. clear instructional structure, adaptation of instructional contents to students' presuppositions and teachers' emotional involvement) showed an increase in both students' achievement and enjoyment (Gruehn, 1995; Fitzsimmons & Lanphar, 2011). It therefore seems extremely important to reveal the links between the quality of instruction and students' learning emotions in more depth.

The influence of the social context and the learning environment on learning and achievement emotions was already emphasized by Pekrun et al. (2002). Instructional quality, value systems, concession of autonomy, expectations and learning and achievement goals as well as a teacher's achievement feedback are assumed to have an influence on students' emotions (Gläser-Zikuda & Fuß, 2008).

Klieme, Pauli and Reusser (2009) identified three basic dimensions of instructional quality: cognitive activation, supportive climate and classroom management. The cognitive activation is a broad set of processes within which emotions serve as a reflection upon successfulness and integrity of the progress. When activated properly, students feel good and ready or even eager to learn. Proper activation means that the a student's actual cognitive and metacognitive processes (esp. the structure of cognitive categories and metacognitive feelings of knowing; Veenman, Van Hout-Wolters, & Afflerbach, 2006) are not only addressed and respected, but also challenged. Similarly, supportive climate and classroom management may help to refine emotional granularity of the students – their ability to reflect upon one's emotions in a specific and accurate way (Barrett, 2004). The cognitive, emotional and motivational processes are in fact so intertwined that they cannot be changed or fostered independently. The emotion-related self-regulation therefore refers to monitoring and regulating the impact of emotions and motivational states on one's performance and parallels the regulation of cognition involved in the executive function dimension of metacognition (Eisenberg, 2010).

Hugener et al. (2009, p. 76) report that various teaching patterns have various effects on emotional and motivational learning quality (perceived by students). As the authors point out, "specifically the discovery pattern, providing the highest degree of cognitive autonomy to the students, led to negative emotions and the subjective feeling of not having understood well the content of the lesson, whereas no significant effect on self-determined motivation or on cognitive learning activity was found". This finding is explained in a following way: "despite higher autonomy support, students' learning experiences were rather negative. These negative effects

might be related to the degree of students' sense of competence: one could argue that the discovery pattern, which confronts students with the challenging tasks of discovering a new mathematical concept through self-regulated problem-solving, may reduce the experience of competence for many students. From this perspective, the negative effects of the discovery pattern are in line with theoretical considerations suggesting that only if students believe that they are capable of successfully mastering tasks do they desire autonomy" (Hugener et al., 2009, p. 76).

To fully determine the role of emotions in learning and/or instruction also means to tackle the teachers' emotions and their perspectives on emotions in teaching. Teachers' emotions and their influence on teachers' behavior in a classroom and teaching practices are rarely analyzed (Schutz & Pekrun, 2007). Teaching is an emotional endeavor (Sutton, Mudrey-Camino, & Knight, 2009). Teachers may experience happiness when an instructional objective is met or students follow directions, frustration when students cannot grasp a concept, anger with misbehavior, disappointment with lack of effort and anxiety when their competence is challenged. Teachers report that these emotions often arise from management and disciplinary classroom interactions and that they try to regulate these emotions frequently because they believe it helps them achieve their goals (Sutton, 2004).

In line with teacher self-efficacy research (Tschannen-Moran & Hoy, 2001), Frenzel, Götz and Pekrun (2008, p. 198) describe the "reciprocal relation between teacher emotions, teaching practices and instructional aims". Significant correlations were found between mathematics teachers' pleasure and teaching practice rated positively by students. An interview study with teachers from different school types (Hargreaves, 2000) revealed that the experience of successful support of students who had problems with their learning processes was a source of teachers' positive emotions. Furthermore, based on attribution theory, Graham and Weiner (1986) showed that teachers' anger increased when they attributed students' failure to a lack of students' engagement. On the other hand, teachers who thought that students who were lacking adequate abilities felt compassionate (Butler, 1994; Rustemeyer, 1984). Furthermore, teachers' enthusiasm and engagement were revealed as conditions for effective and successful instruction (Sutton, 2004; Witcher, Onwuegbuzie, & Minor, 2001).

Teachers' professional learning itself is a complex process requiring strong emotional and cognitive involvement, in both individual and collective respect, the capacity and willingness to examine where one stands in terms of convictions and beliefs, and the perusal and enactment of appropriate alternatives for improvement or change. The role of emotions in a teacher's change (development) is still to be unveiled (Day & Leitch, 2001).

'School-based' research, still being rather scarce, tends to demonstrate that close 'emotional connectedness' or the 'emotional topography' that exists between all school community members engenders engagement in the learning process (Hargreaves, 2002, p. 15) and relatively few studies show how emotions help create optimal learning environments (Wubben, de Cremer & van Dijk, 2009, p. 19). Never-

theless, when it comes to the notion of optimal learning, the classroom and teachers in particular, the role of emotion remains largely unexamined, suppressed and downplayed (Smith et al., 2009; Fitzsimmons & Lanphar, 2011). Teachers are typically afraid to enter into the emotional arena believing it is too personal (Halstead, 2005), that schooling is about 'rationality' and emotions are simply not a part of this construct (Zinn, 2006).

It is therefore necessary for the teacher to pay attention to academic emotions which may provide feedback on individual as well as group learning processes. These emotions – serving as a feedback – are either positive (interest, joy and enthusiasm) or negative (anxiety, anger, sadness and boredom), however, they are all equally important. Boredom, for example, is the most activity-specific emotion which can reflect monotony and subjectively missing meaning of the learning (Robinson, 1975). According to Pavelková (2009), students see a teacher (his/her way of teaching or acting in general) mostly as the main source of their boredom; or they ascribe their boredom to the subject. Only scarcely do they admit the reasons lie in their own attitude, e.g. their inactivity, aversion to change or novelty, etc.

## 4 Domain-specific nature of academic and achievement emotions

Besides instructional features, it should be considered that not all topics and subjects are favored by students in school context. Mathematics and physics in particular seem to repel many students during adolescence (e.g. Kessels & Hannover, 2008). Numerous research studies have shown decrease in interest in mathematics during secondary school (Fredricks & Eccles, 2002; Köller, Baumert, & Schnabel, 2001; Pavelková, Škaloudová, & Hrabal, 2010a). And physics does not seem to be favored very much by students in lower secondary schools (Hoffmann, Häußler, & Lehrke, 1998). Teachers' expertise and competencies have an influence on achievement emotions as well (Gläser-Zikuda & Fuß, 2008). So far a few studies have analyzed the combination of specific aspects of direct and student-centered instruction (e.g., clear instructional structure, adaptive instruction and a teacher's emotional involvement) in secondary schools and showed an increase in both students' achievement and enjoyment (Gruehn, 1995). Positive (e.g. happiness) and negative (e.g. anger and sadness) emotions are experienced by elementary school children in specific school and instructional situations (Samanci & Kaya, 2010). Alarming decrease in enjoyment at transition from primary to secondary school was already observed by Helmke (1993). Finally, school and classroom climate are important factors influencing achievement emotions. Therefore, it may be assumed that classmates play an important role in students' (achievement) emotions.

For example, the way mathematics was perceived in their classroom had significant impact on students' enjoyment of mathematics (Frenzel et al., 2007). The influence of the social context on learning and achievement emotions was empha-

sized by Pekrun et al. (2002). It was shown that many students decline in their valuation of school during adolescence (Wigfield et al., 2006). Students' academic beliefs, attitudes and values are linked to their school-related behaviors, choices and performance (Wigfield et al., 2006). The way students feel in school and the way they value school subjects and achievement are not only influenced by peers and teachers, but also by parents and other family members. The social-cognitive approach of achievement emotions (Pekrun, 2000) points out that values are transmitted by direct verbal information or by the behavior of one's significant others, and are adopted by students as a result (Eccles, 2007; Zhou, Main, & Wang, 2010). Parents and teachers are seen as significant "interpreters of reality" (Eccles et al., 1993, pp. 154–177). Parents, peers and teachers are of primary importance for the formation of self- and task-related beliefs and values, especially in various domains (Pekrun, 2000). It may be expected that students' valuation of subjects is influenced by parents who value mathematics or physics/science highly, classmates who like a particular subject and teachers who teach these subjects enthusiastically.

It is nonetheless important to highlight that teachers tend to view students' individual characteristics as habitual, domain-general attributes rather than domain-specific phenomena (Marsh, 1993; Marsh, Smith, & Barnes, 1983; Pohlmann, Möller, & Streblow, 2004). It may be misleading to make inferences about students' emotions experienced in one domain (e.g. science) from their emotions in another domain (e.g. humanities). It is therefore important for teachers to be aware of the domain specificity of students' affective experiences, to try to avoid thinking about students' emotions in terms of global positive versus negative affects, and to acknowledge the variety of distinct academic emotions experienced by students as part of the learning process instead (Götz et al., 2007).

An analysis of students' attitudes towards particular school subjects was carried out by Pavelková, Škaloudová and Hrabal (2010b). 3108 students from 25 Czech schools in total answered a questionnaire revealing their subjective ratings of interest (liking), difficulty, importance and academic scores in all school subjects. These students' teachers were also asked to provide similar ratings, to answer how they as teachers perceived their students' liking of the subject and the students' ratings of the difficulty and importance of the subject. The findings show that students' liking scores were the highest for informatics and subjects like physical education, arts and crafts, music, civics, health education and world of work. These subjests were, on the contrary, at the end of the importance list, except for informatics. In general, the teachers estimated the students' ratings of the subject's popularity accurately but they overestimated the importance that the students would ascribe to the popular subjects, like civics or health education. (Pavelková, Škaloudová, & Hrabal, 2010b).

Students' boredom was analyzed in another survey (with 437 students) as an important part of the investigation of the students' attitudes towards the school subjects (Pavelková, 2009). Boredom varied among students, it was related to various subjects and the differences were also determined by gender (boys were bored

slightly more in general, but less in physics and biology). The findings are, of course, sample-specific but they show great individual differences regarding emotional experiences in instruction and subjects. Therefore, research elaborated further is needed.

## 5 Conclusion

As Fitzsimmons and Lanphar (2011) summarize, the role of emotions in classroom learning is not one of simply being a 'feel-good' experience, but "the psycho-socio-emotional glue" that has the potential to take students to new areas of reflective and practical capabilities. As such, it certainly requires further investigation. For example, there is a need of differentiated research concerning learning and achievement emotions in various instructional settings – e.g. open instruction, adaptive instruction and personalized instruction which are brought about by curriculum changes in different countries and are expected to influence and be more attuned to the context of instruction.

Because of their effect on teaching, learning and achievement, emotions are a research area that is relevant for practice. A better understanding of the underlying "emotional" processes of instruction will help design emotionally sound instruction in schools (Astleitner, 2000).

This monothematic issue may contribute to the discussion on emotions in the context of learning and teaching in school by addressing both broader issues in the field (i.e. review of research) and more focused topics (i.e. empirical findings on the transition from primary to secondary education or on emotions related to the use of a portfolio).

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