Orbis scholae

VOL 7 / 2 / 2013

Emotional Aspects of Learning and Teaching

Guest Editors
Michaela Gläser-Zikuda
Iva Stuchlíková
Tomáš Janík

Charles University in Prague / Karolinum Press / 2014

© Charles University in Prague – Karolinum Press, 2014

ISSN 1802-4637 (Print)
ISSN 2336-3177 (Online)

Contents

Emotional Aspects of Learning and Teaching

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. During the last decades various conceptualizations of and studies on the affective/emotional side of human being and acting have been introduced. Emotions are understood as basic psychological systems regulating the individual's adaptation to personal and environmental demands, therefore they are very important from the perspective of education and schooling. There is a need for studying emotions in school and classroom contexts. It becomes evident that emotions have the potential to influence teaching and learning in both positive and negative ways.

Emotions play an important role in the social context, for goal orientation, self-concept and the learning processes and outcomes. Therefore it is important to clarify how they might be influenced by changing the learning environment, features of instructional quality as well as the teacher behaviour and expertise in a more emotionally-oriented way.

This special issue sets out to provide a (selective) overview of the research field and aims at contributing to its development by addressing various theoretical, practical and empirical aspects of emotions in the context of learning and teaching in the classroom. This issue comprises four papers. The first one gives a general overview of research on emotions in the context of learning and teaching in school. The following two empirical studies address students' emotions in school and instruction. The fourth paper focuses on the teacher and the objective determinants of their professional socialisation, which can influence their emotions, such as job satisfaction.

In the introductory paper, Michaela Gläser-Zikuda, Iva Stuchlíková and Tomáš Janík review the international research on emotional aspects of learning and teaching in the classroom. The paper starts with a reflection on the concept of emotions with particular emphasis on emotions in the academic context, especially on learning and achievement emotions. It focuses on the impact emotions have on learning and achievement of students, and on the relationship between emotions and instructional quality. Academic emotions are also discussed regarding their domain-specific nature.

The relevance of basic needs' fulfilment for students' school enjoyment at the transition from primary to secondary education is addressed by Gerda Hagenauer,

Eva Reitbauer and Tina Hascher in the second paper. The study is based on the theoretical background of self-determination and emotion research. The results highlight the importance of a positive teacher-student relationship as well as positive relationships amongst the students themselves for students' school enjoyment before and after the transition. The findings also show that students with higher academic self-concept experience more positive emotions than students with lower academic self-concept. The authors conclude that positive relationships and the belief in one's own academic capabilities enhance the likelihood of experiencing the transition from primary to secondary school as an event accompanied by positive emotions such as enjoyment and excitement rather than a stressful or threatening life-event.

Susi Limprecht, Tomáš Janko and Michaela Gläser-Zikuda present an empirical study that focuses on achievement emotions of boys and girls in physics instruction, as physics is a less favoured school subject. The aim of this study was to analyse the gender differences regarding positive and negative emotions in physics instruction and how they are influenced by the implementation of a portfolio in instruction. The portfolio was applied as an instructional approach (including cooperation and systematic reflection) for the enhancement of individualized and self-regulated learning as well as positive emotions. The study confirmed that boys generally experience more positive achievement emotions in physics than girls, whereas girls show a higher level of anxiety and boredom than boys. The differences between boys and girls regarding their well-being in physics instruction were slightly reduced by the portfolio intervention. The study shows that a portfolio may be a promising approach for the equalization of gender differences regarding achievement emotions in physics.

The paper by Michaela Píšová presents an overview of teacher socialisation research paradigms. This paper focuses on both the anticipatory socialisation (pre-service) and the workplace (organisational) socialisation. While recognising the significance of subjective determinants, the paper aims at surveying the objectives as represented by the following three layers of social context: interactive (pupils and classrooms), institutional (school culture, staff, and leadership) and cultural (local social community, and broader economic, political and cultural environment). All these aspects can influence teacher effectiveness, job satisfaction and also career length in the long term.

Finally, we want to thank all contributors for their interesting and important papers.

Michaela Gläser-Zikuda, Iva Stuchlíková, Tomáš Janík

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

Michaela Gläser-Zikuda
Friedrich-Schiller-University in Jena, Institute for Educational Science

Iva Stuchlíková
University of South Bohemia in České Budějovice, Faculty of Education

Tomáš Janík
Masaryk University in Brno, Faculty of Education

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).

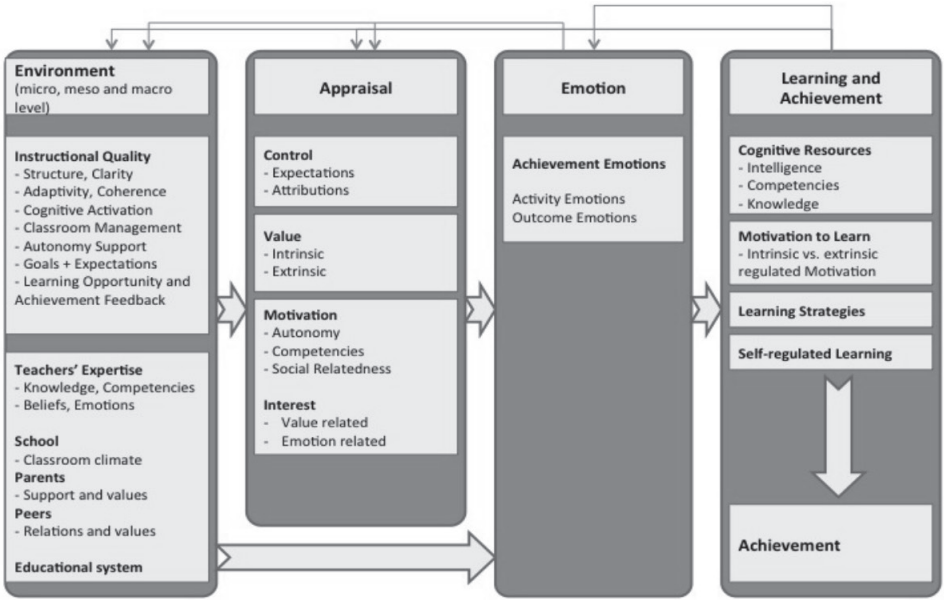


Figure 1 Emotions, learning and instruction – a theoretical model based on the control-value approach to achievement emotions (cf. Pekrun et al., 2007, p. 17)

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).

References

Ainley, M., Corrigan, M., & Richardson, N. (2005). Students, tasks and emotions: Identifying the contribution of emotions to students' reading of popular culture and popular science texts. *Learning and Instruction, 15*(5), 433–447.

Astleitner, H. (2000). Designing emotionally sound instruction: the FEASP-approach. *Instructional Science, 28*(3), 169–198.

Austin, T., & Senese, J. (2007). Self study in school teaching: Teacher's perspectives. In J. Loughran (Ed.), *International handbook of self-study of teaching and teacher education practices,* (pp. 1231–1258), Dordrecht: Springer.

Barrett, L. F. (2004). Feelings or words? Understanding the content in self-report ratings of experienced emotion. *Journal of Personality and Social Psychology*, *87*(2), 266–281.

Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *American Psychologist, 57*, 111–127.

Blanchette, I., & Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgement, decision making and reasoning. *Cognition and Emotion*, *24*(4), 561–595.

Boekaerts, M., Pintrich, P. R., & Zeidner, M. (2000). *Handbook of self-regulation.* San Diego, CA, US: Academic Press.

Butler, R. (1994). Teacher communications and student interpretations: effects of teacher responses to failing students on attributional inferences in two age groups. *British Journal of Educational Psychology*, *64*(2), 277–294.

Carver, C. S., & Scheier, M. (1990). Principles of self-regulation: Action and emotion. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior*, *Vol. 2.* (pp. 3–52). New York: Guilford Press.

Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, *27*(2), 270–295.

Day, C., & Leitch, R. (2001). Teachers' and teacher educators' lives: The role of emotion. *Teaching and Teacher Education, 17*, 403–415.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*, 109–134.

Dennis, T. A., Hong, M., & Solomon, B. (2010). Do the associations between exuberance and emotion regulation depend on effortful control? *International Journal of Behavioral Development*, *34*, 462–472.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, *41*, 1040–1048.

Eccles, J. S. (2007). Families, schools and developing achievement-related motivations and engagement. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization* (pp. 665–691). New York, NY: The Guilford Press.

Eccles, J. S., Midgley, C., Miller Buchanan, C., Reuman, D., Flanagan, C., & MacIver, D. (1993). Development during adolescence: The impact of stage environment fit on young adolescents' task values and expectancy related beliefs. *American Psychologist*, *48*(2), 90–101.

Eisenberg, N. (2010). Self-regulation and school readiness. *Early Education and Development*, *21*(5), 681–698.

Eisenberg, N., & Fabes, R. A. (1992). Emotion, regulation, and the development of social competence. In M. S. Clark (Ed.), *Emotion and social behavior. Review of personality and social psychology. Vol. 14.* (pp. 119–150). Thousand Oaks, CA: Sage.

Ellis, H. C., & Ashbrook, P. W. (1989). The 'state' of mood and memory research: A selective review. *Journal of Social Behavior & Personality, Special issue: Mood and memory: Theory, research and applications*, *4*(2), 1–21.

Fitzsimmons, P., & Lanphar, E. (2011). 'When there's love inside there's a reason why': Emotion as the core of authentic learning in one middle school classroom. *Australian Journal of Language & Literacy*, *34*(2), 35–40.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, *48*(1), 150–170.

Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-typed domains. *Developmental Psychology*, *38*(4), 519–533.

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, *19*(3), 313–332.

Frenzel, A. C., Götz, Th., & Pekrun, R. (2008). Ursachen und Wirkungen von Lehreremotionen: Ein Modell zur reziproken Beeinflussung von Lehrkräften und Klassenmerkmalen. In M. Gläser-Zikuda, & J. Seifried (Hrsg.), *Lehrerexpertise – Analyse und Bedeutung unterrichtlichen Handelns* (pp. 188–211). Münster: Waxmann.

Frenzel, A. C., Pekrun, R., & Götz, T. (2007). Perceived learning environment and students emotional experiences: A multilevel analysis of mathematics classrooms. *Learning and Instruction*, *17*(5), 478–493.

Frenzel, A. C., Thrash, T. M., Pekrun, R., & Götz, T. (2007). Achievement emotions in Germany and China: A cross-cultural validation of the Academic Emotions Questionnaire-Mathematics (AEQ-M). *Journal of Cross-Cultural Psychology*, *38*(3), 302–309.

Gläser-Zikuda, M., & Fuß, S. (2008). Impact of teacher competencies on student emotions: A multi-method approach. *International Journal of Educational Research*, *47*(2), 136–147.

Gläser-Zikuda, M., Fuß, S., Laukenmann, M., Metz, K., & Randler, Ch. (2005). Promoting students' emotions and achievement – conception and evaluation of the ECOLE-approach. In A. Efklides & S. Volet (Eds.), *Learning and Instruction, Special issue feelings and emotions in the learning process, 15*(5), 481–495.

Götz, T., & Frenzel., A. C. (2010). Über- und Unterforderungslangeweile im Mathematikunterricht. *Empirische Pädagogik*, *24*(2), 113–134.

Götz, T., Frenzel, A. C., Pekrun, R. H., Hall, N. C., & Ludtke, O. (2007). Between- and within-domain relations of students' academic emotions. *Journal of Educational Psychology, 99*(4), 715–733.

Götz, T., Zirngibl, A., Pekrun, R., & Hall, N. C. (2003). Emotions, learning and achievement from an educational-psychological perspective. In P. Mayring & C. V. Rhoeneck (Eds.), *Learning emotions: The influence of affective factors on classroom learning* (pp. 9–28). Frankfurt am Main, Germany: Peter Lang

Graham, S., & Weiner, B. (1986). From attribution theory to developmental psychology: A round-trip ticket? *Social Cognition*, 4, 152–179.

Gruehn, S. (1995). Vereinbarkeit kognitiver und nichtkognitiver Ziele im Unterricht. *Zeitschrift für Pädagogik*, *41*(4), 531–553.

Gumora, G, & Arsenio, W. F. (2001). Emotionality, emotion regulation, and school performance in middle school children. *Journal of School Psychology, 40*, 395–413.

Halstead, M. (2005). 'Teaching about love'. *British Journal of Educational Studies*, *53*(3), 290–305.

Hembree, R. (1988). Correlates, causes and treatment of test anxiety. *Review of Educational Research*, *58*, 47–77.

Hargreaves, A. (1999). The emotional practice of teaching. *Teaching and Teacher Education, 14*(8), 835–854.

Hargreaves, A. (2000). Mixed emotions: teachers' perceptions of their interactions with students. *Teaching and Teacher Education*, *16*, 811–826.

Hargreaves, A. (2002). Teaching in a box: Emotional geographies of teaching. In C. Sugrue & C. Day (Eds.), *Developing teachers and teaching practice: International research perspectives* (pp. 3–25). London: RoutledgeFalmer.

Helmke, A. (1993). Die Entwicklung der Lernfreude vom Kindergarten bis zur 5. Klassenstufe. *Zeitschrift für Pädagogische Psychologie*, *7*(2/3), 77–86.

Hidi, S., Berndorff, D., & Ainley, M. (2002). Children's argument writing, interest and self-efficacy: An intervention study. *Learning and Instruction, Special issue: Interest in learning, learning to be interested*, *12*(4), 429–446.

Hoffmann, L., Häußler, P., & Lehrke, M. (1998). *Die IPN-Interessenstudie Physik*. Kiel: IPN.

Hofmann, W., Schmeichel, B. J., & Baddeley, A. D. (2012). Executive functions and self-regulation. *Trends in Cognitive Sciences, 16*(3), 175–180.

Hugener, I., Pauli, Ch., Reusser, K., Lipowsky, F., Rakoczy, K., & Klieme, E. (2009). Teaching patterns and learning quality in Swiss and German mathematics lessons. *Learning and Instruction*, *19*(1), 66–78.

Isen, A. M. (2008). Some ways in which positive affect influences decision making and problem solving. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of Emotions* (pp. 548–573). New York: Guilford Press.

Kessels, U., & Hannover, B. (2008). When being a girl matters less: Accessibility of gender-related self-knowledge in single-sex and coeducational classes and its impact on students' physics-related self-concept of ability. *British Journal of Educational Psychology, 78*(2), 273–289.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of motivation definitions, with a suggestion for a consensual definition. *Motivation and Emotion, 5*(3), 263–291.

Klieme, E., Pauli, C., & Reusser, K. (2009). The Pythagoras study: Investigating effects of teaching and learning in Swiss and German mathematics classrooms. In T. Janík & T. Seidel (Eds.), *The power of video studies in investigating teaching and learning in the classroom* (pp. 137–160). Münster: Waxmann Verlag.

Kochanska, G., Murray, K., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology, 36*, 220–232.

Köller, O., Baumert, J., & Schnabel, K. (2001). Does interest matter? The relationship between academic interest and achievement in mathematics. *Journal for Research in Mathematics Education*, *32*(5), 448–470.

Krapp, A. (2002). Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective. *Learning and Instruction, Special issue: Interest in learning, learning to be interested*, *12*(4), 383–409.

Linnenbrink, E. A. (2007). The role of affect in student learning: A multi-dimensional approach to considering the interaction of affect, motivation and engagement. In P. A. Schutz & R. Pekrun (Eds.), *Emotion in education* (pp. 107–124). Amsterdam: Elsevier.

Man, F., Stuchlíková, I., & Hodapp, V. (1997). Česká verze německého inventáře zkouškové úzkosti (TAI-G): Faktorová struktura a základní psychometrické údaje. *Československá psychologie*, *41*(1), 347–359.

Marsh, H. W. (1993). Academic self-concept: Theory measurement and research. In J. Suls (Ed.), *Psychological perspectives on the self* (pp. 59–98). Hillsdale, NJ: Erlbaum.

Marsh, H. W., Smith, I. A., & Barnes, J. (1983). Multitrait and multimethod analysis of the Self-Description Questionnaires: Student-teacher agreement on multidimensional ratings of student self-concept. *American Educational Research Journal, 20,* 333–357.

Meyer, D. K., & Turner, J. C. (2006). Re-conceptualizing emotion and motivation to learn in classroom contexts. *Educational Psychology Review, 18*, 377–390.

Mayring, Ph., & Rhöneck, Ch. V. (Eds.). (2003). *Learning emotions. The influence of affective factors on classroom learning*. London: Peter Lang.

Oatley, K., Parrott, W. G., Smith, C., & Watts, F. (2011). Cognition and emotion over twenty-five years. *Cognition & Emotion*, *25*(8), 1341–1348.

Pavelková, I. (2009). Nuda ve škole. In R. Váňová & H. Krykorková (Ed.), *Učitel v současné škole*. (pp. 107–118). Praha: FF UK.

Pavelková, I., Škaloudová, A., & Hrabal, V. (2010a). Analýza vyučovacích předmětů na základě výpovědí žáků. *Pedagogika*. 55(1), 38–61.

Pavelková, I., Škaloudová, A. & Hrabal, V. (2010b). Vztah žáků k vyučovacím předmětům na ZŠ. *Pedagogika*, 60(1), 37–60.

Pekrun, R. (1992). The impact of emotions and learning and achievement: Towards a theory of cognitive/motivational mediators. *Applied Psychology: An International Review*, *41*(4), 359–376.

Pekrun, R. (2000). A social cognitive, control value theory of achievement emotions. In J. Heckhausen (Ed.), *Motivational psychology of human development* (pp.143–163). Oxford, UK: Elsevier.

Pekrun, R. (2005). Progress and open problems in educational emotion research. In A. Efklides & S. Volet (Guest Eds.), *Feelings and Emotions in the Learning Process. Special Issue. Learning and Instruction*, vol. (5), 497–506.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries and implications for educational research and practice. *Educational Psychology Review, 18*(4), 315–341.

Pekrun, R., Frenzel, A., Götz, T., & Perry, R. P. (2007). The control-value theory of achievement emotions: An integrative approach to emotions in education. In P. A. Schutz & R. Pekrun (Eds.), *Emotions in education* (pp. 13–36). San Diego: Academic Press.

Pekrun, R., Götz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, *37*(2), 91–105.

Pohlmann, B., Möller, J., & Streblow, L. (2004). Zur Fremdeinschätzung von Schülerselbstkonzepten durch Lehrer und Mitschüler. *German Journal of Educational Psychology, 18,* 157–169.

Renninger, K. A., Hidi, S., & Krapp, A. (1992). *The role of interest in learning and development*. Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

Robinson, W. P. (1975). Boredom at school. *British Journal of Educational Psychology*, *45*(2), 141–152.

Rustemeyer, R. (1984). Selbsteinschätzung eigener Fähigkeit – vermittelt durch die Emotionen anderer Personen. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, *16*, 149–161.

Sallquist, J. V., Eisenberg, N., Spinrad, T. L., Reiser, M., Hofer, C., Zhou, Q., et al (2009). Positive and negative emotionality: Trajectories across six years and relations with social competence. *Emotion,* 9, 15–28.

Samanci, O., & Kaya, R. (2010). A study on the circumstances affecting elementary school students in their family and school lives and their consequential emotions. *International Journal of Human and Social Sciences*, *5*(6), 367–371.

Sarason, I. G. (1984). Stress, anxiety and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, *46*(4), 929–938.

Scherer, K. R. (1984). Emotion as a multicomponent process: A model and some cross-cultural data. *Review of Personality & Social Psychology, 5*, 37–63.

Scherer, K. R., Schorr, A., & Johnstone, T. (Eds.). (2001). *Appraisal Processes in Emotion: Theory, Methods, Research*. Oxford: Oxford University Press.

Schutz, P. A., & Davis, H. A. (2000). Emotions and self-regulation during test taking. *Educational Psychologist, 35*(4), 243–256.

Schutz, P. A., & Lanehart, S. L. (2002). Introduction: Emotions in education. *Educational Psychologist*, *37*(2), 67–68.

Schutz, P. A. & Pekrun, R. (Eds.). (2007). *Emotions in Education*. San Diego, CA: Elsevier.

Seipp, B., & Schwarzer, C. (1991). Angst und Leistung – eine Meta-Analyse empirischer Befunde. *Zeitschrift für Pädagogische Psychologie*, *5*, 85–97.

Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*(4), 765–781.

Smith, C. A., & Lazarus, R. S. (1993). Appraisal components, core relational themes and the emotions. *Cognition and Emotion*, *7*(3/4), 233–269.

Smith, M., Davidson, J., Cameron, L., & Bondi, L. (2009). *Emotions, place and culture*. Hampshire: Ashgate Publishing.

Spielberger, C. D. (Ed.). (1966). *Anxiety and behavior*. New York: Academic Press.

Strittmatter, P. (1993). *Schulangstreduktion*. Neuwied: Luchterhand.

Stuchlíková, I., & Vaníček, J. (2000). Vliv učitelova vymezení hodnotící situace na podvádění žáka. In M. Somr (Ed.), *Cesty k lidské moudrosti a dokonalosti* (pp. 214–218). České Budějovice: Jihočeská univerzita.

Sutton, R. E. (2004). Emotional regulation goals and strategies of teachers. *Social Psychology of Education*, *7*(4), 379–398.

Sutton, R. E., Mudrey-Camino, R., & Knight, C. C. (2009). Teachers' emotion regulation and classroom management. *Theory Into Practice*, *48*(2), 130–137.

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy capturing an elusive construct. *Teaching and Teacher Education, 17*(7), 783–805.

Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology*, *93*(2), 320–329.

Valiente, C., Swanson, J., & Eisenberg, N. (2012). Linking Students' emotions and academic achievement: When and why emotions matter. *Child development Perspectives, 6*,129–135.

Veenman, M. J. V., Van Hout-Wolters, B., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition & Learning, 1,* 3–14.

Vrbová, J., & Stuchlíková, I. (2012). Školní podvádění starších žáků. *Pedagogika, 62*(3), 317–331.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548–573.

Wigfield, A., & Eccles, J. (1989). Test anxiety in elementary and secondary school students. *Educational Psychologist, 24*, 159–183.

Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R. W., & Davis-Kean, P. (2006). Development of achievement motivation. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3, Social, emotional and personality development* (pp. 933–1002). Hoboken, NJ, US: John Wiley & Sons Inc.

Witcher, A. E., Onwuegbuzie, A. J., & Minor, L. C. (2001). Characteristics of effective teachers: Perceptions of preservice teachers. *Research in the Schools*, *8*(2), 45–57.

Wubben, W., de Cremer, D., & van Dijk, E. (2009). 'Being emotional about tit-for-tat: Issues of reciprocity, anger and disappointment in social dilemmas'. *Journal of Experimental Social Psychology*, *45*(4), 987–999.

Zeidner, M. (2007). Test anxiety in educational contexts: Concepts, findings and future directions. In P. A. Schutz & R. Pekrun (Eds.), *Emotion in education* (pp.165–184). San Diego, CA: Academic Press.

Zeidner, M. (1998). *Test anxiety: The state of the art*. New York: Plenum Press.

Zinn, J. (2006). *Risk, affect and emotion, forum: Qualitative social research*. Available at http://www.qualitativeresearch.net/index.php/fqs/article/viewArticle/67/137.

Zhou, Q., Main, A., & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment: A longitudinal study. *Journal of Educational Psychology, 102*, 180–196.

Michaela Gläser-Zikuda
Institute for Educational Science
Friedrich-Schiller-University
Am Planetarium 4
07737 Jena
Germany
michaela.glaeser-zikuda@uni-jena.de

Iva Stuchlíková
Department of Pedagogy and Psychology
Faculty of Education
University of South Bohemia in České Budějovice
Dukelská 9
370 01 České Budějovice
Czech Republic
stuchl@pf.jcu.cz

Tomáš Janík
Institute for Research in School Education
Faculty of Education
Masaryk University
Poříčí 31
603 00 Brno
Czech Republic
tjanik@ped.muni.cz

"It's cool but challenging" The Relevance of Basic Need Fulfillment for Students' School Enjoyment and Emotional Experiences at the Transition from Primary to Secondary Education

Gerda Hagenauer[1], Eva Reitbauer
University of Salzburg, Department of Education

Tina Hascher
University of Bern, Department of Education

Abstract: Based on the theoretical perspective of self-determination, this study examined the effects of basic need fulfillment (relatedness/competence/autonomy) on students' school enjoyment before and after the transition from primary to secondary school. Furthermore, the academic and social impact of control beliefs on the emotions triggered by the upcoming transition was tested. The sample consisted of 63 students who filled out questionnaires at different time points before (grade 4; students between the ages of 9 and 10) and after (grade 5) the primary-secondary transition. The results highlight the importance of a positive teacher-student relationship as well as positive relationships amongst the students themselves for students' school enjoyment before and after the transition. In terms of the emotions evoked by the upcoming transition, the results reveal that students with higher academic self-concept experienced more positive emotions than students with lower academic self-concept. From these findings, it can be concluded that positive relationships and the belief in one's own academic capabilities can contribute to the likelihood of experiencing the transition to secondary school as an event accompanied by positive emotions such as joy and excitement rather than a stressful or threatening life-event.

Keywords: students' emotions, primary-secondary transition, self-determination theory, appraisal theory

1 Introduction

Based on extensive empirical evidence, researchers have come to the consensus that not only is academic achievement influenced by the instructional practices of teachers and the cognitive-motivational factors of learners, but that emotions play a key role in successful student learning as well (Hascher, 2010; von Rhöneck & Melenk, 2003). Studies have shown that positive emotions in students (e.g. joy) are generally associated with positive characteristics in the learning process, such as deeper learning strategies, more effort invested, higher self-regulation and higher behavioural engagement during instruction; this, in turn, positively impacts student achievement (e.g. Hänze, 2003; Gendolla, 2003; Villavicencio & Bernardo, 2012) .Thus, ground-

[1] Corresponding author.

ed in the perceived importance of student emotions for educational outcomes, the interest of educational researchers in studying the emotional processes of students has increased over the past 15 to 20 years (Efklides & Volet, 2005; Schutz & Pekrun, 2007), including not only investigations into the emotions of primary school students (e.g. Helmke, 1993; Wigfield & Eccles, 1989), secondary school students (e.g. Ahmed et al., 2010; Gläser-Zikuda et al., 2005; Hagenauer & Hascher, 2010) and students in further and higher education (e.g. Christie et al., 2008; Grieder, 2006), but also explorations of the emotions of teachers (e.g. Hargreaves, 2000; Sutton & Wheatley, 2003). In early studies of emotion research in education, the focus was placed primarily on test anxiety (e.g. Cassady & Johnson, 2002; Zeidner, 1998), however, current research examines the full variety of emotions experienced in educational settings, taking positive and negative emotions and their antecedents and effects into account (e.g. Astleitner, 2000; Gläser-Zikuda & Fuß, 2008; Pekrun et al., 2002a).

This article contributes to the growing number of empirical studies investigating student emotions in school. It focuses on a critical life-event for students (Sirsch, 2003), namely the transition from primary to secondary school which is of high relevance for students (e.g. Gillison, Standag, & Skevington, 2008; Zeedyk et al., 2003). According to appraisal theories of emotions (Lazarus, 2001), which highlight the importance of cognitions for the elicitation of emotions, emotions are triggered in situations that are *relevant* to the individual (primary appraisal). If situations are not significant and meaningful for a person, emotions are not likely to be evoked. Due to its obviously relevant character, it is expected that the transition from primary to secondary school will generally arouse a variety of emotions.

Pratt and George (2005, p. 16) define this transition as a "key rite of passage for boys and girls, as they move from the seemingly familiar safe environment of the primary school, to the unfamiliar and strange surrounding of the secondary school". In 1985, Weißbach coined the term "secondary school shock" to describe the predominantly negative emotional experiences triggered by this transition. However, current research reflects a more heterogeneous picture in terms of the emotions experienced in the transition. The results of several studies suggest that the transition from primary to secondary school is not necessarily experienced negatively (e.g. by an increase in stress; Rudolph et al., 2001); it is equally likely to be accompanied by positive emotional experiences, such as hope, excitement and joy (Lucey & Reay, 2000). The differences in the positive or negative valence in emotions can be traced back to intra-individual differences among students, such as their academic or social self-concepts which can have an effect on the control cognitions, termed as "secondary appraisal" by Lazarus (2001) and thus on the emotional quality (e.g. Wargo Aikins, Bierman, & Parker, 2005; West, Sweeting, & Young, 2010). Apart from factors related to the individual learner, environmental conditions (e.g. the amount of teacher support, the quality of peer relationships; e.g. Demetriou, Goalen, & Rudduck, 2000; Martinez et al., 2011) are also assumed to influence the emotions evoked.

Based on the heterogeneous findings with respect to emotional experiences during the transition from primary to secondary education and due to the variability of

individual and contextual factors that can impact these experiences, the aim of the present research is to shed further light on student emotions in the primary-secondary transition. In the next chapter, we will introduce the Self-Determination Theory which (in addition to appraisal theories) will guide our approach to studying student emotions.

2 A self-determination perspective on emotions

Self-Determination Theory (SDT) is a theory of human motivation that was developed by Deci and Ryan in the 1980s (e.g. Deci & Ryan, 1985, 2002). Since then, it has been applied in a variety of research fields, including health care, counselling, organization and work and education (for an overview, see the self-determination theory homepage: http://www.selfdeterminationtheory.org/). SDT has proven to be a valuable framework in predicting motivation in individuals, including school students.

Self-determination theory posits that human motivation is driven by three basic psychological needs: the need for autonomy, the need for competence and the need for relatedness. It can be assumed that school learning environments that facilitate the fulfillment of these three basic needs will have a positive impact on students' self-determined motivation as well as on positive emotions; this, in turn, is expected to foster engagement, effort, persistence and achievement/performance. The link between self-determined motivation and positive emotions has been empirically shown, for example by Ryan and Connell (1989) and Patrick et al. (1993) as well as by a prior study in our own research programme (Hagenauer & Hascher, 2011). Furthermore, in lower secondary education, one of our previous studies has demonstrated the association between students' need fulfillment and their learning enjoyment (Hagenauer & Hascher, 2010). The results of this longitudinal study (grades 6 and 7) revealed that the fulfillment of the need for competence and the need for relatedness were the most important in predicting students' learning enjoyment, while the fulfillment of the need for autonomy proved to be of less significance.

This study's results also showed that students' learning enjoyment decreased during the observed period due to an increase in dissatisfaction with school environmental conditions (e.g. students experienced their relationship with teachers as increasingly unsatisfactory; Hagenauer & Hascher, 2010). Stage-Environment Fit Theory (SEF), a theory that originated in the US but is currently being applied internationally across different educational systems (e.g. Eccles & Midgley, 1989; Eccles et al., 1993), explains the decrease in positive motivational and emotional student learning variables in secondary school by the mismatch between students' needs and school environmental conditions. At this point, SDT comes into play again: We assume that the non-fulfillment of students' need for autonomy, relatedness and competence is not only detrimental for students' positive learning emotions in their current stage of schooling, but that it is also (at least partially) responsible for the pedagogically undesirable decline in student motivation and emotional state in secondary education.

In the present study, we will test a model of student emotions focusing on student school enjoyment from an SDT perspective. We will concentrate on school enjoyment because previous studies have shown the relevance of positive learning emotions in general (e.g. Pekrun et al., 2002b) and school enjoyment in particular for learning outcomes (Van Ophuysen, 2008) as well as for positive prospective emotions developed in the transition phase (e.g. high anticipatory joy; Van Ophuysen, 2009). In line with Van Ophuysen (2008), school enjoyment is defined as a positive affective attitude towards school in general ("liking school"). As predictors of school enjoyment, we will take into account school environmental conditions that are assumed to affect students' need fulfillment. As Gillison et al. (2008, p. 151) have asserted, "the satisfaction of the three basic needs set out by SDT during the transition to secondary school has, to date, not received empirical research attention".

3 Research questions and hypotheses

We are interested in students' emotions and their predictors in grade 4 and 5, the period before and after the transition from primary to secondary education in Austria. Because the literature has shown that boys and girls frequently differ in terms of their emotional experiences (e.g. Frenzel, Pekrun, & Götz, 2007; Hascher & Hagenauer, 2011), student gender will be considered in the calculated models.

Firstly, in grade 4 and in grade 5, we test a model of student school enjoyment. We expect that a school environment that meets students' basic needs would be likely to be positively associated with school enjoyment. In particular, we hypothesize that

(1) an autonomy-supporting learning environment (need for autonomy),
(2) a positive relationship with teachers (need for relatedness),
(3) positive relationships with classmates (need for relatedness),
(4) high competence beliefs (need for competence)

will be predictors of school enjoyment. Three predictor models will be described, one in grade 4 and two in grade 5, allowing a comparison of the levels of impact of different predictors in primary and secondary school.

Secondly, studies have shown that the abilities to make new friends and to adapt to new learning demands are crucial for a student's successful transition. In accordance with Lazarus' (2001) distinction between primary and secondary appraisal, we assume that secondary appraisals, namely the perceived controllability of the situation, become relevant in the phase of transition for the arousal of positive or negative emotions (see also the control-value theory of emotions for the importance of control cognitions for emotion elicitation; Pekrun, 2006). We hypothesize that students who believe they can master the social and academic challenges that accompany the transition will be more likely to experience positive emotions in comparison to students who have more doubts about the controllability of the situation (= low academic and/or social self-concept; Götz et al., 2010).

4 Method

4.1 Design and Participants

A longitudinal study was conducted with four measurement points – two in grade 4 (t1: 10 months before the transition to secondary school; t2: 5 months before transition) and two in grade 5 (t3: 3 months after transition; t4: 8 months after transition) – in two primary schools. Both schools were located in a rural area in Austria and the students transited into three different school forms after grade 4: a *Hauptschule*/ *Neue Mittelschule* (n = 60) or a *Gymnasium* (n = 3). Based on the second author's consultations with head teachers, 119 students (6 classrooms, 2 schools) were asked to participate. After obtaining parental agreement, the final sample size was 63 students. These 63 students provided valid data at all four measurement points. After leaving their primary schools, the students moved to eight different secondary schools, but the majority (n = 57) opted to attend the two *Hauptschulen* closest to their homes.

In the Austrian school system, students are separated after grade 4 into two main tracks according to their achievement level: *Hauptschulen,* or low-track schools and high-track *Gymnasien*. A third school type, *Neue Mittelschule*, is currently being established as a substitute for the *Hauptschulen*. This school type is a kind of comprehensive school that applies many innovative forms of instructional practices (e.g. inner differentiation rather than ability grouping; team teaching). In rural areas, the majority of the students move to *Hauptschulen* or *Neue Mittelschulen* after primary school as the high-track schools (*Gymnasien*) are mainly located in cities.

52.4% (n = 33) of the participating students were female and the majority were born in Austria (95.2%; n = 60). Students were between 9 and 10 years old in grade 4.

4.2 Measures and Procedure

At all four measurement points, the students completed questionnaires during regular school hours. All of the students from a school, who were participating in the study, were gathered in a separate classroom and the data collection was conducted by the second author. Thus, the data collection setting featured a high degree of standardization and the students had the opportunity to directly and immediately ask any questions that occurred to them. Teachers were not present during data collection in order to enhance students' trust in the confidentiality of the data and to minimize the potential risk of socially desirable response behaviour. Only the six students who did not move to the two nearby *Hauptschulen* after the transition filled in their questionnaires at home at t3 and t4 and returned them by mail.

As the context in secondary school differs to that in primary school, some of the scales had to be adapted after the transition; as a result, means and standard deviations are not directly comparable across the time points t1/t2 and t3/t4. The calculation of longitudinal analysis across school types was thus not possible. In our

analysis, we will only refer to t1, t3 and t4, as some of the variables used for the research question introduced in the present article were not integrated into the t2 questionnaire. Table 1 highlights the constructs that were measured at the different time points and consequently used for data analysis.

Table 1 Scales used in the present study

Scale	t1	t2	t3	t4	Cronbach's Alpha
School enjoyment	x		x	x	.90/.76/.75
Autonomy support	x		x	x	.84/.80/.76
Teacher-student relationship	x				.86
Satisfaction with teacher-student relationship			x	x	(no alpha was calculated due to a single-item measure)
Social problems with classmates	x		x	x	.67/.63/.63
Academic self-concept	x	x	x	x	.71/.74/.64
Social self-concept		x			.63
Positive emotions in connection to the transition		x			.68

Note. t1 and t2 = primary school; t3 and t4 = secondary school

School enjoyment (adapted from Rauer & Schuck, 2003)
This measurement consisted of six items ranked by students in grade 4 (e.g. "Attending school is fun."; "I am happy when I am at school.") and four items ranked in grade 5 after the transition to secondary school (e.g. "I enjoy going to secondary school."), on a scale ranging from 1 = *not true at all* to 4 = *very true*.

Autonomy support (self-developed scale, based on the results of Van Ophuysen, 2009)
Nine items were used to measure the support of autonomy in the classroom environment which would allow students to contribute to decision-making in the classroom (e.g. "How often are you and your classmates allowed to decide about the seating arrangement in the classroom?").

Teacher-student relationship and satisfaction with teachers (adapted from Rauer & Schuck, 2003)
In primary school, students have one class teacher who teaches most of the subject areas. The students' relationship with their teacher was assessed by six items (e.g. "My teacher listens to me if I want to tell him/her something.") on a scale ranging from 1 = *not true at all* to 4 = *very true*. In secondary school, students are taught by many different teachers and the relationships they build with them are assumed to differ across teachers of different subjects. Thus, only overall satisfaction with

teachers as a general indicator of the relationship built with teachers was assessed. Students were asked to rank their relationship with their teachers using the Austrian grading system: 1 indicated the best mark (= very satisfied with the teachers) and 5 the worst mark (= not satisfied at all).

Social problems with classmates (Hascher, 2004)
The relationships that students form amongst themselves were assessed by the scale "social problems in the classroom": The frequency of problems with classmates reported by students was taken as a measure of social integration (3 items, e.g. "How often have you experienced problems with your classmates during the last few weeks?" on a scale of 1 = *never* to 4 = *often*).

Academic self-concept (Hascher, 2004)
Three items were used to assess students' academic self-concept (e.g. "I don't have problems solving difficult learning tasks"; 1 = *not true at all*, 4 = *very true*).

Social self-concept (adapted from Kunter et al., 2002)
Social self-concept was measured at t2 by three items (e.g. "It is easy for me to make new friends"; 1 = *not true at all*; 4 = *very true*).

Positive emotions evoked facing the transition (a newly developed scale)
Before the transition took place (t2), students were asked to report on their emotional experiences triggered by the upcoming transition. Using six items, two of which addressed the students' general mood (positive/negative) and four of which addressed particular emotions, these emotional experiences were operationalized (1 = *not true at all*; 4 = *very true*).

5 Results

In accordance with the research questions, the section on results is divided into two main sub-sections.

Firstly, after some descriptive information on the school enjoyment of students and the inter-correlation of the variables, a multiple regression analysis predicting students' school enjoyment will be estimated at three time points (t1/t3/t4). Descriptive statistics illustrating the inter-correlations between the variables in the model will also be reported.

Secondly, we will focus on the emotions triggered by the upcoming transition (t2). A regression model of the emotions predicted by students' social and academic self-concepts is tested.

5.1 Predictors of students' school enjoyment

Inter-correlations (see Table 2) show that all independent variables correlate on a significant level with students' school enjoyment in grade 4 but that the impact of these variables decreases in grade 5. At all measurement points, the relationship built with teachers is the variable that correlates most with school enjoyment. Furthermore, the means reveal that school enjoyment is rather high when students first enter secondary school (t3) but decreases after a few months in the new schools (t4). In addition, student satisfaction with teachers decreases during this time period, as does the autonomy experienced in the classroom. Academic self-concept and relationships among students remain relatively stable in grade 5 although some higher frequencies of social problems are revealed at t3 in comparison to t4.

Table 2 Means, standard deviations and inter-correlations of school enjoyment and its predictor variables

				Inter-correlations				
	t	**M**	**SD**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
(1) School enjoyment	*t1*	3.06	0.85	–	.41***	.62***	−.36**	.29**
	t3	3.34	0.55		.10	−.35**	−.33**	.17
	t4	3.14	0.78		.15	−.29**	−.27*	.14
(2) Autonomy support	*t1*	2.17	0.67		–	.27*	−.22*	.12
	t3	2.31	0.61			−.28*	−.20+	.40**
	t4	2.13	0.60			.03	−.13	.22*
(3) Teacher-student relationship	t1	3.53	0.59			–	−.51***	.45***
	t3	1.41	0.59				.48***	−.37**
Satisfaction with teachers	*t4*	2.03	0.95				.18+	−.18+
(4) Social problems with classmates	*t1*	1.83	0.73				–	−.35**
	t3	1.77	0.71					−.42***
	t4	1.51	0.58					−.39***
(5) Academic self-concept	*t1*	3.44	0.60					–
	t3	3.36	0.64					
	t4	3.45	0.35					

Note. All constructs were measured with several indicators using 4-point scales, except the variable "satisfaction with teachers", which was measured with a single item using a scale based on the Austrian school grading system (1 = *very satisfied*, 5 = *not satisfied at all*). *** < .001; ** < .01; * < 0.5; + < .10

Multiple regression analyses at t1 (grade 4), t3 and t4 (grade 5), taking into account indicators of basic need fulfillment, show that the relationship with teachers was the strongest predictor of students' school enjoyment at all three measurement points with the highest impact in primary school. In general, when students experienced a good relationship with their classroom teacher in primary school and when they were satisfied with their teachers in secondary school, they reported higher

school enjoyment. Additionally, support of autonomy proved to be an additional significant predictor in grade 4 but not after the transition to secondary education. In secondary school, students also reported higher school enjoyment when their relationship with classmates was good (= fewer social problems). The relationship with classmates did not explain significant additional variance in primary school as a predictor of school enjoyment although it correlated at a moderate to high level with the relationship with teachers, thus indicating joint variance. Students' competence beliefs or gender did not function as significant predictors (see Table 3).

Table 3 Multiple regression analysis predicting students' school enjoyment in grades 4 and 5

School enjoyment	Primary school	Secondary school	
	Grade 4 (t1)	Grade 5 (t3)	Grade 5 (t4)
Autonomy support (*need for autonomy*)	**.23***	−.02	.12
Teacher-student relationship (gr. 4) Satisfaction with teachers (gr. 5) (*need for relatedness*)	**.51*****	**−.24+**	**−.25+**
Social problems with classmates (*need for relatedness*)	−.05	**−.24+**	**−.22+**
Academic self-concept (*need for competence*)	.00	−.02	−.04
Gender	−.12	−.19	−.05
R2	.46***	.19*	.15+

Note. Standardized beta coefficients are displayed; *** < .001; ** < .01; * < 0.5; + < .10; gender: 0 = girl; 1 = boy

For grade 4, single independent t-tests testing for gender differences showed that boys experienced lower school enjoyment. However, when we controlled for the other variables in the model, this difference disappeared due to the impact of the relationship with the classroom teacher. Boys reported a less positive relationship with their classroom teacher in primary school which was associated with their school enjoyment. The higher negative attitude towards the teacher and towards scholastic learning among boys was also reflected in the question concerning feelings about interactions with teachers (see Figure 1). In secondary school, no further gender differences could be found in school enjoyment or in the predictor variables.

5.2 Transition emotions and their associations with academic and social self-concepts

Students were asked about distinct emotions evoked by the upcoming transition including emotions such as anticipatory joy, excitement, worry or sadness. In general, an examination of the frequency of the distinct experienced emotions on a descriptive level reveals that the majority of students seem to look forward to the transition to

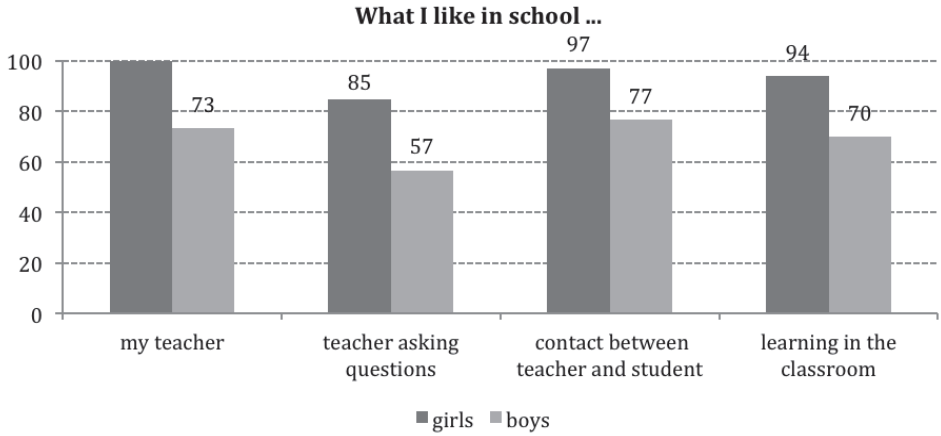


Figure 1 What boys and girls like in school in grade 4, indicating gender differences in the relationship with teachers and the enjoyment of learning (% of agreement)

secondary school, as indicated by the reported experience of emotions being more positive than negative. For example, 41% of the students completely agreed with the statement that they were looking forward to the transition (= anticipatory joy) and another 35% of students partially agreed. In comparison, 9.5% of students completely agreed and another 20.6.% agreed in part that they felt concern with regard to the transition.

With regard to the second hypothesis, we tested the proposed predictive function of social and academic self-concepts on the emotions evoked by the upcoming transition. Inter-correlations reveal that positive emotions are positively associated with social and academic self-concepts at a moderate level (see Table 4).

Table 4 Means, standard deviations and inter-correlations of positive emotions and students' social and academic self-concepts

	M	SD	Positive emotions	Social self-concept	Scholastic self-concept
Positive emotions (t2)	2.97	0.69	–	.26*	.40***
Social self-concept	3.17	0.64		–	.50***
Academic self-concept	3.42	0.49			–

Note. *** < .001; ** < .01; * < 0.5; + < .10

Consecutive multiple regression analyses taking possible gender differences into account show that positive emotional experiences during transitions can be predicted by students' academic self-concept: students with higher academic self-concept experienced more positive emotions. The social self-concept explains no further significant variance in the model but exhibits joint variance with the academic self-concept, as the correlations have already shown. Gender does not contribute to a significant increase in the explanation of variance (see Table 5).

Table 5 Multiple regression analysis predicting the student emotions evoked by the upcoming transition

Positive emotional experiences	Predictors
Social self-concept	.07
Academic self-concept	**.36****
Gender	.01
R2	.16**

Note. Standardized beta coefficients are displayed;
** < .01; gender: 0 = girl; 1 = boy

As academic self-concept proved to be the strongest predictor of the emotions experienced, the scale "academic self-concept" was split by median bisection into two groups, resulting in 20 students with lower academic self-concept (*mean* 1.00–3.00) and 43 students with higher academic self-concept (*mean* 3.33–4.00). The difference in the number of students in the two groups can be traced back to the high proportion of students exhibiting a mean of 3.33 in academic self-concept. These students were allocated to the high academic self-concept group, as this mean was near the maximum that could be achieved by the scale used.

The picture of positive and negative emotional experiences notably changed with the division of the students into the following two groups: students with lower academic self-concept reported worry, anxiety and nervousness in connection with the transition to secondary school more frequently than students with higher academic self-concept. Furthermore, while 70% of the students with higher academic self-concept had an overall "good feeling" about the transition, only 30% of the students with lower academic self-concept experienced these positive anticipatory feelings (see Figure 2).

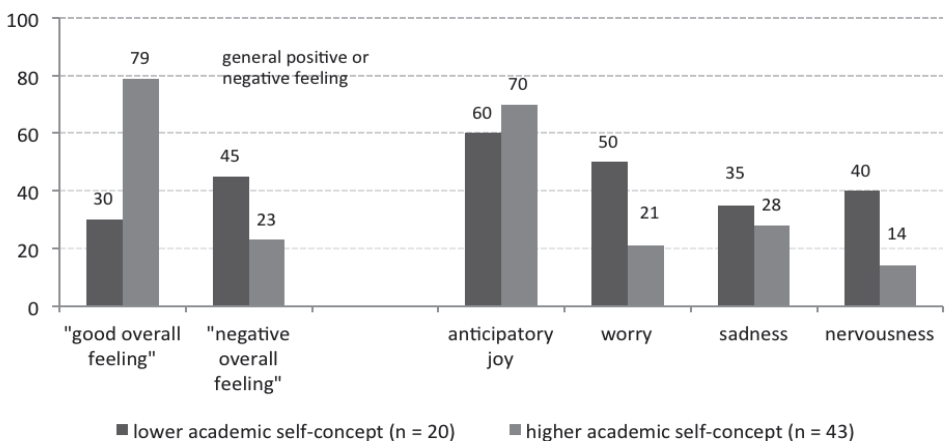


Figure 2 Emotions experienced by students with lower and higher academic self-concept with regard to the upcoming transition (combining answers of "completely agree" and "somewhat agree")

6 Discussion

In this paper, we sought to investigate student emotions at the transition from primary to secondary education, exploring whether basic need fulfillment impacted students' school enjoyment, and whether academic and social self-concepts influenced the emotions triggered by the upcoming transition.

6.1 Students' school enjoyment before and after the transition

In terms of predicting school enjoyment, the results highlight the relevance of the fulfillment of the need for relatedness (as represented by satisfactory relationships with teacher(s) and classmates) for students' school enjoyment before and after the transition. An autonomy-supporting classroom environment proved to be of lesser significance, only affecting students in grade 4. Students' academic self-concept (as an indicator of need fulfillment in terms of competence) did not contribute to the prediction of students' school enjoyment. Thus, our hypothesis could only be partly confirmed, as not all three basic needs contributed equally to predicting students' school enjoyment. Although this finding somewhat contradicts SDT assumptions, it is in line with the results of Gillison et al. (2008) which also indicate that the change in "quality of life" during the primary-secondary transition can only be predicted by the fulfillment of the needs for relatedness and autonomy but not by the fulfillment of the need for competence.

However, on a correlational basis, disregarding other predictors, academic self-concept was only weakly correlated with students' school enjoyment but it proved to be a significant predictor of positive emotions in students (as calculated by an additional regression model). These contradictory results concerning the relevance of academic self-concept for school enjoyment might be explained methodologically, at least partly: It is likely that the lack of any additional and independent significant impact of academic self-concept in the calculated regression models on school enjoyment could be traced back to the limited variance in students' academic self-concept (i.e. there was very high self-concept across all students), accompanied by the strong inter-correlation with the main predictor variable "teacher-student relationship". Students who reported better relationships with their teachers also exhibited higher academic self-concepts. Thus, it would be inadvisable to draw any hasty conclusions that competence beliefs or the fulfillment of the need for competence are not generally relevant for students' school enjoyment because this would contradict prior empirical findings entirely (e.g. Hagenauer & Hascher, 2010) as well as the basic theoretical assumptions of SDT and appraisal approaches to emotions (Lazarus, 2001) including the control-value theory of achievement emotions (Pekrun, 2006). Instead, in future studies it seems to be wiser to use more sensitive and elaborate scales to assess students' academic self-concept in primary education.

This high level of student self-concept at the end of primary school is in accordance with the previous results of Van Ophuysen (2009). Van Ophuysen found very

high levels of academic self-concept among German primary students which she explains from a developmental psychological perspective. Students in some parts of Germany (and in Austria) move to secondary school very early (after grade 4); internationally, this transition normally occurs one or two years later. This early transition corresponds to a less elaborate and less differentiated identity including aspects of self-concept. Another explanation based on achievement level is suggested by our data. In this study, about 85% of students received grades of 1 (*Very Good*) or 2 (*Good*) in the main school subjects of German (reading and writing) and Mathematics in grade 4 (The Austrian grading system ranges from 1 *Very Good* to 5 *Insufficient*). In primary school, grades are typically very high in Austria which may contribute to the high levels of ability self-concept in most students. Moreover, methodological aspects must be taken into account. Young children are more prone to give socially desirable answers, as has been empirically assessed by means of "Lie scores" (Dadds et al., 1998). Consequently, strong agreement with items addressing academic self-concept might be partly due to the social desirability response bias, as high academic self-concept represents a desirable trait and is therefore likely to be overestimated. Similar effects might have occurred with other positive scales such as positive relationships with friends and teachers, however, this bias cannot be controlled for, as "Lie scales" detecting social desirability were not used in the present study.

As far as the need for relatedness is concerned, prior studies have highlighted the importance of positive relationships with teachers and classmates for positive educational outcomes in general (e.g. Roorda et al., 2011), and socio-emotional adjustment during transition periods in particular (e.g. Tobbell & Donnell, 2013; Demetriou et al., 2000). Several studies (e.g. Bru, Munthe, & Thuen, 2010; Martinez et al., 2011) have also indicated that the relationship with teachers – in our study, the most crucial influencing factor for students' school enjoyment – declines over the years of schooling, as comprehensively discussed in stage-environment fit theoretical approaches (Eccles et al., 1993). Bru et al. (2010) suggest that this decline can be considered as merely a time effect rather than an effect triggered by the transition; this partially contradicts Stage-Environment Fit Theory which explains the decline by the change in school context. Bru et al. (2010) argue that the older the students are, the worse they rate their relationship with teachers, beginning in primary school and steadily continuing throughout secondary education. As our data do not allow a comparison between primary and secondary school ratings of the teacher-student relationship, we cannot contribute to the clarification of this issue, however, in line with Bru et al. (2010) and Martinez et al. (2011), we also found a decrease in teacher-student relationship ratings in the first year of secondary education.

Furthermore, a few studies have addressed the importance of peer acceptance and friendship for positive emotional experience and adjustment during the primary-secondary transition (e.g. Demetriou et al., 2000; Pratt & George, 2005). At the time of transition, the desire to belong to a peer group can be assumed for all students, especially as they experience a shift in peer group exposure. The typical

secondary school peer group is larger than the elementary school peer group, it is also more autonomous and less supervised by adults (Wargo Aikins et al., 2005), and research has shown that supportive friends are advantageous during the transition. It can be assumed that friendship quality and social integration serve as important buffers against adjustment problems and – as our data indicate – also as important preconditions of school enjoyment.

The data in the present study identify a relatively high level of school enjoyment directly after the transition to secondary school. This positive perception declines after a few months in the new school, which is in line with previous findings on primary-secondary school transition. Lohaus et al. (2004) attribute the positive changes after transition to the preceding summer holidays, referring to this as the "recovery effect". The authors found a decrease in stress levels among German students as they entered secondary school, while Gillison et al. (2008) detected an increase in "quality of life" and need-satisfaction during the first 10 weeks of secondary school among British pupils. A different explanation for the positive rating of school enjoyment after the transition is provided by Reitbauer and Hascher (2008) who coin the term *transition positivism* (p. 824). Transition positivism describes the positive expectations and feelings triggered by the upcoming transition that are likely to be maintained through the first weeks in the new school setting. After a few weeks, it is expected that more realistic (and probably less positive) judgments of the new school environment will develop which may impact the decline in school enjoyment.

6.2 The emotional valence of the upcoming transition

This transition positivism is reflected by the chiefly positive emotions evoked by the upcoming transition in the students in our study. Although majority of the students reported joy in connection with the upcoming transition, some of them (in particular students with lower academic self-concept) also mentioned worry and concern. Similar results were obtained by a study conducted by Leffelsend and Harazd (2004): German primary students reported a high amount of anticipatory joy in connection with the transition to secondary school and less worry/concern. However, the authors argue (in accordance with the present findings) that the academic ability self-concept plays a relevant moderating role, insofar as critical life-events are more likely to be experienced positively when individual resources are high. If students do not believe in their academic ability, the likelihood of experiencing the transition as a threat is enhanced and thus the likelihood of positive emotions is reduced (see also West, Sweeting, & Young, 2010).

Not only the belief in one's academic ability, but also the belief in one's social ability was expected to influence student emotions. However, although Wargo Aikins, Bierman and Parker (2005) stress that children's social competence and their belief that they possess the ability to make new friends are relevant preconditions for successful school adjustment and avoidance of emotional distress, our data could not support the additional influence of social self-concept on the positive emotional

experiences evoked by the transition. Again, this might be due to the joint variance exhibited by academic and social self-concepts: The more students believed in their academic capabilities, the more they also believed in their ability to make new friends.

In general, the emotions evoked by the transition must be regarded as independent dimensions, as students frequently reported "mixed emotions" (see also Leffelsend & Hazard, 2004). For example, the upcoming transition may trigger joy *and* concern in the same student, however, these emotional experiences are likely to vary in terms of intensity and frequency (Hascher, 2004). Consequently, in future studies it might be useful not only to investigate the variety of emotions, but also to explore their intensity and frequency in order to be able to make inferences about the overall predominantly positive or negative emotional valence experienced during the transition.

6.3 Limitations

Certain limitations in this study must be addressed.

Firstly, although the design was longitudinal in nature, not all measured constructs could be compared across time points due to the different operationalizations used in the primary and secondary school measurements. As a result, longitudinal analyses were impossible to conduct, which limited the potential of the data.

Secondly, the sample in this study was relatively small (N = 63) and thus not highly representative which limits the generalization of the findings. Furthermore, the sample only included students from a rural area who are expected to have somewhat different transition experiences than students from cities. For example, the majority of the students in the present study moved to a local *Neue Mittelschule*, and thus most of them would have some friends transiting with them to the new school. Empirical evidence shows that moving to a new school together with friends reduces the stressful character of the transition (e.g. Green, 1997). In contrast to the rural experience, students in (larger) cities often have a broader choice in selection of schools near their home (different school types, different academic emphases, etc.), which can mean fewer opportunities to transit with close friends as the students spread out across various schools. In addition, the students in the sample were nested within classrooms. Due to the small sample size, the hierarchical nature of the data could not be controlled for; this might have led to an underestimation of the standard error.

Thirdly, the reliability of some of the constructs was rather low (between .60 and .70). This could be partly due to the small sample size and the limited amount of items on the scales, a factor that contributes to the overall Cronbach's alpha. The items themselves showed satisfactory item inter-correlations and discriminatory power. Thus, more elaborate scales (for example to measure the social self-concept of students) should be developed, keeping in mind that the validity of primary students' answers could be jeopardized by extensive assessment instruments.

The fourth limitation pertains to the measurement of two predictor variables. Autonomy support was measured by the indicator "providing opportunities to take part in decision-making", which is an important aspect of "autonomy support" but does not completely cover the construct. As Lewalter (2005) argues, autonomy support consists of not only the opportunity to contribute to decision-making, but also the student's experience of the learning environment as meaningful and relevant. This aspect of relevancy of the learning environment was not covered by the construct used in this study which might have contributed to the limited impact (grade 4) or lack of impact (grade 5) of the support of autonomy on students' enjoyment (for a similar result addressing students' learning enjoyment in grades 6 and 7, see Hagenauer & Hascher, 2010). In addition, "satisfaction with teachers" in secondary education was assessed by one item only and might not have completely captured the relationships that students have built with their teachers. Because students are taught by many teachers in secondary school, it is unclear which teacher they referred to when they rated their overall satisfaction. Recency effects might have occurred, e.g. in their judgments, students might have predominantly drawn on the relationship quality of the last teacher they were taught by in the previous school day. In evaluating the teacher-student relationship in secondary education, future studies could attempt to focus on the homeroom teacher (who has the primary responsibility for the students) and a more elaborate measure of this relationship should be implemented (e.g. Ang, 2005).

6.4 Pedagogical implications and future perspectives

Despite these limitations, the present research contributes to clarifying school enjoyment and the positive emotions students experience during primary-secondary education based on a self-determination perspective. In conclusion, the results suggest that in order to facilitate students' school enjoyment and promote positive emotions it may be advisable to place greater emphasis on the establishment of positive relationships among students and between teachers and students in all years of schooling (e.g. Bernstein-Yamashiro & Noam, 2013), especially during the phase of transition between primary and secondary education as it is strongly inter-correlated with school enjoyment. Even though the present study cannot explain the causality between the constructs, positive social relationships at school seem to be of crucial relevance for students' school enjoyment. Thus, competence in supporting positive relationships in the classroom can be regarded as a crucial element of teacher professionalism and should be explicitly addressed in teacher education.

Furthermore, another implication emerges from the need for competence. School environments are challenged by the need to provide learning settings that will foster the development of students' positive control beliefs. These pedagogical implications are equally valid for boys and girls as – in contradiction to our initial expectations – boys and girls did not differ in terms of the emotions induced by the transition. Finally, with regard to the relevance of the need for autonomy the results

remain unclear for grade 5, although an impact could be detected in grade 4. Further studies focusing on students' need for autonomy are required, preferably relying on a more elaborate measurement of autonomy support. Overall, future studies accounting for the direct, indirect and reciprocal effects of basic need fulfillment as well as student cognitions and emotions are needed in order to obtain more profound insight into the complex interplay of these inextricably linked factors.

References

Ang, R. P. (2005). Development and validation of the teacher-student relationship inventory using exploratory and confirmatory factor analysis. *The Journal of Experimental Education, 74*(1), 55–73.

Ahmed, W., van der Werf, G., Minnaert, A., & Kyper, H. (2010). Students' daily emotions in the classroom: intra-individual variability and appraisal correlates. *British Journal of Educational Psychology, 80*(4), 583–597.

Astleitner, H. (2000). Designing emotionally sound instruction: The FEASP-approach. *Instructional Science, 28*(3), 169–198.

Bernstein-Yamashiro, B., & Noam, G. G. (2013). Teacher student relationships: towards personalized education (special issue). *New Directions for Youth Development*, 137.

Bru, E., Stornes, T., Munthe, E., & Thuen, E. (2010). Students' perceptions of teacher support across the transition from primary to secondary school. *Scandinavian Journal of Educational Research, 54*(6), 519–533.

Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology, 27*(2), 270–295.

Christie, H., Tett, L., Cree, V. E., Hounsell, J., & McCune, V. (2008). "A real rollercoaster of confidence and emotions": Learning to be a university student. *Studies in Higher Education, 33*(5), 567–581.

Clore, G. L., & Ortony, A. (2008). Appraisal theories. How cognition shapes affect into emotion. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of emotions* (pp. 628–642). New York & London: Guilford Press.

Dadds, M. R., Perrin, S., & Yule, W. (1998). Social desirability and self-reported anxiety in children: an analysis of the RCMAS Lie Scale. *Journal of Abnormal Child Psychology, 26*(4), 311–317.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour.* New York: Plenum Press.

Deci, E. L., & Ryan, R. M. (2002). (Eds.). *Handbook of self–determination research*. Rochester, N.Y.: University of Rochester Press.

Demetriou, H., Goalen, P., & Rudduck, J. (2000). Academic performance, transfer, transition and friendship: listening to the student voice. *International Journal of Educational Research, 33*(4), 425–441.

Eccles, J. S., & Midgley, C. (1989). Stage-Environment-Fit: Developmentally appropriate classrooms for young adolescents. In C. Ames, & R. Ames (Eds.), *Research on motivation and education. Goals and cognitions* (pp. 139–186). San Diego: Academic Press.

Eccles, J. S., Midgley, C., Wigfield, A., Miller-Buchanan, C., Reuman, D., Flanagan, C., & MacIver, D. (1993). Development during adolescence. The impact of stage-environment fit on young adolescents' experience in schools and in families. *American Psychologist, 48*(2), 90–101.

Efklides, A., & Volet, S. (2005). Emotional experiences during learning. Multiple, situated and dynamic. *Learning and Instruction, 15*(5), 377–380.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. Hill Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572–595). Oxford: University Press.

Frenzel, A. C., Pekrun, R., & Götz, T. (2007). Girls and mathematics – A "hopeless" issue? A control-value approach to gender differences in emotions towards mathematics. *European Journal of Psychology of Education, 26*(4), 497–514.

Gendolla, G. H. E. (2003). Mood effects and effort mobilisation in learning: Theory and experimental evidence. In P. Mayring, & Ch. von Rhoeneck (Eds.), *Learning emotions. The influence of affective factors on classroom learning* (pp. 29–46). Frankfurt: Peter Lang.

Gillison, F., Standage, M., & Skevington, S. (2008). Changes in quality of life and psychological need satisfaction following the transition to secondary school. *British Journal of Educational Psychology, 78*(1), 149–162.

Gläser-Zikuda, M., Fuß, S., Laukenmann, M., Metz, K., & Randler, Ch. (2005). Promoting students' emotions and achievement – Instructional design and evaluation of the ECOLE-approach. *Learning and Instruction, 15*(5), 481–495.

Gläser-Zikuda, M., & Fuß, S. (2008). Impact of teacher competencies on students' emotion – a multi-method approach. *International Journal of Educational Research, 47*(2), 136–147.

Götz, T., Cronjäger, H., Frenzel, A. C., Lüdtke, O., & Hall, N. C. (2010). Academic self-concept and emotion relations: Domain specificity and age effects. *Contemporary Educational Psychology, 35*(1), 44–58.

Green, P. (1997). Moving from one world of the known to the unknown: the transition from primary to secondary school. *Critical Studies in Education, 38*(2), 67–83.

Grieder, S. K. (2006). *Emotionen von Berufsschülern bei selbstreguliertem Lernen – Eine Interventionsstudie* (Dissertation Arbeit). Universität Basel. Available at: http://pages.unibas.ch/diss/2006/DabsB_7618.pdf.

Hänze, M. (2003). Productive functions of emotions in classroom learning. In P. Mayring, & Ch. von Rhöneck (Eds.), *Learning emotions. The influence of affective factors on classroom learning* (pp. 185–194). Frankfurt: Peter Lang.

Hagenauer, G., & Hascher, T. (2010). Learning enjoyment in early adolescence. *Educational Research and Evaluation, 16*(6), 495–516.

Hagenauer, G., & Hascher, T. (2011). Lernfreude, engagierte Mitarbeit im Unterricht und erfolgreiches Leisten bei instrumentellen Formen der Lernmotivation – ein Widerspruch in sich? *Zeitschrift für Bildungsforschung, 1*(2), 97–113.

Hargreaves, A. (2000). Mixed emotions: teachers' perceptions of their interactions with students. *Teaching and Teacher Education, 16*(8), 811–826.

Hascher, T. (2004). *Wohlbefinden in der Schule*. Münster: Waxmann.

Hascher, T. (2010). Learning and emotion: perspectives for theory and research. *European Educational Research Journal, 9*(1), 13–28.

Helmke, A. (1993). Die Entwicklung der Lernfreude vom Kindergarten bis zur 5. Klassenstufe. *Zeitschrift für Pädagogische Psychologie, 7*(2/3), 77–86.

Kunter, M., Schümer, G., Artelt, C., Baumert, J., Klieme, E., Neubrand, M., Prenzel, M., Schiefele, U., Schneider, W., Stanat, P., Tillmann, K.-J., & Weiß, M. (2002). PISA 2000: Dokumentation der Erhebungsinstrumente. Berlin: Max-Planck Institut für Bildungsforschung.

Lazarus, R. S. (2001). *Stress and emotion: a new synthesis*. London: Free Assoc. Books.

Leffelsend, S., & Hazard, B. (2004). Erwartungen an die weiterführende Schule. Empirische Untersuchung zu den Übergangserwartungen von Grundschülern. *Empirische Pädagogik, 18*(2), 252–272.

Lewalter, D. (2005). Der Einfluss emotionaler Erlebensqualitäten auf die Entwicklung der Lernmotivation in universitären Lehrveranstaltungen. *Zeitschrift für Pädagogik, 51*(5), 642–655.

Lohaus, A., Elven C. E., Ball, J., & Klein-Hessling, J. (2004). School transition from elementary to secondary school: changes in psychological adjustment. *Educational Psychology, 24*(2), 161–173.

Lucey, H., & Reay, D. (2000). Identities in transition: anxiety and excitement in the move to secondary school. *Oxford Review of Education, 26*(2), 191–205.

Martínez, R. S., Aricak, O. T., Graves, M. N., Peters-Myszak, J., & Nellis, L. (2011). Changes in perceived social support and socioemotional adjustment across the elementary to junior high school transition. *Journal of Youth and Adolescence, 40*(5), 519–530.

Patrick, B. C., Skinner, E. A., & Connell, J. P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology, 65*(4), 781–791.

Pekrun, R. (2006). The control-value theory of achievement emotions: assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*(4), 315–341.

Pekrun, R., Götz, T., Titz, W., & Perry, R. (2002a). Academic emotions in students' self-regulated learning and achievement: a program of qualitative and quantitative research. *Educational Psychologist, 37*(2), 91–105.

Pekrun, R., Götz, T., Titz, W., & Perry, R. (2002b). Positive emotions in education. In E. Frydenberg (Ed.), *Beyond coping: Meeting goals, visions and challenges* (pp. 149–174). Oxford: Elsevier.

Pratt, S., & George, R. (2005). Transferring friendship: girls' and boys' friendships in the transition from primary to secondary school. *Children & Society, 19*(1), 16–26.

Rauer, W., & Schuck, K. D. (2003). *FEESS 3–4. Fragebogen zur Erfassung emotionaler und sozialer Schulerfahrungen von Grundschulkindern dritter und vierter Klassen.* Göttingen: Beltz.

Reitbauer, E., & Hascher, T. (2009). „Die neue Schule ist schon gut" – Rekonstruktion des Übergangs von der Volksschule in die Sekundarstufe I aus der Sicht von SchülerInnen". *Erziehung und Unterricht*, *159*(7/8), 815–826.

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher-student relationships on students' school engagement and achievement. A meta analytic approach. *Review of Educational Research, 81*(4), 493–529.

Rudolph, K. D., Lambert, S. E., Clark, A. G., & Kurlakowsky, K. D. (2001). Negotiating the transition to middle school: the role of self-regulatory processes. *Child Development, 72*(3), 929–946.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*(5), 749–761.

Schutz, P. A., & Pekrun, R. (2007). (Eds.). *Emotion in education.* Amsterdam: Elsevier.

Self-determination theory (n.d.). Available at: http://www.selfdeterminationtheory.org/.

Sirsch, U. (2003). The impending transition from primary to secondary school: challenge or threat? *International Journal of Behavioral Development, 27*(5), 385–395.

Sutton, R. E., & Wheatley, K. F. (2003). Teachers' emotions and teaching: a review of the literature and directions for future research. *Educational Psychology Review, 15*(4), 327–358.

Van Ophuysen, S. (2008). Zur Veränderung der Schulfreude von Klasse 4 bis 7. *Zeitschrift für Pädagogische Psychologie, 22*(3–4), 293–306.

Tobbel, J., & O'Donnell, V. L. (2013). The formation of interpersonal and learning relationships in the transition from primary to secondary school: students, teachers and school context. *International Journal of Educational Research, 59*(3), 11–23.

Van Ophuysen, S. (2009). Moving to secondary school: on the role of affective expectations in a tracking school system. *European Educational Research Journal, 8*(3), 434–446.

Von Rhöneck, Ch., & Melenk, H. (2003). The influence of emotions on classroom learning and consequences for teaching. In P. Mayring, & Ch. von Rhöneck (Eds.), *Learning emotions. The influence of affective factors on classroom learning* (pp. 195–201). Frankfurt: Peter Lang.

Villavicencio, F. T., & Bernardo, A. B. (2012). Positive academic emotions moderate the relationship between self-regulation and academic achievement. *British Journal of Educational Psychology, 83*(2), 329–340.

Wargo Aikins, J., Bierman, K. L., & Parker, J. G. (2005). Navigating the transition to junior high school: the influence of pre-transition friendship and self-system characteristics. *Social Development, 14*(1), 42–60.

Weissbach, B. (1985). Ist der Sekundarstufenschock vermeidbar? *Die Deutsche Schule*, *77*(4), 293–303.

West, P., Sweeting, H., & Young, R. (2010). Transition matters: pupils' experiences of the primary-secondary school transition in the West of Scotland and consequences for well-being and attainment. *Research Papers in Education, 25*(1), 21–50.

Wigfield, A., & Eccles, J. S. (1989). Test anxiety in elementary and secondary school students. *Educational Psychologist, 24*(2), 159–183.

Zeedyk, S., Gallacher, J., Henderson, M., Hope, G., Husband, B., & Lindsay, K. (2003). Negotiating the transition from primary to secondary school: perceptions of pupils, parents and teachers. *School Psychology International, 24*(1), 67–79.

Zeidner M. (1998). *Test anxiety: The state of the art*. New York, NY: Plenum.

Gerda Hagenauer
Department of Education
University of Salzburg
Erzabt-Klotz Straße 1
5020 Salzburg
Austria
gerda.hagenauer@sbg.ac.at

Eva Reitbauer
Department of Education
University of Salzburg
Erzabt-Klotz Straße 1
5020 Salzburg
Austria
eva.reitbauer@sbg.ac.at

Tina Hascher
Department of Education
University of Bern
Fabrikstrasse 8
3012 Bern
Switzerland
tina.hascher@edu.unibe.ch

Achievement Emotions of Boys and Girls in Physics Instruction: Does a Portfolio Make a Difference?

Susi Limprecht
Friedrich-Schiller-University in Jena, Institute for Educational Science

Tomáš Janko
Masaryk University in Brno, Faculty of Education

Michaela Gläser-Zikuda
Friedrich-Schiller-University in Jena, Institute for Educational Science

Abstract: It is well documented in educational research that instruction in science – including Physics – is connected with rather negative emotions of students. It becomes especially apparent when considering the gender differences. Therefore, an important question is whether and how achievement emotions of boys and girls in Physics may be positively influenced. The aim of this study is to analyze firstly the differences regarding positive and negative emotions of boys and girls in Physics instruction. Secondly, a quasi-experimental intervention study has been carried out to test whether and how girls' and boys' emotions may be influenced by the application of a portfolio approach in Physics instruction. Covariance and multivariate analyses were carried out to test the hypothesized effects of the intervention. The Physics instruction focused on the topic of electricity. The research sample consisted of N = 161 students from eight 8th grade classrooms of three grammar schools in Germany which were divided into treatment and control groups randomly. Our study confirmed that boys generally experience more positive achievement emotions in Physics than girls, whereas girls showed higher level of anxiety and boredom than boys. The hypothesized effects of the portfolio intervention were only partly confirmed. The differences between boys and girls regarding their well-being in Physics instruction before the intervention have been slightly reduced by the application of the portfolio. Girls' well-being in the treatment group increased after the application of a portfolio compared to girls in the control group. As expected, self-concept and interest have been revealed as significant covariates influencing students' achievement emotions. Limitations of the study as well as implications for instruction are discussed. It is suggested that a portfolio represents a promising approach for the equalization of gender differences regarding achievement emotions in Physics.

Keywords: achievement emotions, well-being, gender, Physics instruction, portfolio intervention, quasi-experimental study, German Grammar School

1 Achievement emotions of boys and girls in Physics instruction

1.1 Achievement emotions and their influence on learning science in school

For a long time, research only focused on emotions induced by achievement outcomes, fear of failure and pride following performance feedback (Weiner, 1985).

Research in anxiety was dominating (Spielberger, 1966; Zeidner, 1998). 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). The assumption that students' emotions represent a significant factor influencing behavior and learning performance is meanwhile widely confirmed in psychological and educational research (e.g. Götz, 2002; Pekrun, Götz, Frenzel, Barchfeld, & Perry, 2011; Gläser-Zikuda & Järvelä, 2008).

Emotions are basic psychological systems regulating the 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, Schorr, & Johnstone, 2001). Emotions are closely related to cognitive, behavioral, motivational and physiological processes and they are therefore generally important for learning and achievement. They may initiate, terminate or disrupt information processing and result in selective information processing, or they may shape a recall (Pekrun, Götz, Titz, & Perry, 2002). For example, mood research determines that positive mood (as an enduring positive emotional state) promotes students' productive mental processes and creativity (Abele, 1995). Emotions particularly those experienced in an academic and achievement context may be characterized by criteria of valence (positive vs. negative) and activation (activating vs. deactivating). Positive-activating emotions, such as enjoyment, satisfaction and hope, positive-deactivating (relief, relaxation), negative-activating (anxiety, anger, shame/guilt) and negative-deactivating (boredom, hopelessness) are differentiated (Pekrun, 1992, 2006). Achievement emotions have an evaluational 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. Furthermore, emotions are experienced in specific situations (state-component) and they are biographically developed and enduring (trait-component). In contrast to mood, emotions are generally related to a specific event or more precisely caused by an event (e.g. feedback by teacher or parents).

It is assumed that not only instruction, parents' and teachers' value system, autonomy, expectancies and achievement goals, but also achievement feedback and it's consequences have an influence on students' achievement emotions (Pekrun et al., 2002). Pekrun (2000, 2006) suggested a control-value approach of achievement emotions 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). The control-value approach of achievement emotions points out that subjective control of the learning and achievement situation as well as the subjective value of learning process and achievement are crucial for students' emotional experience. For example, achieving joy in learning

presupposes that students experience their ability to master a task (control) and their interest in the task (value). Students experience a variety of instructional situations and they assess these situations depending on previous experiences, the social context, their personal goals, their abilities, their interests and other personality factors (Pekrun et al., 2002).

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). It was shown that positive emotions also facilitate self-regulation in learning (Boekaerts, Pintrich, & Zeidner, 2000; Carver & Scheier, 1990). Students' perceived self-regulation is significantly positively correlated with positive emotions whereas perceived external regulation is correlated with negative emotions (Pekrun et al., 2002). The experience of competence and autonomy in learning has been stressed out to be important for self-regulation and self-determination (Deci & Ryan, 1985). Furthermore, emotions are related to interest. 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 positive emotions, such as joy and it is closely linked to all self-determined activity. A significant factor determining achievement emotions is self-concept. Self-concept has an influence on how students estimate their personal learning skills and performance (Wodzinski, 2007). Self-concept is strongly related to students' interest and contributes to the students' learning effort and engagement in a school subject (Häußler, 2003). Beyond that, it may promote students' learning ambitions (Marsch, Byrne, & Yeung, 1999) and may cause the fact that students see themselves as talented in particular school subjects (Möller & Jerusalem, 1997). Students' self-concept was also related to an increase in achievement (Marsh & Hau, 2003). In contrast, students with lower self-concept tend to be more anxious in school instruction (Helmke, 1989).

Emotions are an important dimension of well-being which is crucial for human life in general. Well-being refers to the individual emotional and cognitive evaluation of the social context (Diener, 2000). Enjoyment and satisfaction as well as the absense of negative emotions and psycho-physiological stress are crucial dimensions of well-being. In the last years some studies were carried out to analyze well-being in school and instruction. Well-being correlates for example with the learning process, motivation and achievement of students (Hascher, 2007, 2012). Teachers' didactic competencies, students' academic achievement and interest, and social interactions have an impact on well-being in school as well (Hascher, 2003). Therefore it is an important issue to analyze students' emotions and well-being.

1.2 Physics instruction, students' emotions and gender

In school context not all topics and subjects are favoured by students. Frenzel, Götz and Pekrun (2009) describe significant differences for students' emotions in Mathematics, German Language, English Language and other subjects. Mathematics and Physics in particular seem to repel many students during adolescence (Kessels & Hannover, 2008). Physics in Germany usually starts in the 8th grade and is seen as a difficult exact science subject which makes it very unpopular (Hoffmann, 2002). Students dislike Physics especially in lower secondary schools (Hoffmann, Häußler, & Lehrke, 1998). Beyond, it was shown that the value of school decreases amongst many students during adolescence (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006).

Attitude towards math and science play an important role when considering learning processes and achievement. Osborne, Simon and Collins (2003, p. 1053) defined attitudes as „the feelings, beliefs and values held about an object that may be the enterprise of science, school science, the impact of science on society or scientists themselves". In an extensive study with students from 7th and 8th grades on the determination of gender differences in relationships of attitudes toward science and achievement (Mattern & Schau, 2002) was shown that there was no significant effect of achievement in science on attitudes among girls. In contrast, there was an effect of achievement in science on attitudes among boys.

In his meta-analysis of 18 different studies, Weinburgh (1995) described that positive attitudes of all students caused higher achievement in the subjects of science. In the subjects of Biology and Physics, the correlations were positive for both boys and girls, but stronger for girls than for boys.

One possible explanation is how a subject is taught in school. For example Physics instruction in Germany may be characterized by quite strong teacher-centering and high density of knowledge presentation. Typical instruction combines a narrow step-by-step procedure with a high density of knowledge transfer characterized as a *questioning-developing* classroom discussion style (Seidel et al., 2007, p. 86). Teachers focus on specific topics and only a few aspects of a topic are presented and explained in one lesson or teaching unit. Teacher experiments are typical instructional elements in Physics and in all other science subjects (Tesch & Duit, 2004). It may be assumed that a more student-oriented instruction or learning-oriented teaching (Darling-Hammond & Bransford, 2006; Hiebert et al., 2005) may enhance students' positive emotions.

Student-oriented instruction focuses on modelling, guiding and scaffolding students' learning to create a deep understanding of learning contents and a positive attitude towards domains (Collins, Brown, & Newman, 1989). Learning-oriented teaching aims at changing the role of the teacher from a knowledge transmitter to a coach and moderator of students' individual learning (Reusser, 1996) and emphasizes opportunities for active student engagement and self-regulated learning (Boekaerts & Corno, 2005; Collins et al., 1989; Slavin, 1995), providing positive and constructive feedback (Ryan & Deci, 2000) and scaffolding student learning process-

es in a way that students can solve problems independently (Collins et al., 1989). In addition, numerous studies identified cooperative learning as a very effective characteristic of learning-oriented teaching (Slavin, 1995). Students learn teamwork, how to give and receive criticism and how to plan, monitor and evaluate their individual and joint activities with others (Hertz-Lazarowitz & Miller, 1992). Some studies showed that student- and learning-oriented teaching is associated with more positive emotions than teacher-centred instruction (Gläser-Zikuda & Fuß, 2008; Gläser-Zikuda & Schuster, 2005; Götz & Frenzel; 2010, Pekrun et al., 2002). A theoretically guided approach explicitly focusing on instructional strategies to influence learners' emotions is the FEASP-approach (Astleitner, 2000), indicating, for example, that instructional strategies should be regarded to reduce fear, envy and anger, and to enhance stafisfaction and joy. In relation to this approach and based on findings of research on emotion, motivation and instructional quality, the ECOLE-approach (Emotional-Cognitive Learning) in its quasi-experimental intervention study revealed strong effects on students' achievement but also effects on students' emotions and well-being in Physics (Gläser-Zikuda, Fuß, Laukenmann, Metz, & Randler, 2005).

Especially gender effects have to be regarded when analyzing learning and instruction in science. Differences between boys and girls in terms of their emotions are well documented in the domain of Mathematics. Frenzel, Pekrun and Götz (2007) confirmed that boys and girls achieve similar performance in Mathematics but girls usually report on significantly less enjoyment, more anxiety and more hopelessness. The situation is similar in Physics. Girls experience more negative and less positive emotions than boys in Physics instruction (Gläser-Zikuda & Fuß, 2003). Physics is traditionally perceived (and sometimes even realized) as a male domain. Several studies describe that girls and even female university students rate their abilities and performance on a lower level compared to boys and male students (Milhoffer, 2000). Girls' interest in Math, Science and Technology is relatively low compared to boys (Roisch, 2003).

Wodzinski (2007) states that teachers' organization of instruction in Physics is predominatly related to the learning demands of boys; this may cause that girls feel rather insecure in Physics lessons and perceive Physics as a "feared" school subject. This may also have an impact on the girls' underestimation of their learning achievement in Physics. In contrast, boys have a tendency to overestimate their learning achievement. Nevertheless, girls are often interested in Physics (Hoffman et al., 1998) but their interest in Physics is more context-related and depends on activating instructional methods such as experiments and group work. It has also been found that the participation of girls increases significantly when instructional topics are taught with respect to allday life topics such as, for example, medical topics and functioning of a human body (Häußler & Hoffmann, 1995).

To explain why there are differences in emotional experiences of boys and girls in Physics (and other science school subjects), psychological, biological and social theories may be mentioned. One of the approaches which has pertained for quite a long time explains that gender differences regarding emotions may be explained by the

different level of the boys' and girls' cognitive skills (Baumert, Gruehn, Heyn, Köller, & Schnabel, 1997). Recent research, however, found only small or rather declining differences between boys and girls regarding their cognitive skills and achievement in Physics and other science school subjects (Baumert et al., 1997; Kotte, 1992).

Another attempt to explain the differences in emotional experiences of boys and girls is to argue that there are dissimilarities in their cognitive interpretations of learning situations and events. Up to now, the control-value theory of achievement emotion (Pekrun, 2000, 2006; Pekrun et al., 2002) has been primarily used to explain gender differences in achievement emotions in Mathematics (Frenzel et al., 2007). According to the control-value theory, gender differences in emotional experiences and the fact that girls usually report more negative emotions in Mathematics and Physics lessons than boys could be explained on the basis of gender-linked stereotypes. It was argued that girls have a tendecy to underestimate their competencies (Lupart, Cannon, & Telfer, 2004; Milhoffer, 2000) but at the same time they recognize the value of Physics (for everyday life) and they are also aware of the importance of achieving good grades in the school subject. Following the control-value approach, the reason why girls are experiencing rather negative emotions in Physics may be seen in these discrepancies between their underestimation of their competencies and the high value of the school subjects (in this case of Physics) (Frenzel et al., 2007).

1.3 Influencing achievement emotions of boys and girls by applying a portfolio in Physics

We argue that a portfolio-based learning environment should enhance girls' positive achievement emotions especially. It is argued that in comparison to boys, girls appreciate more a social, communicative and reflective learning environment. Furthermore, girls are more interested in written reflection and feedback. For example, a well known result in PISA (the Programme for International Student Assessment, of the Organisation for Economic Co-operation and Development [OECD]) is that girls show significantly higher mean achievement in reading literacy than boys in all OECD countries. The girls also have a higher level of interest and engagement in reading outside school. Whereas boys often dislike almost all school writing, most girls enjoy writing at school and girls even choose to write themselves at home (Millard, 2001). They write diaries very often or they keep in touch by writing letters to friends in foreign countries (Seiffge-Krenke, 1987). Clark & Dugdale (2009) showed that students generally enjoy writing for family and friends more than for schoolwork. Girls enjoy writing very much (Clark & Douglas, 2011) and they consider themselves good writers in comparison to boys (Clark, 2012).

A portfolio could meet these preferences of girls. It is usually characterized as an individualized learning tool – a collection of students' learning materials which are carefully selected (mainly by students and sometimes by teachers) to document, reflect and evaluate students' learning progress and outcomes (Paulson, Paulson, &

Meyer, 1991). A portfolio is also regarded as a learning environment which facilitates competence-oriented learning and supports its reflection (Ziegelbauer, Noack, & Gläser-Zikuda, 2010). Moreover, in comparison to other instruments of self-reflection (e.g. learning diaries, learning protocols) a portfolio comprises characteristic features influencing students' achievement emotions and learning outcomes – discussion with classmates and teachers as well as their feedback and assessment (Gläser-Zikuda & Hascher, 2007; Häcker, 2007).

As stated by Hattie and Timperley (2007) and shown by Hattie (2012), feedback is an important dimension for successful learning and achievement. Feedback is conceptualized as information provided by a person (e.g. teacher, classmate, oneself) or a medium (e.g. book, audio information) regarding aspects of one's understanding or performance. For example, a teacher or parent can provide corrective information, a classmate can provide an alternative learning strategy and a book can provide information to clarify ideas. Feedback is one core element of the portfolio.

Compared to other instructional approaches, the portfolio approach represents an educational concept which focuses on a more individualized instruction – to enable students to learn in a more self-regulated and self-determined way. In Physics (as well as in other science subjects) the cultivation of students' self-regulated and self-determined learning represents an important educational principle which may significantly influence performance in both its cognitive and the affective aspects. This presumption was already empirically confirmed by Sander and Ferdinand (2013) who examined whether self-regulated learning environment may improve students' learning achievement and interest in natural sciences by evocing higher cognitive activation in Austrian schools. The results of the study with 141 ninth graders from three middle schools (middle school, called "Realschule" in Austria and Germany) showed that students who learned in the self-regulated learning environment understood the instructional topic deeper and were able to make better use of acquired knowledge when solving a problem-oriented learning situation compared to their classmates from the teacher-oriented classroom. Furthermore, students in the experimental group (self-regulated learning environment) showed higher level of interest in science instruction and were more internally motivated. However, it was been found out that the positive effect of the self-regulated and self-determined learning may depend on the level of students' pre- knowledge – self-regulated and self-determined learning seem to be more beneficial for students with greater pre-knowledge.

In recent decades, the portfolio has been analysed as a promising educational concept which may foster cognitive and affective dimensions of students' learning (e.g. Gläser-Zikuda & Hascher, 2007; Gläser-Zikuda, Lindacher, & Fuß, 2006; Limprecht & Gläser-Zikuda, in development). The portfolio has also been regarded as an attempt to switch from teacher-based instruction to student-centered learning (Berendt, 2005) enabling students to learn in a more self-regulated way (Gläser-Zikuda, Fendler, Noack, & Ziegelbauer, 2011). In this study we tried to test the effects of a portfolio on the academic emotions of boys and girls.

2 Aim and research questions of the study

The study focused on girls' and boys' achievement emotions in Physics. We were interested in analyzing differences between boys' and girls' emotions in Physics instruction on the one hand while developing, implementing and evaluating a portfolio intervention to reduce gender differences in achievement emotions in Physics instruction. The idea was to implement a portfolio approach and to create a more student-oriented learning environment supporting students', especially girls', self-regulation and self-reflection in learning Physics. The aim was to enhance girls' positive achievement emotions and to reduce their negative achievement emotions in Physics instruction.

In orientation to these considerations, we expect that implementing such a learning environment should particularly enhance girls' positive achievement emotions. It is argued that in comparison to boys, girls prefer a social, communicative and reflective learning environment. Furthermore, it is expected that they are more interested in written reflection and feedback which should have a positive impact on their achievement emotions.

The following research hypotheses were tested:

1. Boys experience more positive achievement emotions in Physics than girls in general.
2. The application of a portfolio has a positive effect on achievement emotions of girls, or more precisely the differences between positive and negative achievement emotions of girls and boys may be reduced by a portfolio intervention.

3 Method

In the following section the method of our study is described. Firstly, the portfolio approach applied in the quasi-experiemntal intervention study is presented. Secondly, the research design and sample of the intervention study are described. Finally, the applied instruments and statistical procedures are explained. It should be noted that this paper only reports on a small part of the results we gained in this intervention study. Futher details and results are presented and discussed in other publications.

3.1 Portfolio approach applied in the intervention study

In this study we developed a portfolio approach based on a *working portfolio* aiming at continuos observation of and reflection on the individual learning process (Gläser-Zikuda & Hascher, 2007; Gläser-Zikuda et al., 2011). The portfolio-based learning environment included problem and competence oriented learning tasks, interactions between students and teachers including consultations and peer- and teacher-feedback, cooperative and reflexive learning phases and a well balanced relation between instructional and self-regulated learning phases. The portfolio approach has been developed taking both context-related characteristics of Physics

instruction and the elements of self-regulation, self-reflection, learning dialogues and feedback into account. The approach comprised a students' portfolio folder, prompts (Nückles et al., 2010) for a systematic reflection of the individual learning progress as well as feedback documents from discussions with classmates and the teacher. In particular, we focused on the approach of "learning through dialogues" (Ruf, 2008) to strengthen interaction and communication in instruction. Students reflected on specific topics and tasks during Physics instruction several times. Furthermore, all students participated in portfolio dialogues with classmates and also with the teacher three times. Finally, the students presented their learning results at the end of the teaching unit based on discussion of their portfolios.

3.2 Research Design and Sample

The study was based on a quasi-experimental design. The sample consisted of eight 8th grade classes from three grammar schools in Germany. In total, 161 students (56 boys and 78 girls) participated in the study[1]. To test the effects of our intervention the research sample was divided into treatment (N = 80; 48 girls and 32 boys) and control group (N = 81; 43 girls and 38 boys) randomly (Fig. 1). Two female Physics teachers and two male Physics teachers participated in the study; all of them had more than 10-year teaching experience. First, each teacher taught a control group, and after a specific training regarding portfolio-based instruction he/she taught the treatment group. The portfolio approach was implemented for a period of approximately four months in classrooms that had no experience of portfolio instruction.

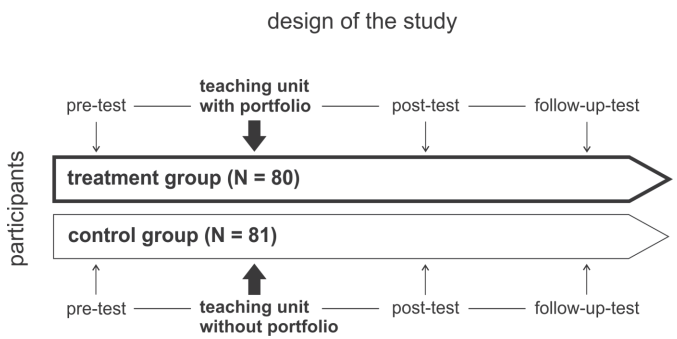


Figure 1 Quasi-experimental design of the study.

The same topic (electricity) was taught in both classrooms (treatment and control) for a comparable number of lessons (26–27 lessons in the treatment group and 26 lessons in the control group). In the treatment groups students were taught in a student-centered and problem-oriented instructional setting which included an

[1] The real numbers of the participants may however slightly differ. This is because not all of the answers of the respondents could be taken into account as valid.

application of a portfolio, whilst the control groups were taught in a more teacher-centered setting. Both groups were tested with the same instruments and tests. All reliability coefficients of the psychometric measures (Cronbach's alpha) ranged from 0.75 to 0.95 indicating that the internal consitency of these measures was at least satisfactory and in most cases either good or excellent (Table 1).

3.3 Instruments and Statistical Procedures

Based on the quasi-experimental design we carried out a pre-, post- and follow-up test (after six weeks and a holiday break). We applied the following standardized instruments (Table 1) in this study: three scales of a standardized short questionnaire about state emotions (anxiety, boredom and well-being [with enjoyment and satisfaction]) we developed in previous studies (Gläser-Zikuda & Fuß, 2008) were applied to measure students' achievement emotions.

Table 1 Instruments and scales of significant covariates and dependent variables

Covariates	Scales	Item example
Self-concept (Schöne et al., 2002)	Self-concept in school (individual): 6 Items; α = .91	Now, I perform worse in school than before.
	Self-concept in school (negative) 10 Items; α = .95	I'm not gifted enough to peform well in school.
	Domain specific self-concept: 7 Items; α = .94	**The school subject Physics does not appeal to me.**
Interest in Physics (Hoffmann et al., 1998)	**Leisure: Interest in Information: 6 Items; α = .85**	**I'm interested in watching TV programmes dealing with Physics and Technology.**
	Leisure: Interest in Practice: 5 Items; α = .75	**I'm interested in dismantling and repairing things.**
	Object related interest: 10 Items; α = .86	I'm interested in finding out more about the development and the effects of thunderbolt.
Dependent variables	Subscales	Item Example
Achievement State-Emotions (Gläser-Zikuda & Fuß, 2008)	Anxiety: 4 Items; α = .82	Physics instruction makes me anxious.
	Well-being: 4 Items; α = .91	I'm satisfied with Physics instruction.
	Boredom: 3 Items; α = .90	In Physics instruction I often feel bored.

Note: The scales in bold are significant covariates.

For the measurement of covariates, we used different standardized instruments such as well-being in school, classroom climate etc. However, we only report on the significant covariates in this paper. To test self-concept we applied an instrument

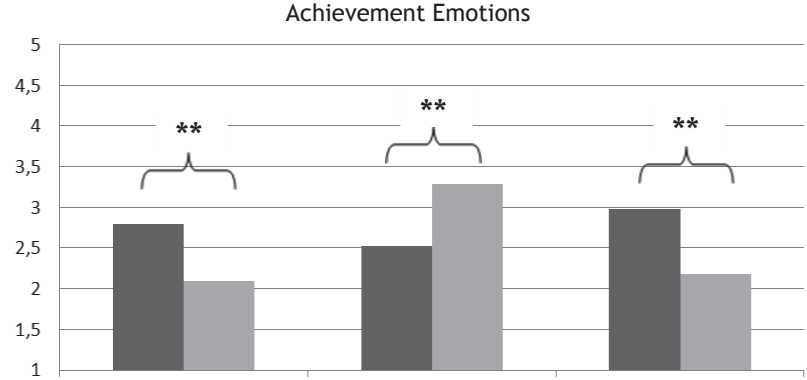
with three scales (Schöne, Dickhauser, Spinath, & Stiensmeier-Pelster, 2002). For the measurement of interest in Physics we used three scales (Hoffmann et al., 1998).

4 Results

In this chapter the results of our study in orientation to the research questions are presented. Firstly, the descriptive results regarding gender differences of students' achievement emotions in Physics are presented (see 4.1). Secondly, the results based on covariance analyses to test the hypothesized effect the application of a portfolio had on positive and negative achievement emotions of boys and girls in Physics are presented (see 4.2).

4.1 Achievement emotions of boys and girls in Physics

The first aim of our study was to analyze whether there are significant differences between boys and girls regarding their positive and negative achievement emotions in Physics. We therefore carried out a t-test for the interrogation data before the intervention phase (pre-test). In Figure 2 the significant differences between the achievement emotions of boys and girls are illustrated. The results are based on a comparison of the total sample of girls and boys.



	Anxiety		Well-being		Boredom	
	Mean	SD	Mean	SD	Mean	SD
Girls (dark grey)	2.79	0.93	2.53	0.81	2.98	1.15
Boys (pale gray)	2.10	0.97	3.29	1.07	2.18	1.06

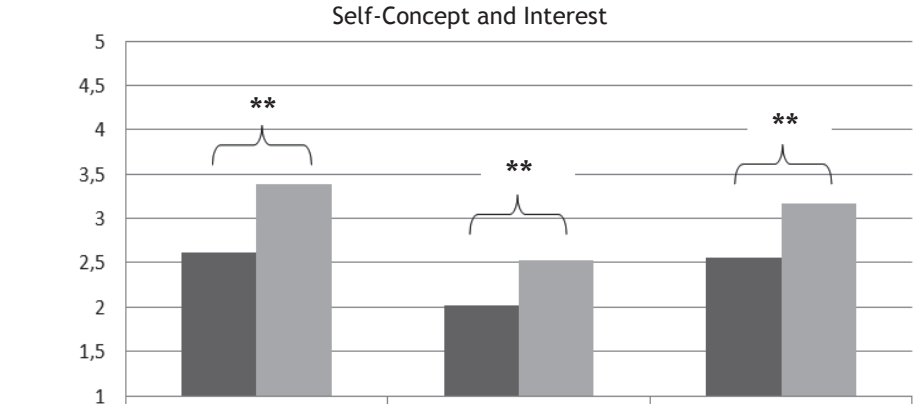
Respondents with valid answers: girls N = 78; boys N = 56; Levels of significance: $p < .01$ (*), $p < .001$ (**); Effect Sizes: Anxiety: $Eta^2 = .117$; Well-being: $Eta^2 = .141$; Boredom: $Eta^2 = .141$.

Figure 2 T-tests regarding gender differences in achievement emotions in Physics at pre-test measurement

Figure 2 illustrates that in the pre-test measurement girls experienced significantly higher levels of negative emotions (boredom and anxiety) in Physics instruction. Boys experienced significantly higher levels of positive achievement emotions (well-being) in Physics instruction.

4.2 Interest and self-concept of boys and girls in Physics

As a subsequent step of our analysis of gender differences in students' achievement emotions in Physics, the variables which could also have an influence on the achievement emotions were examined.



	Self-concept		Interest info		Interest practical	
	Mean	SD	Mean	SD	Mean	SD
Girls (dark gray)	2.61	0.93	2.02	0.65	2.56	0.75
Boys (pale gray)	3.39	1.05	2.53	0.78	3.17	0.79

Respondents with valid answers: girls N = 86; boys N = 56; Levels of significance: $p < .01$ (*), $p < .001$ (**); Effect Sizes: Self-concept: $Eta^2 = .130$; Interest info: $Eta^2 = .113$; Interest practical: $Eta^2 = .133$.

Figure 3 T-tests for interest and self-concept regarding Physics at pre-test measurement

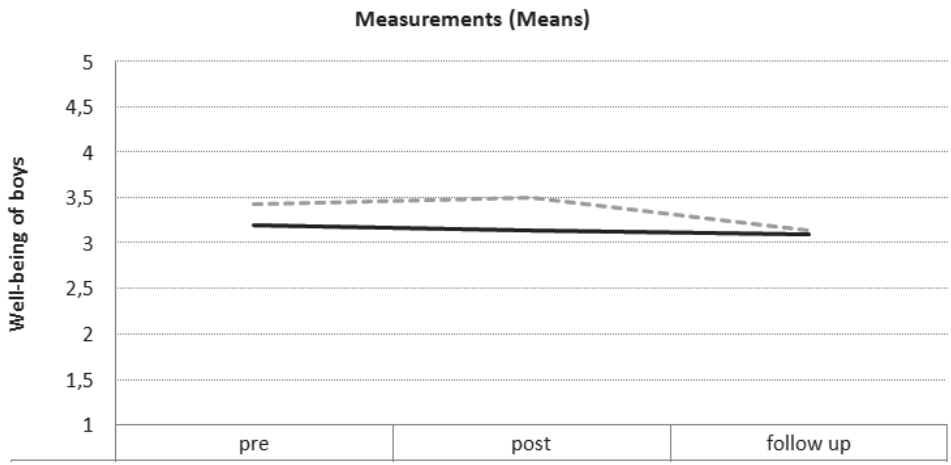
As hypothesized, the t-tests for pre-test measurement revealed significantly higher levels of interest and self-concept of ability in Physics for boys than for girls (Fig. 3).

4.3 Effects of a portfolio on achievement emotions of boys and girls in Physics instruction

To test the effects of a portfolio on the achievement emotions of boys and girls, the data of the pre-, post- and follow-up tests in treatment and control groups were subsequently analyzed. We only present results for positive achievement emotions

(well-being: enjoyment and satisfaction) in the following section because no significant effects of the portfolio intervention for the negative achievement emotions such as anxiety and boredom were determined.

At first, we describe the development of well-being of boys and girls separately and differentiate them with respect to treatment and control groups. The graph includes means for the pre-, post- and follow-up tests. Figure 4 describes the results of the measurements for the boys in treatment and control groups, figure 5 focuses on the results in the girls groups.

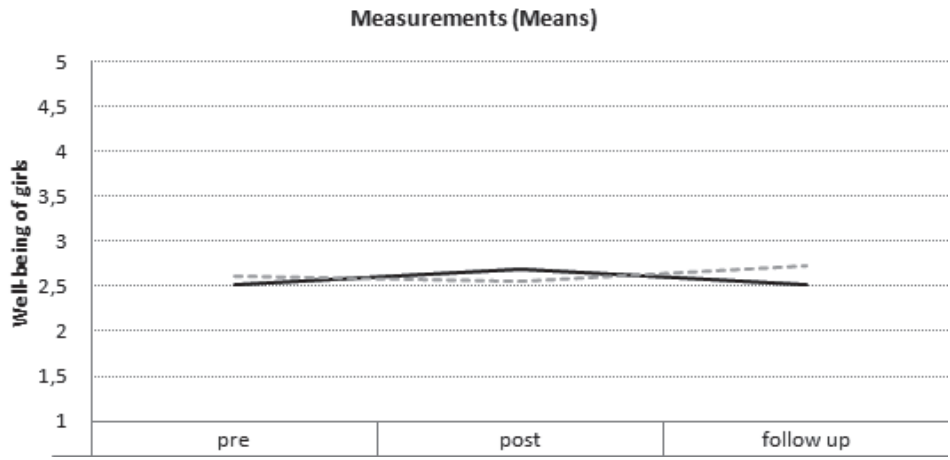


	Pre-test			Post-test			Follow-up test		
	Mean	SD	Eta²	Mean	SD	Eta²	Mean	SD	Eta²
TG (full line)	3.20	1.18	TG<CG n.s.	3.14	1.10	TG<CG n.s. .028	3.10	1.01	TG<CG n.s. .000
CG (dotted line)	3.43	1.06	.010	3.50	0.96		3.15	1.13	

Respondents with valid answers: boys TG N = 24; boys CG N = 17; it has to be noted that not all participants were present at all three measurements.

Figure 4 Well-being of boys' in treatment and control groups

Figure 4 shows that before instruction (intervention phase; pre-test) the level of boys' well-being was smaler in the treatment than in the control group. After the intervention phase (post-test) the level of boys' well-being in the treatment group decreased slightly and this trend continued until the follow-up test. In the control boys' group (without a portfolio) the development was different. The level of boys' well-being grew up progressively until post-test but the level was decreasing then noticeably until the follow-up test. In general, the well-being of the boys in the two groups did not differ significantly.



	Pre-test			Post-test			Follow-up test		
	Mean	SD	Eta²	Mean	SD	Eta²	Mean	SD	Eta²
TG (full line)	2.53	0.89	TG<CG n.s. .002	2.70	0.80	TG>CG n.s. .008	2.53	0.74	TG<CG n.s. .017
CG (dotted line)	2.61	0.82		2.56	0.78		2.73	0.80	

Respondents with valid answers: girls TG N = 31; girls CG N = 25; it has to be noted that not all participants were present at all three measurements.

Figure 5 Well-being of girls' in treatment and control groups

Compared with the boys, the girls' well-being in treatment and control groups showed a rather different trend (Fig. 5). Whilst at the pre-test the levels of girls' well-being was rather similar in the treatment and control groups, after the intervention phase the level of girls' well-being rose in the treatment group (portfolio intervention), while it decreased in the control group. Between the post-test and the follow-up test, well-being in the treatment group decreased onto the same level as it had been before the intervention. Interestingly, the well-being of the girls in the control group increased at follow-up measurement and it oscillated on a higher level compared to the starting level before instruction.

4.4 Testing hypothesized effects of the portfolio intervention on boys' and girls' well-being in Physics controlling the covariates self-concept and interest

To identify the effects of variables which may also have an influence on students' achievement emotions, we carried out an analysis of covariance controlling students' interest and self-concept, as well as school and classroom climate (e.g. Rudolf

& Müller, 2004). The results of the analysis of covariance showed that only *self-concept* and *interest* were significant covariates.

To test the hypothesized effects of the portfolio intervention on students' emotions (well-being) regarding gender differences, analysis of covariance was conducted (controlling *self-concept* as covariate in the first step and then *interest* in the second step*)*. Means, standard deviations, level of significance and effect sizes as partial Eta^2 are presented in Table 2 and 3.

Table 2 Effects of the portfolio intervention based on covariance analysis for well-being of boys and girls (controlling the covariate self-concept)

Well-being		Mean	SD	self-concept		Intervention Effect	Eta^2
				sig	Eta^2		
Treatment group							
pre-test (t1)	girls (n=31)	2.53	0.89	.000	.34	girls<boys n.s	.03
	boys (n=23)	3.30	1.11				
post-test (t2)	girls (n=31)	2.70	0.80	.000	.40	girls<boys n.s.	.00
	boys (n=23)	3.24	1.02				
follow-up-test (t3)	girls (n=31)	2.53	0.74	.000	.54	girls<boys n.s	.03
	boys (n=23)	3.19	0.93				
Control group							
pre-test (t1)	girls (n=25)	2.61	0.82	.000	.30	girls<boys n.s	.05
	boys (n=16)	3.37	1.07				
post-test (t2)	girls (n=25)	2.56	0.78	.02	.13	girls<boys sig. =.024	.13
	boys (n=16)	3.47	0.99				
follow-up-test (t3)	girls (n=25)	2.73	0.80	.000	.29	girls<boys n.s	.00
	boys (n=16)	3.11	1.16				

Levels of significance: $p < .05$, $p < .01$ (*), $p < .001$ (**); Effect size (eta^2): low (> 0.01), moderate (> 0.06), high (> 0.14). It should be noted that not all participants responded to all items in the questionnaires. Therefore, sample sizes may differ sligthly.

Our analysis of the hypothesized effects of a portfolio intervention on girls' and boys' well-being by controlling the self-concept and interest covariates revealed some interesting results. Controlling the domain specific self-concept as a covariate

has an impact on the calculation of the intervention effect. In both groups, self-concept has a moderate or even high impact on girls' and boys' well-being. In the pre-test, boys and girls do not differ significantly in their well-being in both control and treatment group. In the treatment group girls' well-being increases and boys' well-being decreases slightly. But there is no significant effect of the intervention at post-test. However, compared to the treatment group, girls' and boys' well-being in the control group differs significantly at post-test. A moderate effect size of 0.13 (sig. = .024) was stated. The effect occurs because girls' well-being decreases while the boys' well-being increases strongly from pre- to post-test. For the follow-up test, this effect disappears and no significant differences in girls' and boys' well-being may be observed there again. The hypothesized effect of the portfolio intervention

Table 3 The results for the effects of the portfolio intervention based on covariance analysis for well-being of boys and girls (controlling the covariate interest)

Well-being		Mean	SD	Interest		Intervention Effect	Eta²
				sig	Eta²		
Treatment group							
pre-test (t1)	girls (n=31)	2.53	0.89	Info 0,16	.04	girls<boys sig. = .01	.12
	boys (n=22)	3.40	1.02	Practical .10	.06		
post-test (t2)	girls (n=31)	2.70	0.80	Info .06	.07	girls<boys n.s.	.04
	boys (n=22)	3.34	0.92	Practical .23	.03		
follow-up-test (t3)	girls (n=31)	2.53	0.74	Info .04	.08	girls<boys sig. =.03	.10
	boys (n=22)	3.30	0.81	Practical .12	.05		
Control group							
pre-test (t1)	girls (n=25)	2.61	0.82	Info .03	.12	girls<boys sig. =.05	.10
	boys (n=16)	3.37	1.07	Practical .03	.12		
post-test (t2)	girls (n=25)	2.56	0.78	Info .08	.08	girls<boys sig. =.04	.11
	boys (n=16)	3.47	0.99	Practical .43	.02		
follow-up-test (t3)	girls (n=25)	2.73	0.80	Info .08	.08	girls<boys n.s.	.04
	boys (n=16)	3.11	1.16	Practical .04	.11		

Levels of significance: $p < .05$, $p < .01$ (*), $p < .001$ (**); Effect size (eta^2): low (> 0.01), moderate (> 0.06), high (> 0.14). It should be noted that not all participants responded to all items in the questionnaires. Therefore, sample sizes may sligthly differ.

on students' well-being may be confirmed for the post-test. An enduring effect after the intervention cannot be determined.

Controlling interest (information and practice oriented interest in Physics) as a covariate has an impact on the calculation of the intervention effect as well. In both groups, interest has a moderate impact on girls' and boys' well-being. Including the covariate interest in the pre-test, boys and girls differ significantly in their well-being in both control (effect size 0.10; sig. = 0.05) and treatment groups (effect size 0.12; sig. = 0.01). In case of the post-test it is different. While the significant difference in well-being between boys and girls in the treatment group disappears (effect size 0.04; n.s.), it becomes even greater in the control group (effect size 0.11, sig. = 0.04). Girls in the treatment group show a noticeable higher level of well-being after the intervention, whereas boys' well-being decreases sligthly. For the post-test, no effect is observed for the control group. But in the treatment group, the effect size for the difference regarding well-being between boys and girls is compared to the pre-test level again relatively high (effect size 0.10; sig. = 0.03).

5 Discussion

The aims of the analyses of the presented study – that (1) boys experience more positive and less negative emotions in Physics instruction than girls and that (2) a portfolio intervention would have a positive impact on girls' and boys' achievement emotions – were partly confirmed.

Firstly, the expectation that boys have a higher level of well-being in Physics instruction than girls was confirmed by t-tests based on data at pre-test, before the instruction or the intervention started. It may be argued that girls and boys estimated their achievement emotions with respect to the same experience in Physics and in Physics instruction. As expected, girls showed a significantly higher level of anxiety and boredom than boys. It may be concluded that our first hypothesis was confirmed.

Secondly, the expectation that interest and self-concept would have an impact on girls' and boys' emotions, especially on their well-being, was only partly confirmed. Based on covariance analyses the effects of theses covariates were systematically proven.

Thirdly, the hypothesized effects of a portfolio intervention on students' emotions were only partly confirmed. We found no general effect of the portfolio intervention on girls' and boys' achievement emotions. Whereas we found no intervention effects on the negative achievement emotions, we were successful in reducing the differences betweem girls' and boys' well-being, at least at post-test. It was shown that in the control group girls' well-being was systematically decreasing from pre- to post-test. In contrast, girls' well-being in the treatment group was increasing and the differences between girls' and boys' levels of well-being were reduced from pre- to post-test, as expected. This was the case for both covariance analyses including

interest and domain specific self-concept. It has to be noted that the effects are small to moderate and not systematical. These results should be interpreted very carefully as indicators for the potential of a portfolio-based instruction for a more emotionally sound instruction (Astleitner, 2000).

It can be therefore argued that the portfolio approach has the potential to influence emotional experience of girls rather than of boys in Physics. This presumption corresponds with the findings described in the study of Hoffmann et al. (1998). They found out that girls were more sensitive than boys when it came to teaching methods and instructional context. Girls also appreciated much more the teaching methods in Physics contributing to a stronger student orientation. The boys were less influenced by these instructional aspects because their emotions and interest in Physics are more related to person-related conditions as trait components (Hoffmann et al., 1998). We therefore assume that the portfolio approach offered various opportunities of self-regulated learning for girls including written reflection, learning dialogues and feedback. It may be concluded that this learning environment had a positive influence on girls' well-being in this Physics instructional unit.

Furthermore, we assume that girls in this portfolio-based Physics instruction felt more competent because first, they had the opportunity to choose different tasks (with respect to three different task levels). As girls may have a tendecy to underestimate their competencies (Lupart et al., 2004) it is assumed that the portfolio helped to get a more realistic and positive estimation of their competencies in Physics. Within the portfolio-based learning setting the girls received immediate and formative feedback on their learning process while discussing and reflecting on their learning process in small groups several times during the intervention phase. As shown in the review by Hattie and Timperley (2007), different types or levels of feedback should be taken into account to support learning and achievement: the task, the process, the regulation and the self. They conclude that feedback is more powerful when it helps create ideas and when it leads to the development of more efficient learning strategies for understanding a topic or learning material. Feedback that is focusing on self-regulation is powerful to the degree where it leads to further engagement and further effort made during the learning task. When feedback focuses on the self only, students try to avoid the risks, minimize their effort and have a high fear of failure; the goal is to minimize the risk to the self. We assume that the portfolio especially helped girls to get supportive feedback on these different levels, particularly on the task and regulation level. These types of feedback may have contributed to a lesser focus of the girls on themselves and their general underestimation of their own competencies, especially in science.

Following the control-value approach, the portfolio might therefore have contributed to the reduction of the discrepancies between girls' underestimation of competencies and the high value of school subjects (in this case of Physics) (Frenzel et al., 2007). In general, we also assume that student-centered instruction and cooperative learning activities which are usually not applied in Physics instruction may have increased girls' well-being (Hascher, 2003).

Finally, some conceptual and methodological limitations of the study have to be discussed. In contrast to our expectations, the intervention was not successful in reducing girls' negative achievement emotions. We found just a few and in most cases small effects. There are various possible explanations. Firstly, the sample of students was relatively small in this study; therefore the potential of the statistical analyses was limited. Secondly, a teaching unit including 26 lessons of instruction might have been too short to influence emotions which are strongly person- and subject-related (as trait-components), and thus difficult to influence. This hypothesis should be tested in a more extensive intervention. In this study, we did not control factors of the personality of the students, such as trait-anxiety or extraversion. Thirdly, the portfolio-based instruction may have been unfamiliar to most of the students. We know that students had no or insufficient experience of portfolio-based instruction and they were mainly not familiar with self-regulated and self-reflexive learning to fully benefit from the treatment. Using a portfolio requires a variety of strategies that need to be developed, applied and experienced in many different learning situations before they can be experienced as emotionally positive and valuable. These new ways of learning may have created insecurity. Furthermore, it is important that teachers accept this new type of instruction. Since the training for the teachers was relatively short they may have had difficulties with the intervention. At least, some teachers reported that they did not have enough time to really implement all elements of the portfolio-based instruction. Therefore, the intervention was carried out with some limitations.

Since students' emotions are generally strongly related to their experiences with school, instruction and teachers, they may rarely be influenced by short-term interventions without including the teacher. Therefore, the effects of the teachers' personalities and competencies need to be focused on. Further analyses indicate that well-being as well as anxiety and self-concept depend strongly on the teacher variable (Gläser-Zikuda & Fuß, 2008). In the ECOLE-intervention study the teacher variable explained up to 15% of the variance of emotion variables, whereas the experimental variable (ECOLE-instruction vs. traditional instruction) explained a maximum of 3% of the variance. Finally, the interaction between a teacher's emotions and students' emotions needs to be investigated more in depth as well (Frenzel, Götz, & Pekrun, 2008). To sum up, the portfolio approach may be characterized as a promising instructional approach to develop a more student-oriented learning environment that takes achievement emotions into account as well.

Acknowledgements

The intervention study was founded by the German Research Foundation (GL 508/2-1); project leader was Michaela Gläser-Zikuda, Susi Limprecht was project collaborator. The cooperation was supported by the project "Employment of Newly Graduated Doctors of Science for Scientific Excellence" (CZ.1.07/2.3.00/30.0009) co-financed from European Social Fund and the state budget of the Czech Republic.

References

Abele, A. (1995). *Stimmung und Leistung. Allgemein- und sozialpsychologische Perspektive*. Göttingen: Hogrefe.

Astleitner, H. (2000). Designing emotionally sound instruction: The FEASP-approach. *Instructional Science*, 28, 169–198.

Baumert, J., Gruehn, S., Heyn, S., Köller, O., & Schnabel, K. U. (1997). *Bildungsverläufe und psychosoziale Entwicklung im Jugendalter (BIJU). Dokumentation, Bd. 1. Skalen Längsschnitt I, Welle 1–4.* Berlin: Max Planck Institut fur Bildungforschung.

Berendt, B. (2005). The Shift from teaching to learning – mehr als eine „Redewendung": Relevanz – Forschungshintergrung – Umsetzung. In U. Welbers & O. Gaus (Eds.), *The shift from teaching to learning* (pp. 35–41). Bielefeld: wbv.

Boekaerts, M., & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review*, *54*(2), 199–231.

Boekaerts, M., Pintrich, P. R., & Zeidner, M. (2000). *Handbook of self-regulation*. San Diego, CA, US: Academic Press.

Carver, C. S., & Scheier, M. (1990). Principles of self-regulation: Action and emotion. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior, Vol. 2.* (pp. 3–52). New York: Guilford Press.

Clark, C., (2012) *Young People's Writing in 2011: findings from the National Literacy Trust's annual literacy survey.* National Literacy Trust.

Clark, C., & Douglas, J. (2011) *Young People's Reading and Writing: an in-depth study focusing on enjoyment, behaviour, attitudes and attainment.* National Literacy Trust.

Clark, C., & Dugdale, G. (2009). *Young People's Writing: attitudes, behaviour and the role of technology*. National Literacy Trust in collaboration with Booktrust.

Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing and mathematics. In L. B. Resnick (Ed.), *Knowing, learning and instruction. Essays in honor of Robert Glaser* (pp. 453–494). Hillsdale, N.J.: Erlbaum.

Darling-Hammond, L., & Bransford, J. D. (Eds.). (2006). *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do*. San Franscisco: Jossey-Bass.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, 19, 109–134.

Diener, E. (2000). Subjective well-being. The science of happiness and a proposal for a national index. *American Psychologist*, *55*(1), 34–43.

Ellis, H. C., & Ashbrook, P. W. (1989). The 'state' of mood and memory research: A selective review. Special issue of *Journal of Social Behavior & Personality*, *4*, 1–21.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, *48*(1), 150–170.

Frenzel, A. C., Götz, T., & Pekrun, R. (2009). Emotionen. In E.Wild & J. Möller (Hrsg.), *Pädagogische Psychologie* (pp. 205–234). Berlin: Springer.

Frenzel, A. C., Götz, T., & Pekrun, R. (2008). Ursachen und Wirkungen von Lehreremotionen: Ein Modell zur reziproken Beeinflussung von Lehrkräften und Klassenmerkmalen. In M. Gläser-Zikuda & J. Seifried (Hrsg.), *Lehrerexpertise – Analyse und Bedeutung unterrichtlichen Handelns* (pp. 188–211). Münster: Waxmann.

Frenzel, A. C., Pekrun, R., & Götz, T. (2007). Perceived learning environment and students emotional experiences: A multilevel analysis of mathematics classrooms. *Learning and Instruction*, *17*, 478–493.

Gläser-Zikuda, M., & Fuß, S. (2008). Impact of Teacher Competencies on Student Emotions: A Multi-Method Approach. *International Journal of Educational Research*, *47*(2), 136–147.

Gläser-Zikuda, M., & Fuß, S. (2003). Emotionen und Lernleistungen in den Fächer Deutsch und Physik. Unterscheiden sich Mädchen und Jungen in der achten Klasse? *Lehren und Lernen*, *29*(4), 5–11.

Gläser-Zikuda, M., & Hascher, T. (Hrsg.). (2007*). Lernprozesse dokumentieren, reflektieren und beurteilen. Lerntagebuch & Portfolio in Bildungsforschung und Bildungspraxis*. Bad Heilbrunn: Klinkhardt.

Gläser-Zikuda, M., & Järvelä, S. (Eds.). (2008). Application of qualitative and quantitative methods to enrich understanding of emotional and motivational aspects of learning. *International Journal of Educatinal Research*, *47*(2), 136–147.

Gläser-Zikuda, M., & Schuster, H. (2005). How do students feel in open and direct instruction? A study with mixed methods. In L. Gürtler, M. Kiegelmann, & G. L. Huber (Eds.), *Areas of Qualitative Psychology – Special Focus on Design* (pp. 143–162). Tübingen: Huber.

Gläser-Zikuda, M., Lindacher, T., & Fuß, S. (2006). Wirksamkeit eines Portfolios zur Förderung von Lernleistungen und Lernstrategien – eine quasi-experimentelle Studie. *Empirische Pädagogik*, *20*(3), 229–244.

Gläser-Zikuda, M., Fendler, J., Noack, J., & Ziegelbauer, S. (2011). Fostering self-regulated learning with portfolios in schools and higher education. *Orbis Scholae*, *5*(2), 67–78.

Gläser-Zikuda, M., Fuß, S., Laukenmann, M., Metz, K., & Randler, Ch. (2005). Promoting students' emotions and achievement – instructional design and evaluation of the ECOLE-approach. In A. Efklides & S. Volet (Eds.), Feelings and Emotions in the Learning Process *Learning and Instruction, 15*(5), 481–495.

Götz, T. (2002). *Emotionales Erleben und selbstreguliertes Lernen bei Schülern im Fach Mathematik*. München: Herbert tz Verlag.

Götz, T., & Frenzel, A. C. (2010). Über- und Unterforderungslangeweile im Mathematikunterricht. *Empirische Pädagogik*, *24*(2), 113–134.

Häcker, Th. (2007). *Portfolio: ein Entwicklungsinstrument für selbstbestimmtes Lernen. Eine explorative Studie zur Arbeit mit Portfolios in der Sekundarstufe 1(* 2. überarb. Aufl.). Baltmannsweiler: Schneider Verlag Hohengehren.

Häußler, P. (2003). Emotional aspect and the role of interest and self-concept in learning physics. In P. Mayring & Ch. von Rhöneck (Eds.), *Learning emotions. The influence of affective factors on classroom learning* (pp. 47–66). Frankfurt am Main: Peter Lang.

Häußler, P., & Hoffmann, L. (1995). Physikunterricht – an den Interessen vom Mädchen und Jungen orientiert. *Unterrichtwissenschaft*, *23*(2), 107–126.

Hascher, T. (2012). Well-being and learning in school. In N. M. Seel (Ed.), *Encyclopedia of the Sciences of Learning*. Heidelberg: Springer.

Hascher, T. (2007). Exploring students' well-being by taking a variety of looks into the classroom. *Hellenic Journal of Psychology*, 4, 331–349.

Hascher, T. (2003). Well-being in school – Why students need social support. In Ph. Mayring & Ch. v. Rhöneck (Eds.), *Learning emotions. The influence of affective factors on classroom* learning (pp. 127–142). New York: Peter Lang.

Hattie, J. (2012). *Visible learning for teachers*. London, New York: Routledge.

Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, *77*(1), 81–112.

Helmke, A. (1989). The impact of student self-concept of ability and task motivation on different indicators of effort at school. In H. J. Walberg, T. N. Postlehwaite, B. P. M. Creemers, & E. de Corte (Eds.), *International Journal of Educational Research. Volume 12* (pp. 281–295). Oxford: Pergamon.

Hertz-Lazarowitz, R. & Miller, N. (Eds.). (1992). *Interaction in co-operative groups*. New York, Cambridge University Press.

Hiebert, J., Stigler, J., Jacobs, J., Givvin, K., Garnier, H., & Smith, M., Hollingsworth, H., Jacobs, J., Chui, A. M., Wearne, D., Smith, M., Kersting, N., Monaster, A., Tseng, E., Etterbeek, W., Manaster, C., Gonzales, P., & Stigler, J. W. (2005). Mathematics teaching in the United States today (and tomorrow): Results from the TIMSS 1999 Video Study. *Educational Evaluation and Policy Analysis*, *27*, 111–132.

Hidi, S., Berndorff, D., & Ainley, M. (2002). Children's argument writing, interest and self-efficacy: An intervention study. *Learning and Instruction, 12*, 429–446.

Hoffmann, L. (2002). Promoting girls' interest and achievement in physics classes for beginners. *Learning and Instruction*, *12*, 447–465.

Hoffmann, L., Häußler, P., & Lehrke, M. (1998). *Die IPN-Interessenstudie Physik*. Kiel: IPN.

Kessels, U., & Hannover, B. (2008). When being a girl matters less: Accessibility of gender-related self-knowledge in single-sex and coeducational classes and its impact on students' physics-related self-concept of ability. *British Journal of Educational Psychology*, *78*(2), 273–289.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and emotion*, *5*(4), 345–379.

Kotte, D. (1992). *Gender differences in science achievement in 10 countries*. Frankfurt am Main: Lang.

Krapp, A. (2002). Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective. *Learning and Instruction*, *Special issue: Interest in learning, learning to be interested*, *12*(4), 383–409.

Limprecht, S., & Gläser-Zikuda, M. (in preparation). Enhancing students' competencies by portfolio-based instruction. *Instructional Science*.

Lupart, J. L., Cannon, E., & Telfer, J. A. (2004). Gender differences in adolescent academic achievement, interests, values and life-role expectations. *High Ability Studies*, *15*(1), 25–42.

Marsh, H. W., & Hau, K. T. (2003). Big-fish-little-pond effect on academic self-concept. A cross-cultural study test of the negative effects of academically selective schools. *American Psychologist*, *58*(5), 364–376.

Marsh, H. W., Byrne, B. M., & Yeung, A. S. (1999). Causal ordering of academic self-concept and achievement: Reanalysis of a pioneering study and revised recommendations. *Educational Psychologist*, *34*(3), 155–167.

Mattern, N., & Schau, C. (2002). Gender differences in science attitude-achievement relationships over time among white middle school students. *Journal of Research in Science Teaching*, 39(4), 324-340.

Milhoffer, P. (2000). *Wie sie sich fühlen, was sie sich wünschen. Eine empirische Studie über Mädchen und Jungen auf dem Weg in die Pubertät*. Weinheim: Juventa.

Millard, E. (2001). *Boys, girls and writing. Literacy Today*. (From 01.10.2013; http://www.literacytrust.org.uk/Pubs/millard.html)

Möller, J., & Jerusalem M. (1997). Attributionsforschung in der Schule. *Zeitschrift für Pädagogische Psychologie*, *11*, 151–166.

Nückles, M., Hübner, S., Glogger, I., Holzäpfel, L., Schwonke, R., & Renkl, A. (2010). Selbstreguliert lernen durch Schreiben von Lerntagebüchern. In M. Gläser-Zikuda (Hrsg.), *Lerntagebuch und Portfolio auf dem Prüfstand* (pp. 35–58). Landau: Verlag Empirische Pädagogik.

Osborne, J., Simon, S., & Collins, S. (2003). Attitude towards science: a review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079.

Paulson, F. L., Paulson, P. R., & Meyer, C. A. (1991). What makes a portfolio a portfolio? *Educational Leadership*, *48*(5), 60–63.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries and implications for educational research and practice. *Educational Psychology Review*, *18*, 315–341.

Pekrun, R. (2000). A social cognitive, control value theory of achievement emotions. In J. Heckhausen (Ed.), *Motivational psychology of human development* (pp. 143–163). Oxford, UK: Elsevier.

Pekrun, R. (1992). The impact of emotions and learning and achievement: Towards a theory of cognitive/motivational mediators. *Applied Psychology: An International Review*, *41*(4), 359–376.

Pekrun, R., Götz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, *37*(2), 91–105.

Pekrun, R., Götz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students learning and performance: The achievement emotions questionnaire (AEQ). *Contemporary Educational Psychology*, *36*(1), 36–48.

Renniger, K. A., Hidi, S., & Krapp, A. (1992). *The role of interest in learning and development*. Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

Reusser, K. (1996). From cognitive modeling to the design of pedagogical tools. In S. Vosniadou, E. De Corte, R. Glaser, & H. Mandl (Eds.), *International perspectives on the design of technology-supported learning environments* (pp. 81–103). Hillsdale, NJ, England: Lawrence Erlbaum Associates.

Roisch, H. (2003). Geschlechtsspezifische Interessensgebiete und Interessenpräferenzen. In M. Stürzer, H. Roisch; A. Hunze & W. Cornelißen (Hrsg.), *Geschlechterverhältnisse in der Schule* (Seite 123–150). Opladen: leske & Budrich.

Rudolf, M., & Müller, J. (2004). *Multivariate Verfahren. Eine praxisorientierte Einführung mit Anwendungsbeispielen in SPSS*. Göttingen: Hogrefe.

Ruf, U. (2008). Das Dialogische Lernmodell auf dem Hintergrund wissenschaftlicher Theorien und Befunde. In U. Ruf, S. Keller, & F. Winter (Hrsg.), *Besser lernen im Dialog. Dialogisches Lernen in der Unterrichtspraxis* (pp. 233–270). Seelze-Velber: Klett/Kallmeyer.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology. Special issue: Motivation and the Educational Process*, *25*(1), 54–67.

Sander, E., & Ferdinand, P. (2013). Empirische Befunde und pädagogische Chancen im Kontext selbstgesteuerten, experimentierenden Lernens in den Naturwissenschaften. *Empirische Pädagogik, 27*(1), 47–85.

Sarason, I. G. (1984). Stress, anxiety and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, *46*(1), 929–938.

Seidel, T., Prenzel, M., Rimmele, R., Herweg, C., Kobarg, M., Schwindt, K., & Dalehefte, I. M. (2007). Science teaching and learning in German physics classrooms Findings from the IPN Video Study. In M. Prenzel (Ed.), *Studies on the educational quality of schools* (pp. 79–99). Münster: Waxmann.

Scherer, K. R., Schorr, A, & Johnstone, T. (Eds.). (2001). *Appraisal Processes in Emotion: Theory, Methods, Research*. Oxford: Oxford University Press.

Schöne, C., Dickhäuser, O., Spinath, B., & Stiensmeier-Pelster, J. (2002). *Skalen zur Erfassung des schulischen Selbstkonzepts* (SESSKO). Manual. Göttingen: Hogrefe.

Slavin, R. E. (1995). *Cooperative learning: Theory, research and practice (2nd ed.)*. Boston: Allyn & Bacon.

Seiffge-Krenke, I. (1987). Textmerkmale von Tagebüchern und die Veränderung der Schreibstrategie. *Unterrichtswissenschaft, 15*, 366–381.

Smith, C. A., & Lazarus, R. S. (1993). Appraisal components, core relational themes and the emotions. *Cognition and Emotion*, *7*(3/4), 233–269.

Spielberger, C. D. (Ed.). (1966). *Anxiety and behavior*. New York: Academic Press.

Strittmatter, P. (1993). *Schulangstreduktion*. Neuwied: Luchterhand.

Tesch, M., & Duit, R. (2004). Experimentieren im Physikunterricht – Ergebnisse einer Videostudie. *Zeitschrift für Didaktik der Naturwissenschaften, 10*, 51–59.

Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology*, *93*(2), 320–329.

Weinburgh, M. (1995). Gender differences in student attitudes toward science: A meta-analysis of literature from 1970 to 1991. *Journal of Research in Science Teaching, 32*(4), 387–398.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*(4), 548–573.

Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R. W., & Davis-Kean, P. (2006). Development of Achievement Motivation. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3, Social, emotional and personality development*. 6th ed. (pp. 933–1002). Hoboken, NJ, US: John Wiley & Sons Inc.

Wodzinski, R. (2007). Mädchen im Physikunterricht. In E. Kircher, R. Girwidz, & P. Häußler (Hrsg.), *Physikdidaktik. Theorie und Praxis* (pp. 559–580). Berlin, Heidelberg: Springer.

Zeidner, M. (2007). Test anxiety in educational contexts: Concepts, findings and future directions. In P. A. Schutz & R. Pekrun (Eds.), *Emotion in education* (pp. 165–184). San Diego, CA: Academic Press.

Zeidner, M. (1998). *Test anxiety: The state of the art*. New York: Plenum Press.

Ziegelbauer, S., Noack, J., & Gläser-Zikuda, M. (2010). Förderung von Lernkompetenz auf der Grundlage des Portfolioansatzes. *Zeitschrift fur Didatik der Naturwissenschaften*, *16*, 355–358.

Susi Limprecht
Institute for Educational Science
Friedrich-Schiller-University
Am Planetarium 4
07737 Jena
Germany
Susi.Limprecht@uni-jena.de

Tomáš Janko
Institute for Research in School Education
Faculty of Education, Masaryk University
Poříčí, 31
603 00, Brno
Czech Republic
janko@ped.muni.cz

Michaela Gläser-Zikuda
Institute for Educational Science
Friedrich-Schiller-University
Am Planetarium 4
07737 Jena
Germany
michaela.glaeser-zikuda@uni-jena.de

Teacher Professional Socialisation: Objective Determinants

Michaela Píšová
Masaryk University in Brno, Faculty of Education

Abstract: Entry into teaching is generally recognised as a crucial phase in the professional life of a teacher. The initial years at school can be a critical part of a teacher's career having long-term implications for teacher effectiveness, job satisfaction and also career length. The problem of a high drop-out rate of novice teachers has gradually become a global issue. Therefore, teacher professional socialisation as a specific field within a larger body of research into occupational socialisation has received increased attention in the last decades. The paper presents a brief overview of teacher socialisation research paradigms within which both the anticipatory socialisation (pre-service) and the workplace (organisational) socalisation are investigated. Further on, the focus is specifically on the latter and on the factors that determine the processes of workplace socialisation of novice teachers. While recognising the significance of subjective determinants, we aim to survey mainly the objective ones in this article. Three layers of social context are addressed: interactive (pupils and classrooms), institutional (school culture, staff, and leadership) and cultural (local social community as well as broader economic, political and cultural environment).

Keywords: teacher socialisation, novice teacher, objective determinants of novice teacher socialisation, interactive, institutional and cultural levels of analysis

1 Introduction

Entry into teaching is generally recognised as a crucial phase in the professional life of a teacher. The initial years at school can be a critical part of a teacher's career, having long-term implications for job satisfaction and career length. It is the period during which professional identity is sought and formed (for a review see Cherubini, 2009). As such it has been in the centre of attention of researchers worldwide for decades (e.g. Waller, 1932). Within the plethora of studies two main orientations may be distinguished: a socio-pedagogical orientation, i.e. research focusing on teachers' career development (*career paths, professional lives of teachers*), and research in the development of teacher effectiveness in a school classroom (or, in the contemporary discourse, the development of professional competence of teachers) rooted mainly in didactics, pedagogy and cognitive psychology. It is the former perspective this text aims to address acknowledging their mutual interconnection at the same time.

Since the late 1950s, one of the main reasons for increased attention to the initial phase of teachers' career has been, particularly in Great Britain and the United States, the joint problem of teacher shortages and the high drop-out rate of young

teachers (Battersby, 1981, p. 25). The concern for teacher retention and attrition rates has gradually become a global issue as evidenced by numerous contemporary studies conducted all over the world: retention was investigated in connection with teacher morale in Great Britain (Rhodes et al., 2004); with satisfaction and motivation of teachers in Australia, England and New Zealand (Dinham & Scott, 1998); with satisfaction in the USA and China (Ouyang & Paprock, 2006) as well as Taiwan (Fwu & Wang, 2002), etc. An international overview of research in this area was provided by Cooper & Alvarado (2006). The data from the last decades in the USA indicate that it is especially novice teachers who leave the profession within a few years. Darling-Hammond (2000) noted that the rate of attrition among teachers in their first two years of teaching is at least double the average for teachers overall. According to Perez et al. (1997), 30% of beginning teachers leave teaching during that time; Ingersoll (2003) stated that the number goes up to 50% within five years of teaching. Such an attrition rate represents a serious economic loss (in Texas the State Board of Education carried out a study to assess the fiscal cost of a teacher 'lost' during the induction years: the estimate after considering the investment in teacher preparation, recruitment, professional development and support went up to $50,000). What can hardly be estimated in dollars – and what is perhaps even more important – is the effect that rapid turnover of teachers has on the quality of teaching and thus the quality of pupils' learning.

Data by the Czech School Inspectorate are available for the context of the Czech educational system but we are not aware of any research based data concerning novice teachers' dropout and its causes. It is certain, however, that the situation does not significantly differ from the rest of the world. The shortage of qualified teachers in some of the school subjects (e.g. foreign languages) has already become notorious[1].

The above data indicate that it is vital to gain a deeper insight into the processes of professional initiation at the workplace, into teacher socialisation. Socialisation is a concept used in sociology, social psychology, education, anthropology and other disciplines. The definitions vary in different theories of socialisation; e.g. Zeichner and Gore (1990, p. 329) in their seminal paper build on a broader Danzingers' (1971) view of socialisation research as "that field of scholarship which seeks to understand the process whereby the individual becomes a participating member of the society of teachers".

[1] According to the Annual Report 2010–2011 (the last one displayed on the Czech School Inspectorate web pages; http://www.csicr.cz/getattachment/e1b96137-2102-4a87-8cae-7384d9dba60c, 2012, p. 80) 70.9% of teachers of English met the qualification criteria, and only 28.2% met the specialisation criteria at primary and lower secondary levels. As regards teachers of German, the situation is slightly better (75.1% and 53.2%), teachers of other languages are not mentioned. Attrition rates are not provided either.

2 Approaches to teacher socialisation research

Teacher socialisation is a specific field of investigation developing within a larger body of research into occupational socialisation. The term socialisation has been deployed in connection with the teaching profession for decades; Danziger (1971) traced the current usage of the term to Waller (1932), Park (1939) and Sutherland and Woodward (1937). Over time, teacher socialisation research has adopted various theoretical stances in line with the paradigms of occupational research. Zeichner and Gore (1990, p. 329) highlighted three primary paradigms in the study of teacher socialisation namely a functionalist, interpretive and critical approaches.

The functionalist approach enthused by structural functionalism (Merton, 1968) is perhaps the most commonly applied one. It gives social structures analytical priority over individuals whose behaviour is conceptualised as generally determined by the social context in which they find themselves. In that context, professional socialisation is viewed as "the process by which persons acquire the knowledge, skills and disposition that makes them more or less effective members of society" (Weidman, Twale, & Stein, 2001, p. 27). The functionalist stance tends to be realistic, positivist, determinist and nomothetic (Burrell & Morgan, 1979, p. 26). Reacting against functionalism, the interpretive approach to socialisation focuses on human agency. It seeks explanation "within the realm of individual consciousness and subjectivity, within the frame of reference of the participant as opposed to the observer of action" (Burrell & Morgan, 1979, p. 28). In this view, professional socialisation is not a static process in which new students only receive the impression of the organization. It is a dynamic process in which the new student brings experiences, values and ideas into the organization. The paradigm is characterised as nominalist, antipositivist, voluntarist and ideographic (ibid., p. 28). Zeichner and Gore (1990, p. 332) pointed out that though the functionalist and interpretive approaches are fundamentally different, they share a value-neutral stance, their concern being either for explanation (functionalist perspective) or for understanding (interpretive view). Unlike that, the critical approach aims at social transformation, at increasing equality, freedom and justice, etc. (Carr & Kemmis, 1986, p. 156). Reality is viewed as socially created and sustained, the basis of the critical approach is reflexivity. (Zeichner & Gore, 1990).

3 Stages of socialisation

Teacher socialisation is often described as a staged process. Zeichner and Gore (1990, p. 336–354) reviewed influences on teacher socialisation in the following three stages: (a) prior to formal teacher education, (b) during pre-service teacher education, and (c) during the in-service years of teaching. Similarly, Staton and Hunt (1992) created a chronological model of teacher socialisation which includes three categories: biography, pre-service experience and in-service experience. The first two phases that

occur before and during the professional education period are sometimes labeled anticipatory socialisation (Olesen & Whittaker, 1970). It is often argued that the beliefs and stereotypes related to the role and behaviour of teachers created during anticipatory socialisation become a perceptual and cognitive filter and determine teacher post-entry socialisation (for a survey of literature see Cherubini, 2009). Furthermore, formal and informal socialisation are often distinguished in the main socialisation processes, i.e. in acculturation and in professional and organizational socialisation.

A non-linear model of teacher socialisation was offered in a much cited monograph by Weidman, Twale and Stein (2001); the model was developed with specific focus on the second phase, on graduate student teachers socialisation during their study at tertiary educational institutions. In Figure 1 an adaptation of this model is presented which attempts to shift the attention to the last stage of teacher socialisation, to entrants to the profession (novices after their entry to their workplaces, to schools). The model places teacher socialisation processes, i.e. professional learning linked to interaction and integration, within a complex environment which includes specific factors determining these processes.

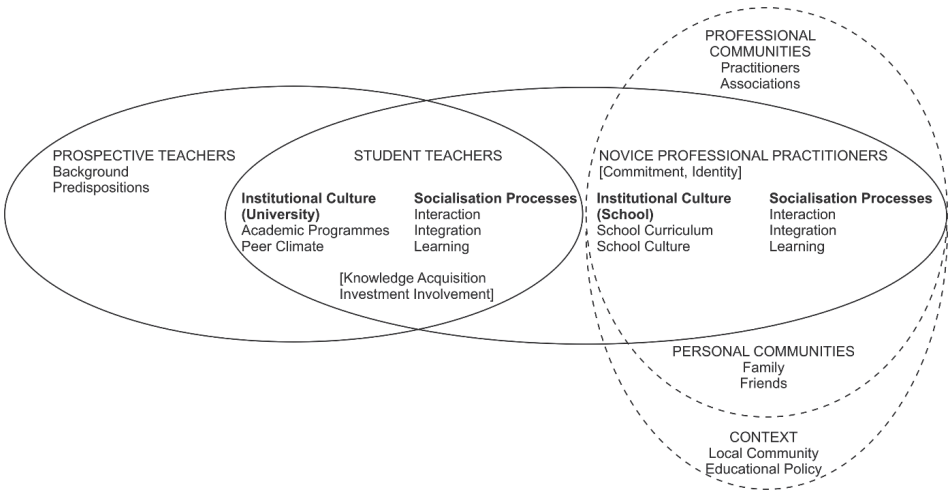


Figure 1 Model of teacher professionalisation (adapted after Weidman, Twale, & Stein, 2001)

Further on, the factors influencing teacher in-service professionalisation stage, i.e. "the classrooms", institutional culture and a broader context, will be dealt with in more detail.

4 In-service stage of teacher socialisation

Reviews of research into the initial phase of teacher career path (Battersby, 1981; Zeichner & Gore, 1990; Cherubini, 2009; Keller-Schneider, & Hericks, 2011; in the

Czech context Šimoník, 1995; Průcha, 2002, p. 23–29; Píšová, 1999, 2005; and others) bring up various aspects of teacher socialisation. Back in 1981, Battersby (1981, p. 26) in his review as well as others later on noticed that despite the differences resulting from broader cultural, historical, political, socio-economic and contextual determinants, uniform global trends in teacher socialisation processes may be identified.

The state of the art in the field offers the following characteristics of novice teacher life phase: Huberman et al. (1993) in their extensive study of teachers' professional life cycles concluded that teachers' early careers are marked by phases of exploration and stabilisation. The new teacher, according to these authors, is initially involved in a personal investigation of the dynamics of their role in the context of professional culture and then explores and experiments with these suppositions. If this exploration is positive, his/her professional self begins to stabilise by approaching the various technicalities that the role entails on a more systematic level. "The development of the profession is, therefore, a process rather than a successive series of punctual events […], in short, discontinuities" (Huberman et al., 1993, p. 4).

Drawing on these ideas of Huberman and on the ideas of Hansen (1995) that teacher development "happens" in the context of a vocation, Day and Gu (2010, p. 44–45) emphasised the notion of teachers' professional life (rather than career) in order to encapsulate also the impact of personal, emotional and organisational factors. In other words, how teachers differ within and along their professional life phases needs to be discussed on the basis of policy, organisational and classroom settings, and how these interact with events from teachers' personal lives. The perception and reactions to external influences, however, are probably largely shaped by the first phase of a teacher's professional life when his/her professional identity is sought and formed.

Even within the novice life phase, teachers were repeatedly described as proceeding through distinct sub-phases of professional development (Lortie, 1975; Lacey, 1977; etc.). For illustration, a model by Furlong and Maynard (1995, p. 68–99) includes five sub-phases: (1) initial idealism; (2) survival; (3) recognizing difficulties; (4) hitting the plateau; (5) moving on. The pace novices take up to go through differs in individuals and their environments. Therefore, Ball and Goodson (1985, p. 11) described the concept of professional career and its beginning as "socially constructed and individually perceived".

As regards the factors that may play the key role in novice teachers' professional socialisation in the contemporary Czech context, we find it useful to distinguish along with Pařízek (1994, p. 61–67) between subjective and objective determinants of socialisation processes. While recognizing the significance of subjective (or internal) determinants that include novice teacher's personality traits, reflective potential, coping strategies, commitment, professional knowledge and beliefs, and the value system of a teacher, this analysis will focus predominantly on the objective determinants, such as the organisational setting, i.e. the school and its culture (including the pupils, staff and leadership), the broader social community in which the teacher operates (including the parents), and the profes-

sional, economic, political and cultural environment. The socialising influence of the workplace is captured in Pollard's (1982) conceptual model describing three levels of social contextualisation. Pollard (1982) believed that teachers respond by their actions to this immediate context in an active and creative way and, furthermore, that it is this context that shapes their perception of the wider structure of the community, society and the state. He identified three levels of environmental influences: interactive (pupils and classrooms), institutional (school culture, staff and leadership) and cultural (local social community as well as broader economic, political and cultural environment).

4.1 Specific aspects of entry

A number of socialisation problems common to novice teachers globally may be ascribed to the specific aspects of entry to the profession which are relevant for the first two levels of Pollard's model. Lortie (1975, p. 59) formulated it in a pertinent way noting that "one of the striking features of teaching is the abruptness with which full responsibility is assumed". Unlike in other professions, novices are expected to carry out the same professional duties as veteran teachers immediately. No time (and often limited support) are provided for them to adapt to their new social roles, to the complexity of professional tasks, the pressure being often exacerbated by a radical change in their personal lives.

Another specific aspect of entry to teaching is, again in Lortie's words (1975, p. 61–62), the long "apprenticeship of observation". Individual preconceptions created through this process may play a key role and make the induction experience stressful, the number and complexity of demands sometimes leading to a so-called transition shock (cf. large-scale research at Konstanz University in Germany). At its worst, the transition shock may contribute to burnout: the stress is identified as overwhelming and a contributing factor of new teachers' depleting energy levels and emotional capacities.

Burnout has been observed relatively often with newly qualified teachers (Zehm & Kottler, 1993, p. 87). A generally stressful character of the teaching profession is universally recognised. For newly qualified teachers, the specifics of entry coincide with general causes of occupational stress which makes them especially vulnerable. Nathan (in Tolley et al., 1996, p. 41) identified the following specific stressors of novice teachers as: "pressure of work including the amount of time which has to be spent on lesson preparation", "lack of confidence and low self-esteem resulting from anxiety about getting things wrong, and overestimating the importance of perceived failures in the classroom, setting unrealistic objectives which cannot be achieved, being required […] to cope with a multiplicity of tasks in addition to teaching", "difficulty in gaining access to information, equipment and resources" and, furthermore, personal issues linked to novice's new life phase. Implicit in this list are external conditions which may either exacerbate the perceived level of pressure or moderate it on the other hand.

4.2 Socialising influence of classrooms: interactive level of analysis

Zeichner and Gore (1990, p. 342) pointed out that the emphasis on socialising influence of pupils and classrooms on teachers is supported both on logical grounds and by empirical evidence. The 'logical' explanations usually link the importance of pupils and classrooms to a typical isolation of teachers from their colleagues as well as to the 'invisible' nature of professional learning processes (Doyle, 1979). These arguments are supported by a substantial number of empirical studies; Cherubini (2009, p. 86–87) provided us with a review of studies dated since the publication of Veenman's (1984) important international study of the main concerns about beginning teachers' socialisation. Among the five predominant concerns identified by Veenman (1984) four relate to pupils: classroom discipline, pupil motivation, teacher – pupil relationships and assessing pupils' work. Nowadays, novice teachers are confronted with a new generation of learners. Discipline problems, pupils'/students' attitude towards learning and lack of motivation are recognised as causes of occupational stress (Hennig & Keller, 1996, p. 9–10, for the Czech context e.g. Bendl, 2011). Though they are 'evergreens' in teachers discourse, currently they have taken up a new shape and unexpected representations, thus posing a challenge to the expectations of novices.

Moreover, Doyle (1979) argued that pupil effects are just one facet of the larger matter of the effects of classrooms on teachers. He emphasised the role of the ecology of the classroom in teacher socialisation, namely factors related to the material conditions and social organisation of the classroom (teacher-pupil ratios, lack of resources, limited time and financial problems).

4.3 Socialising influence of school and its culture: institutional level of analysis

Occupational culture and institutional culture[2] are complex phenomena. An extensive body of literature documents "an escalating interest in the socio-psychological conditions and circumstances of teachers' work" (Little & McLaughlin, 1993, p. 1; for the Czech context e.g. Pol, 2013). For the purpose of this discussion we build on the perception of school culture as "the distinctive blend of norms, values and accepted modes of professional practice, both formal and informal, that prevails among colleagues" (Bryk & Driscoll, 1988, p. 253). All schools are positioned within their own histories that exist before teachers enter them. For new teachers it means that they must engage immediately in discourse and behaviour/s already established (Scherff, 2008, p. 1319). Weiss (1999) found in her analysis of a nationwide sample of beginning teachers in the USA that their views of the social organization of their

[2] For conceptual discussion and definitions of the terms culture, climate, ethos, etc. see Mareš (2003).

schools (including leadership and culture) were the variables most closely associated with morale, career choice, commitment and planned retention. Our study of novices' induction experience carried out at about the same time in the Czech Republic (Píšová, 1999) generated similar results – school culture was identified as the main cause of novice teachers' concern, the reason why three quarters of respondents in the research have decided or considered leaving the profession.

Lortie (1975, p. 56) believed that in teaching the occupational culture in general is characterised by privatism and survival strategies, though such characteristics, which turn induction into 'sink or swim in private', are not necessarily predominant in every single school. Over the past decades a campaign for cooperative schools was very strong based on the belief that the ethos of collegiality, supportive criticism and systematic reflection on practice would encourage similar dispositions in teachers and help create communities of practice. The 'cooperative rhetorics' has not been fully unanimous though, as e.g. Little and McLaughlin (1993, p. 2) pointed out. According to them "the initial enthusiasm about the benefits of collegiality has been followed by increasing scepticism" in the light of growing research on staffroom culture and the evidence provided by its results.

As school culture/climate has also received much attention in the Czech Republic (various studies by Mareš, Prokop, Pol and his colleagues, Grecmanová, Chráska, Tomanová and Holoušová, Ježek, etc.), we restrict the focus here on the aspects/dimensions that may be of special importance in novice teachers' socialisation processes.

An important element of institutional culture is the school hierarchy, mainly the leadership, its style and the management structure. According to West-Burnham's (1995) analysis of leadership tasks, headmasters are responsible for formulating and communicating a vision for the school, thus creating a positive atmosphere. Moreover, novice teachers acknowledge the head's role as a leading professional, expecting at the same time that instructional leadership will respect a certain degree of teacher autonomy (Ball & Goodson, 1985, p. 15). Lortie (1975, p. 200) pointed out that "the acceptance of the principal's authority is coupled with definite ideas on how the authority should be deployed". Generally, democratic leadership based on collegial decision making is considered to be the most effective according to current theories of educational management. Research results, unfortunately, indicate that teachers' participation in making decisions concerning whole school policies is usually relatively low (e.g. Pol & Rabušicová, 1997, p. 95–100 for Czech schools). In case of novice teachers, moreover, truly open relationships with senior management and participation in decision making are constrained by the perception of the headteacher's dual role as an advisor and an assessor. Generally speaking, the success of a novice teacher's socialisation is supposed to be facilitated by an open door policy with "leadership visible presence" (West-Burnham, 1995, p. 27) and "leader approachability" (Humphreys, 1993, p. 70).

Most studies point to staff relationships as the key factor of success or failure of novice teachers' socialisation processes; e.g. Putz's extensive synthesis of literature

in 1992 highlighted relationship among colleagues and staff as one of the four main concerns in novices' acclimatisation into school culture. Beginning teachers' interactions with colleagues are described as a complex and sensitive series of exchanges, with emphasis on new teachers' ability to uphold a cohesive relationship with the school community (Cherubini, 2009, p. 87). Such an active engagement of a novice is expected to be facilitated by the collegial culture with high frequency of interaction, inclusive collegial grouping and shared value orientation (Little & McLaughlin, 1993, p. 6). A fundamental prerequisite of cooperation is mutual trust (Hargreaves, 2002, p. 393–407) which permits for the highest level of cooperation – joint work such as, for example, team teaching, mutual observations and joint planning (Pol & Lazarová, 1999, p. 15).

Unfortunately, research into school culture seems to indicate that in spite of social changes and theoretical development in this area, relationships among colleagues have not changed in many schools since Lortie's analysis (1975). The reasons are often ascribed to the specifics of teachers' work: isolation as a feature of classroom performance, lack of feedback (or feedback from learners rather than from colleagues). These factors may drive a novice into defensive behaviour patterns, especially at schools with general 'culture of non-interference' (Huberman et al., 1993, p. 29) where 'deceptive discourse', i.e. social small talk rather than professional debate, prevails (Eraut, 2002, p. 373). Generally speaking, a cooperative school culture seems to be better suited to novice teachers' needs. But, as Little (1990, p. 174–175) warned, even highly collegial schools do not automatically represent an optimal environment for a newcomer; she observed that collegial teams have their standard of productivity, dynamic pace, accumulated knowledge base and shared language which may cause assimilation problems for a novice and, at the same time, his/her presence may endanger effective functioning of the team.

More generally it may be stated that during the initial phase of socialisation into institutional culture a young teacher discovers the rules of conduct, hidden agendas and micro-political power structures. Gender, age and even physical facilities such as the presence or absence of a staffroom (Píšová, 1999) may play an important role in establishing relationships with colleagues. Research proves that the quality of interactions between novice teachers and their more experienced colleagues impacts their decision to remain in the profession or not (e.g. Weiss, 1999).

It has been repeatedly noted that one way to ease the assimilation of novices and reduce the attrition rate is through supportive induction. Mentoring programmes were paid most attention to within the various models of professional induction and supportive measures (Darling-Hammond, 2003; Rippon & Martin, 2006; Píšová, Duschinská et al., 2011 for the Czech context). Mentoring as personal long-term support for novices and as facilitation of professional learning processes has become one of the leading forms of teacher induction (and, indeed, of school-based teacher education) in a number of countries in Europe and overseas (Ingersoll & Smith, 2004). As such, it has been thoroughly researched (for more details see Píšová et al., 2011). Unfortunately, in the Czech Republic mentoring as well as any other job-embedded

support schemes are still solely in the hands of individual schools at present. Novice teachers usually open up informal vertical relationships first (e.g. within their subject committees; Ball & Goodson, 1985, p. 9) and often rely heavily on support from and through the generation cliques or on informal friendships; they find sympathy and someone they may trust there but hardly ever expert advice. Effective mentoring, however, should not only stand as the source of support, the other key dimension of mentoring to be put in balance here is challenge (Píšová et al., 2011, p. 50).

Mentors also often become the main sources of professional affirmation. There are certainly not many extrinsic rewards in (not only) novice teachers' work: "the tradition of teaching makes people who seek money, prestige, or power somewhat suspect" (Lortie, 1975, p. 102). However, intrinsic or "psychic rewards", as Lortie calls them, are an essential prerequisite for positive self-esteem which is recognised as an important variable in successful induction. Taking into account the frequent lack of clear criteria for a functioning teacher appraisal system, informal signals of affirmation from others, i.e. mentors, colleagues and leaders, often become the main "psychic rewards" for a novice teacher. Unfortunately, as Humphreys (1993, p. 71) noted, "recognition, respect, valuing, affirming, encouragement, praise are not regular features of staff/staff or leader/staff interactions."

4.4 Socialising influence of local community and social context: cultural level of analysis

Schools do not operate in a vacuum, their immediate environment exerts strong influence on them, on their culture. Social changes all over the world are reflected in an increase in the responsibility of the school linked to the deteriorating role of the family, to the 'impossible' demands and expectations imposed on schools by society (to prevent and/or eliminate emerging negative social issues such as drug abuse, xenophobia, etc.). Such demands go hand in hand with critical attitude of parents towards school and further decrease the status and prestige of the occupation which constantly forces the teachers on to the defensive. Scherff's study (2008, p. 1329) may serve as an example: her novice teacher was confronted with the situation when

> the power rested not with classroom teachers, but with students (and their parents) who, in turn, influenced how administrators operated. Appeasing parents came at the expense of teacher control, decision-making, and professionalism. At […] /*the name of the school*/, reputation was key, and as long as the school looked good in the eyes of the public, things were okay.

The example serves as illustration of ways in which the neo-liberal trend in education (Štech, 2007) may materialise and directly affect the school culture, thus influencing novices' socialisation processes. At its worst, in combination with a novice's low professional self-esteem and other stressors typical of professional initiation, it may contribute to the decision to abandon the profession.

The impact of neo-liberal era on education mentioned above and illustrated in one example is obviously overarching – Štech (2007, p. 328–330) spoke about a dra-

matic turn in the history of school education. His enumeration of the basic postulates of educational neo-liberalism such as individualisation, de-regulation, i.e. free and responsible choice, utilitarian conception of education and the perception of education as a market commodity, has clear implications for the teaching profession – and the more so for a self-conscious novice. Research in the Western countries repeatedly pinpointed the effects of neo-liberal reforms on school culture and on teacher professionalism: erosion of value systems, weakening of school autonomy, culture of competitiveness, domination of accountability, etc. The shift is well captured by Sachs' (1999, page not provided) distinction of democratic professionalism and managerial professionalism of teachers, the latter being characterised as "an ideology with two distinct claims: that efficient management can solve any problem; and that practices which are appropriate for the conduct of private sector enterprises can also be applied to the public sector".

Research suggests that a school culture which values external measures as representative of student learning is marked by a distinct identity that translates into the reinforcement of certain behaviours over others (Darling-Hammond, 1997). With a pervasive concentration on external accountability the novice teachers' anxiety is further strengthened by the burden of being pressured to assimilate their practice and conceptualise their paradigms to the school's occupational purposes (Cherubini, 2009). To provide a counterbalance, an interesting finding by Huberman et al. (1993, p. 34–36) may be quoted: after comparing the results of his research with the outcomes of other studies he concluded that in the periods of abrupt or intense educational change, during a reform or innovation, higher levels of teacher cooperation may be observed; even rigid schools and fierce opponents of cooperation within them consider joint efforts to solve new problems legitimate.

5 Conclusion

The paper focused on the initial phase of the professional lives of teachers. The impetus to deal with this issue comes from the recognition of the immense importance of professional entry not only for teacher retention, i.e. for a definite career choice of an individual, but also for the the emerging professional identity of a new teacher. Professional socialisation is perceived as more than just acquiring the skills and knowledge necessary to perform a role, it also includes understanding and internalising the values and norms that are fundamental to the essence of the profession. Though there is a growing body of research providing deeper insight into teacher socialisation processes, its results especially from the studies conducted in the English speaking countries indicate that novices' induction experience brings about a lot of the initial concerns which have been documented about beginning teachers for over 35 years. It is worth noting, that such conclusion may be formulated despite the educational reforms in Canada, the USA, the United Kingdom and Australia over the last three decades (Cherubini, 2009, p. 83).

The focus on objective determinants of novice teacher socialisation we have opted for in this paper is linked to the current educational context in the Czech Republic. Discussions about teacher career system which would encompass a systemic attention to novice teacher induction have been going on for almost two decades. It is a must to take into consideration the lessons learned from research in designing such a systemic support scheme aimed at increasing the quality of education through its key agents, the teachers.

References

Ball, S. J., & Goodson, I. F. (Eds.). (1985). *Teachers' lives and careers*. London: The Falmer Press.

Battersby, D. (1981). Beginning teachers: a review of research. *Australian Journal of Teacher Education*, 6(2), 25–39.

Bendl, S. (2011). *Kázeňské problémy ve škole*. Praha: Triton.

Bryk, A., & Driscoll, M. E. (1988). *The high school as community: Contextual influences and consequences for students and teachers*. Madison, WE: National Center on Effective Secondary Schools.

Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organizational analysis*. London: Heinemann.

Carr, W., & Kemmis, S. (1986). *Becoming critical: Education, knowledge and action research*. Philadelphia: Falmer Press.

Cherubini, L. (2009). Reconciling the tensions of new teachers' socialisation into school culture: A review of the research. *Issues in Educational Research, 19*(2), 83–99.

Cooper, J. M., & Alvarado, A. (2006). *Preparation, recruitment, and retention of teachers. Educational Policy Series*. Paris: The International academy of Education.

Darling-Hammond, L. (1997). Restructuring schools for student success. In P. Brown, A. H. Halsey, H. Lauder, & A. S. Wells (Eds), *Education: Culture, economy, and society* (pp. 332–337). Oxford, UK: Oxford University Press.

Day, Ch., & Gu, Q. (2011). *The New Lives of Teachers*. London: Routledge.

Danziger, K. (1971). *Socialization*. Baltimore: Penguin Books.

Darling-Hammond, L. (2003). Keeping good teachers: Why it matters, what leaders can do. *Educational Leadership, 60*(8), 6–13.

Dinham, S., & Scott, C. (1998). *An international comparative study of teacher satisfaction, motivation, and health: Australia, England, and New Zealand*. Paper presented at the AERA, San Diego, CA.

Doyle, W. (1979). Classroom effects. *Theory Into Practice, 18*(3), 138–144.

Eraut, M. (2002). Menus for Choosy Diners. *Teachers and Teaching: theory and practice*, *8*(3/4), 371–378.

Fwu, B., & Wang, H. (2002). The social status of teachers in Taiwan. *Comparative Education, 38*(2), 211–224.

Havlík, R. (2003). Postoje mladých učitelů k vlastní přípravě. In *Sociální a kulturní souvislosti výchovy. Sborník z 11. celostátní konference ČAPV* (pp. 1–6) [CD-ROM]. Brno: Paido.

Hennig, C., & Keller, G. (1996). *Antistresový program pro učitele*. Praha: Portál.

Huberman, M., Grounauer, M. M., & Marti, J. (1993). *The Lives of Teachers*. London: Cassell, New York: Teachers' College Press.

Humphreys, T. (1993). *A different kind of teacher*. New York: Cassell.

Ingersoll, R. (2003). *Is there really a teacher shortage*? *(A research report cosponsored by the Center for the Study of Teaching and Policy and the Consortium for Policy Work in Education; Document R-03-04)*. Seattle: Center for the Study of Teaching and Policy.

Janík, T., et al. (2010). *Kurikulární reforma na gymnáziích. Výsledky dotazníkového šetření*. Praha: VÚP.

Keller-Schneider, M., & Hericks, U. (2011). Forschungen zum Berufseinstieg. Übergang von der Ausbildung in den Beruf. In E. Terhart, H. Bennewitz, & M. Rothland (Eds.), *Handbuch der Forschung zum Lehrerberuf* (pp. 296–313). Münster/New York/München/Berlin: Waxmann.

Lacey, C. (1977). *The socialization of teachers*. London: Methuen.

Little, J. W. (1990). Teachers as Colleagues. In A. Lieberman (Ed.), *Schools as Collaborative Cultures: Creating the Future Now* (pp. 165–189). New York/Philadelphia London: The Falmer Press.

Little, J. W., & McLaughlin, M. W. (Eds.). (1993). *Teachers' Work. Individuals, Colleagues and Contexts*. New York/London: Teachers College, Columbia University.

Lortie, D. (1975). *Schoolteacher: A Sociological Study*. Chicago: University of Chicago Press.

Mareš, J. (2003). Zamyšlení nad pojmem klima školy. In M. Chráska, D. Tomanová, & D. Holoušová (Eds.), *Klima současné české školy. Sborník příspěvků z 11. konference ČPdS* (pp. 32–42). Brno: Konvoj.

Merton, R. (Ed.). (1968). *Social theory and social structure*. New York: New York Free Press.

Olesen, V., & Whittaker, E. W. (1970). Critical notes on sociological studies of professional socialization. In J. A. Jackson (Ed.), *Professions and professionalization* (pp. 179–221). London: Cambridge University Press.

Ouyang, M., & Paprock, K. (2006). *Teacher job satisfaction and retention: A comparison study between the US and China*. Paper presented at the Academy of Human Resource Development international conference, Columbus, OH.

Park, R. E. (1939). Symbiosis and socialization: A frame of reference for the study of society. *The American Journal of Sociology, 45*(1), 1–25.

Pařízek, V. (1994). *Obecná pedagogika*. Praha: Pedagogická fakulta UK.

Píšová, M. (1999). *Novice Teacher*. Pardubice: Sci. Pap. University of Pardubice, Series C, Supplement 1.

Píšová, M. (2005). *Klinický rok: procesy profesního rozvoje studentů učitelství a jejich podpora*. Pardubice: Univerzita Pardubice, Fakulta humanitních studií.

Píšová, M., & Duschinská, K. et al. (2011). *Mentoring v učitelství*. Praha: Pedagogická fakulta UK.

Pol, M., & Rabušicová, M. (1997). Učitelé a rozhodovací procesy ve škole. *Pedagogická orientace, 7*(4), 95–100.

Pol, M., & Lazarová, B. (1999). *Spolupráce učitelů – podmínka rozvoje školy*. Praha: Strom.

Pol, M., Hloušková, L., Lazarová, B., Novotný, P., & Sedláček, M. (2013). *Když se školy učí*. Brno: Masarykova univerzita.

Průcha, J. (2002). *Učitel*. Praha: Portál.

Putz, B. (1992). *Helping beginning teachers succeed.* SSTA Research Centre Report No. 92–13.

Rhodes, C., Nevill, A., & Allen, J. (2004). Valuing and supporting teachers: A survey of teacher satisfaction, dissatisfaction, morale and retention in an English local education authority, *Research in Education*, 71, 67–80.

Rippon, J. H., & Martin, M. (2006).What makes a good induction supporter? *Teaching and Teacher Education, 22*(1), 84–99.

Sachs, J. (1999). *Teacher Professional Identity: competing discourses, competing outcomes*, Paper Presented at AARE Conference Melbourne. Available at: http://www.aare.edu.au /99pap/sac99611.htm.

Scherff, L. (2008) Disavowed: The stories of two novice teachers. *Teaching and Teacher Education, 24*(5), 1317–1332.

Staton, A. Q., & Hunt, S. L. (1992). Teacher socialization: Review and conceptualization. *Communication Education, 41*(2), 109–137.

Šimoník, O. (1995). *Začínající učitel*. Brno: Masarykova univerzita.

Štech, S. (2007). Profesionalita učitele v neo-liberální době, *Pedagogika, 57*(4), 326–337.

Tolley, H., Biddulph, M., & Fisher, T. (1996). *The Professional Development Management File*. Cambridge: Chris Kingston Publishing.

Urbánek, P. (2001). Postoje budoucích učitelů k vlastní profesi. In *Nové možnosti vzdělávání a pedagogický výzkum*. Sborník z IX. konference ČAPV (pp. 130–134). Ostrava: PdF OU.

Veenman, S. (1984). Perceived problems of beginning teachers. *Review of Educational Research, 54*(2), 143–178.

Waller, W. (1932). *The sociology of teaching*. New York: John Wiley.

Wang, J., Odell, S. J., & Schwille, S. A. (2008). Effects of teacher induction on beginning teachers' teaching: A critical review of the literature. *Journal of Teacher Education, 59*(2), 132–152.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: a perilous passage*. ASHE-ERIC Higher Education Report 28(3). Washington: Association for the Study of Higher Education.

Weiss, E. M. (1999). Perceived workplace conditions and first year teachers' morale, career choice commitment, and planned retention: A secondary analysis. *Teaching and Teacher Education, 15*(8), 861–887.

West-Burnham, J. (1990). Human resource management in schools. In B. Davies et al. (Eds.), *Educational management for the 1990s* (p. 24–38). Harlow: Longman.

Zeichner, K., & Gore, J. (1990). Teacher socialisation. In R. Houston (Ed.), *Handbook of research on teacher education* (pp. 329–348). New York, London: Macmillan.

Michaela Píšová
Institute for Research in School Education
Faculty of Education
Masaryk University
Poříčí 31, 603 00 Brno
Czech Republic
pisova@ped.muni.cz

Ten Years of the Institue for Research in School Education

Tomáš Janík, Petr Najvar, Marie Doskočilová

In 2013, the Institute for Research in School Education (IRSE), Faculty of Education, Masaryk University take the opportunity to look back at the ten years that have passed since its establishment. IRSE was set up in 2003 as a new department at Masaryk University's Faculty of Education whose purpose is to initiate and support research activities of not only its own members but also all the other faculty staff. This report is one of the ways of looking back. We introduce IRSE and summarise some of its activities and achievements in its first decade.

Introducing IRSE

IRSE's goal has been to promote research in school education in broader socio-cultural contexts. The Institute's core areas of interest are in the educational conditions, environments, actors, aims, contents, processes and outcomes at primary and secondary school levels.

IRSE's mission (summarised in the motto *better education through research*) is to develop both in-depth knowledge of the educational reality in schools and elaboration of theoretical base for improving their practice. In order to reach these goals the members of IRSE employ a wide range of research approaches: theoretical and empirical as well as interdisciplinary and comparative. Besides the quantitative and qualitative methodology the mixed-method design is employed.

The focus of IRSE also lies on the pedagogical methodology, especially the relation between the theory and practice, general didactics and subject didactics, mixed methods, video-based methodology, comparative methodology in the research on curriculum and the contrastive approaches in the research on teacher education.

IRSE develops expert reports and evaluation studies for the Czech Republic's Ministry of Education and its organisations. The research findings are publicly discussed as the Institute's ambition is to give voice to research community.

IRSE participates in the doctoral study in Educational sciences programme at the Faculty of Education by supervising doctoral students and prospective applicants. The Institute offers lectures, seminars and workshops on research methodology and subject didactics, it also hosts visiting scholars from the Czech Republic and abroad.

A special book series *Educational Research in Theory and Practice* (counting more than twenty publications) was introduced in order to present research findings to public.

IRSE's aim is to undertake projects which investigate the three general pedagogical areas of 1) curriculum, 2) teaching and learning, and 3) teacher education.

1) Focusing on the aims and contents of school education (curriculum)

IRSE investigates the processes of designing, implementation, realisation, evaluation and revision of curricular documents, textbooks, etc. The focus lies on relations between theory and practice, curricular policies and educational practice with regard to general didactics and subject didactics.

Research on textbooks and other curricular documents

Curriculum is viewed as a complex of issues concerned with questions why, who, in what, how, when, under what conditions and with what expected effects to educate.

The aim of IRSE is predominantly:

- to generate knowledge of curriculum, to inform theory and practice in particular;
- to develop and optimise methods of empirical investigation into curricular documents, especially textbooks including the broader context of their development, authorisation, use, assessment, etc.;
- to provide theoretical and methodological support and publishing opportunities to beginning as well as senior researchers in the area of curriculum research;
- to organise regular conferences and seminars which support establishing and expanding the research community dealing with the issues of curriculum.

The purpose of the Institute's ongoing activity is to develop curricular research and its methodology. We concentrate on the methodology of developing aims and content of school education and on implementation of curricular reforms, especially on outlining the curricular processes and forms as well as their mutual interaction. In addition, historical-comparative and content analyses of the curriculum are dealt with in a number of dissertation theses.

One of the important areas focused on by IRSE is the research on textbooks. Textbooks may be viewed either as a product, curricular project or a medium in a narrow sense, or from the perspective of processes of their development, use, assessment, etc. in a broad sense. Furthermore, the issue of textbook research methodology is important to us as many questions concerning data objectivity and reliability remain unanswered in this research area. The findings available are often based on intuition or long-term pedagogical experience. Although such assumptions may be correct, IRSE strives to verify them empirically.

IRSE participated in the *Kvalitní škola (Quality school)* research whose concern was to monitor the processes and assessment of the curricular reform. The aim of the research was to describe, analyse and evaluate the Framework Education

Programme implementation, the School Education Programme development and its realisation. Factors influencing those processes were identified as well as roles which the framework and school programmes play on the levels of curricular planning, work with educational aims and content. Relevant data relating to the qualitative changes on the school level, curriculum and lessons were gathered from interviews with coordinators of school programmes (phase 1), from questionnaires (representative sample of grammar schools, phase 2), case studies of the processes of the curriculum development (phase 3), video studies focusing on curriculum realisation (phase 4) and from expert inquiry (phase 5).

2) Focusing on classroom processes

IRSE develops a video-based methodology of teaching and learning as they occur in classrooms and conducts research into various aspects of teaching and learning in different school subjects. Through investigating both the overlap between the subject-specific issues and the inter-subject similarities and differences, the aim is to develop a concept of transdisciplinary didactics. The ultimate concept is *quality of instruction*.

Video Study: classroom research in Czech schools (2004–2012)
Since 2004, IRSE has been conducting a series of inquiries into classroom processes in different subjects in primary and lower-secondary schools. The IRSE Video Study is an umbrella label for different video-study projects:

- Video Study of Physics (2004),
- Video Study of Geography (2005),
- Video Study of English (2007),
- Video Study of Physical Education (2007),
- Video Study of Primary Education (2011),
- Video Study of German (2012).

The ultimate goal of the individual video-study projects is to explore the processes of teaching and learning in different school subjects at primary and lower-secondary school levels. The aim is to document, describe and analyse the reality of everyday teaching in different school subjects and provide a comparative perspective. Such comparison will enable us to gain an in-depth knowledge of the differences arising from the different content-specific nature of the school subjects.

The aims of the video study are:

- to contribute to establishing basic knowledge of teaching and learning processes that take place in different subjects at primary and lower-secondary school levels, and to provide for an in-depth understanding of such processes in transdisciplinary perspective;
- to elaborate on methodology for investigating classroom processes with regard to current topics, such as competencies and the ways to enhance them

- to use the video-recordings in teacher education withthe respective teachers' consents.

Each lesson is videotaped using the standardised procedure with two video cameras. The student camera captures the activity of most students from the blackboard-side corner of the classroom, and the teacher camera captures the teacher's activity. At the primary level, the sample includes 10 lessons of English as a foreign langauge and 10 lessons of primary science; at the lower-secondary level, the sample includes videotapes of 62 lessons of physics, 50 lessons of geography, 58 lessons of physical education, 79 lessons of English as a foreign language and 28 lesson of German as a foreign language.

3) Focusing on teacher education

IRSE focuses on teacher training and professionalisation, the processes of the shift from novice teachers to expert teachers, contributes to their support and analyses the role of contextual variables in such processes. Teacher professional competence is monitored in areas of teacher thinking and knowledge, special focus lies on developing pedagogical content knowledge.

Using videos in teacher education (video web)

IRSE develops a videobased e-learning environment. The IRSE Video Study started the development of an e-learning environment for future teachers. The IRSE Video Web refers to learning environment involving video recordings of lessons and related set of questions and tasks to be answered or solved by future teachers. The aim of the IRSE Video Web is to foster students' professional vision which helps them prepare for their own teaching.

The IRSE Video Web has two general functions. 1) As an instrument for developing students' professional vision the video web functions as a guide for future teachers to explore different pedagogical situations, to structure their thinking, to help students describe, interpret, clarify and assess the observed situations, all leading to enhancing their professional vision. 2) As a diagnostic instrument for assessing future teachers' reflective competence, The IRSE Video Web generates research data (e.g. the answers to questions, rating of observed situations) which enables the researchers to analyse student's thinking about the observed situations.

In order to develop the video web a research group has been established at the Faculty of Education, MU, represented by experts in didactics of the subjects which were included in the IRSE Video Study and the TIMSS 1999 Video Study – physics, geography, chemistry, biology, physical education and English. The experts in didactics sought video sequences exemplifying particular subject matters and developed a set of questions and tasks for students. The video web cooperated with experts in information technology who loaded the video clips into the MU Information system, enabling their access to the registered students.

Management structure of IRSE

The *head of the Institute* formulates IRSE's research programme in cooperation with the management of the Faculty of Education MU (bottom-up) and with the heads of research groups (top-down). The *head* also supervises activities of the research groups and publications.

The *heads of research groups* are responsible for the strategy and planning in their thematic areas (curriculum, teaching and learning, teacher education), prepare project proposals in compliance with IRSE's research programme. The heads of research groups are autonomous researchers, presenters of the projects and main authors of project outcomes.

The *members of research groups* cooperate on carrying out the project tasks. They become co-authors of the project outcomes. The members of the research teams are staff members and doctoral students of the Faculty of Education MU as well as guest experts.

Current projects

Following its research agenda, IRSE realises and participates in various research projects granted by the Czech Science Foundation, Masaryk University and other bodies. Some of the projects are listed below with a short description of their aims.

Exploring professional vision and its development through video-based analysis (from the perspective of teachers of English as a foreign language) – GA ČR GA13–21961S

The project draws on current debates of teacher professionalization and quality in education and aims to research a relatively new concept of teachers' professional vision. Professional vision, linked to professional knowledge and professional action, offers a possibility to re-conceptualize teacher professionalism. It has two components – noticing (what teachers attend to) and knowledge-based reasoning (the process of making sense of a situation). In the project we focus on teachers of English as a foreign language (EFL) and aim to (1) describe the nature of professional vision of EFL teachers; (2) explore the influence of participation in a videoclub (collaborative video-based analysis) on teachers' professional vision and explore its acceptance among participating teachers, (3) explore the relationship between professional vision, professional knowledge and professional action. Research methods including qualitative content analysis of teachers' comments on video sequences and of teachers' self-reports, acceptance questionnaire and video study will be used to achieve the aims.

Opportunities to develop problem solving competence in textbooks and in the classroom – GA ČR GPP407/12/P059

Ongoing educational reforms in the Czech Republic strive to introduce new culture of learning and instruction. Together with new culture of learning and instruction, new theoretical concepts are introduced such as key competences which represent the highest aim of education in many educational systems around the world, including the Czech Republic. There is a lack of data that could provide a comprehensive picture of the curriculum materials as well as of the schooling processes as they occur in schools and classrooms; that could provide us with information about the implementation of educational reform. We suppose that questions and tasks can be the most influential and approachable features in the process of implementing new ideas, aims and objectives. In the proposed research we focus on problem-solving competence, as an example of a key competence. The purpose of the research is to examine and describe the nature and qualities of questions and tasks in geography textbooks and instruction with regard to the development of problem solving competence.

Foreign language learning strategies and achievement: Analysis of strategy clusters and sequences – GA ČR GAP407/12/0432

The project is based on an analysis of problems of foreign language learning and instruction in the Czech Republic. Many pupils do not reach the expected language level even after many years of learning. The reason is not only the quality of instruction but also the learning strategies of pupils. More than two thirds of pupils reported not to be sure of how to learn and showed deficiencies in learning skills and strategy use. The project is based on the current state of the art of learning strategies which shows that they do not exist separately but in sequences and clusters that have to be described and analysed in terms of their orchestration and quality of use. The aim of the project is 1) to introduce the concept of strategy sequences and clusters as a theoretical construct, 2) to point out the typical sequences and clusters of foreign language learning strategies and their relation to achievement in language situations and tasks, 3) to specify the relation of strategies and achievement in foreign language at the end of lower secondary (i.e. compulsory) education.

Quality of curriculum and instruction in school education – GA ČR P407/11/0262

The project is based on an analysis of problems in school education which were identified by the Czech educational research in 2001–2008. A number of the problems are related to the quality of curriculum and instruction. The two concepts are often mentioned in political slogans, however, they have not yet been established as scientific constructs. The aim of the project is to (1) introduce the concepts of quality of curriculum and instruction as theoretical constructs, (2) develop instruments for their empirical research, and (3) carry out research studies on the quality of curriculum and instruction in different school subjects (languages, maths and science, social sciences, aesthetics and sport). Three methodological principles are applied:

(A) systematic approach, (B) content-process-oriented approach, (C) connecting the domain-specific and the domain-general perspectives – the quality of curriculum and instruction is primarily investigated from the point of view of field didactics, but building on a cross-curricular comparison, it will achieve generalizations across the subjects concerned.

An expert teacher: his/hercharacteristics and the determinants of his/her professional development (in the context of foreign language teaching) – GA ČR P407/11/0234
The ongoing discussion concerning the quality in education concurrently addresses one of its central challenges – the professionalisation of a teacher. The project aims to shed more light on the concept of expertise in the teaching profession. Firstly, an extensive survey of theoretical and research studies of expertise in the teaching profession will be carried out, then on the basis of its outcomes and considering the specifics of the Czech cultural context the project is going to develop, pilot and verify methods for the core of the project, i.e. research into the nature of teacher expertise in the first phase and research into the processes and conditions of expertise development and maintenance in the next phase. The results may provide information crucial for reshaping and transforming pre-graduate as well as further teacher education, for setting the standards of quality in teaching and, last but not least, for raising the status of the teaching profession.

Pupils' skills in biology, geography and chemistry: research into planned, realized and achieved curriculum in the implementation phase of curricular reform – GA ČR 407/10/0514
The main aim is to propose a structured and linked system of pupils' skills, which should be acquired in geography, biology and chemistry in primary and secondary schools on the basis of results of a multi-level analysis of skills in terms of intended, realized and acquired curriculum.

Projects realised in the past

Since 2003, IRSE has realised or participated in various projects, some of which are listed below with a short description of their aims.

Research Centre on Schooling – LC 06046 (2006–2011)
In general, the project aimed to gain a new theoretical knowledge concerning structures, aims, contents and processes of schooling under the changing economic, social and cultural conditions of the society and to analyse consequences for educational policies and school practices. More specifically, the project aimed to analyse the process of transformation of education systems in central Europe and other european countries, to analyse the implementation of the principle of equity in education,

to analyse stakeholders' demands on education, to develop a theoretical model of curriculum, to realise a complex analysis of teaching and learning in Czech schools and to realise a series of case studies of Czech basic schools.

Pedagogical content knowledge as a key issue in curricular reform – GA ČR 406/06/P037 (2006–2008)
The project concentrated on L. S. Shulman's concepts of pedagogical content knowledge and knowledge base for teaching. It focused on the diagnosis and analysis of pedagogical content knowledge of experienced primary school teachers. The aim of the project was to analyse and describe the features of this knowledge and the construction and development of the processes. A complex research strategy was employed that included both qualitative and quantitative methodologies (narrative interview, concept mapping, structuring cards technique, videoanalysis of teachers' acting, etc.). In the content dimension, the project aimed provide an analysis of pedagogical content knowledge of primary school teachers. In the methodological dimension, it contributed to the development of methods and techniques of investigating the pedagogical content knowledge.

The content dimension of basic school curriculum – GA ČR 406/05/0246 (2005–2007)
The project aimed at the analysis of the demands on educational content, in particular on the level of the basic school leaver. The topic was examined from the point of view of the schools and also from the point of view of the society's expectations. Quantitative approaches (lesson analyses, curricular document analyses, textbook analyses and questionnaires) as well as qualitative ones (participative observation in schools and case studies) were implemented. Within the project, seminars and conferences were organised and theoretical studies, conference books and other outcomes were published. The project contributed to the clarification and specification of the basic school curriculum's function in the content and methodical dimensions.

Tacit pedagogical knowledge and the self-regulation of the process of its development – GA ČR 406/02/1247 (2002–2004)
The aim of this interdisciplinary project was to find the relationship between tacit and explicit pedagogical knowledge and to study the conditions of the self-regulation of their development process (with both the student teachers and in-service teachers). The qualitative methodology (non-structured observation, teacher's biography method, ethnographic interview, case studies of students and their self-reflective reports) topped up with an experiment based on quantitative research procedures were employed. The intervention that support the self-regulation of the process of the tacit pedagogical knowledge development were suggested.

Conferences and seminars

Between 2003 and 2013, IRSE organised or co-organised a number of events that aimed to serve as opportunities for colleagues in the Czech Republic and abroad to share research ideas and also research results. Great many of these events were intended for the Czech research community, some had international implications. Some of the latter are listed below.

Internationale Tagung der Internationalen Gesellschaft für historische und systematische Schulbuchforschung – Methodenfragen in der Schulbuch- und Lehrmittelforschung
September 27–29, 2013, Faculty of Education, Masaryk University, Brno, Czech Republic

Emotions in School and Instruction: The Power of Video Studies in Investigating Teaching and Learning in the Classroom V
December 4–6, 2012, Friedrich-Schiller-Universität Jena, Germany

Power of Video Studies in Investigating Teaching and learning IV
November 17–21, 2010, IPN – Leibniz Institute for Science and Mathematics Education, University of Kiel, Germany

New Pathways in the Professional Development of Teachers
June 15–16 2010, Faculty of Education, Masaryk University, Brno, Czech Republic

IX. Internationale Sommerakademie Bewegung und Sport im Kontext: Themen – Methoden – Daten – Analysen
May 17–21 2010, Zentrum für Sportwissenschaft und Universitätssport, Universität Wien, Austria

The power of video studies in investigating teaching and learning in the classroom III
November 17–20, 2009, Faculty of Education, Masaryk University, Brno, Czech Republic

The Power of Videostudies in Teaching and Learning in Classroom II
April 3–6, 2008, Fridrich-Schiller-Universität Jena, Germany

The Power of Videostudies in Teaching and Learning in Classroom I
November 1–3, 2007, Faculty of Education, Masaryk University, Brno, Czech Republic

Sommerakademie VII – Neue Herausforderungen im Gesundheitsbereich an der Schule: Was kann der Sportunterricht dazu beitragen?

August 20–24, 2006, Telč, Czech Republic

Foreign Language Acquisition at an Early Age
March 15, 2006, Faculty of Education, Masaryk University, Brno, Czech Republic

Staff members

Between 2003 and 2013 the following staff were members of the Institute: Josef Maňák (head of the Insitute between 2003 and 2008), Tomáš Janík (head of the Institute since 2008), Michaela Píšová, Tomáš Janko, Petr Knecht, Milan Kubiatko, Eva Minaříková, Veronika Najvarová, Petr Najvar, Karolína Pešková, František Tůma, Petr Vlček and Kateřina Vlčková. PhD students of the time included Petr Blažej, Tereza Češková, Marie Doskočilová, Libuše Ďurišová, Gabriela Hublová, Jana Chocholatá, Miroslav Janík, Tomáš Janko, Jana Jašková, Veronika Lokajíčková, Jana Lukášová, Jana Přikrylová, David Solnička, Simona Šebestová, Marek Těšík and Veronika Tománková.

International cooperation

Since 2003, IRSE has cooperated with many institutions in Germany, Austria, Slovakia and other countries. Among prominent of those were Lehrstuhl für Schulpädagogik und Didaktik, Friedrich-Schiller-Universität Jena; IPN – Leibniz-Institut für die Pädagogik der Naturwissenschaften und Mathematik an der Universität Kiel; School of Education, Technische Universität München; Interfakultärer Fachbereich Sport- und Bewegungswissenschaft an der Universität Salzburg; and National Institute for Education, Bratislava.

Outlook

In the coming decade, IRSE will continue to strive to contribute to further development of educational research in the Czech Republic. Its activities will continute to focus into the alma mater as well as into the research community in the Czech Republic as well as abroad. Our aim is to follow our motto *"better education through research"* so that tangible contribution to pedagogy is made by the year 2023.

Tomáš Janík
Institute for Research in School Education
Faculty of Education, Masaryk University
tjanik@ped.muni.cz

Petr Najvar
Institute for Research in School Education
Faculty of Education, Masaryk University
najvar@ped.muni.cz

Marie Doskočilová
Institute for Research in School Education
Faculty of Education, Masaryk University
12574@mail.muni.cz

The Educate Together Network of Schools

Ann Ryan

For over 34 years Educate Together has been working with local communities to establish multi-denominational schools in the Republic of Ireland.

A registered charity, Educate Together relies on small government grants and financial supports from individuals, companies and charitable trusts to deliver choice to parents and services to our growing network of schools.

Today Educate Together operates 68 multi-denominational primary schools. Those figures represent just 2% of the primary schools in Ireland, as the vast majority of schools are denominational, with 96% of them controlled by either the Catholic or Protestant Churches. This is out of sync with the profile of Ireland's diverse population. In many parts of the country, there are no Educate Together schools available. In areas where they have been established, they quickly become oversubscribed. This lack of choice creates situations where many families are forced to send their children to Catholic schools because there is no other option.

In addition to opening and operating primary schools, Educate Together is actively involved in the establishment of Educate Together second-level (secondary) schools. In September 2014, the first three Educate Together second-level schools will open in Ireland, in Dublin and Co Louth.

The Educate Together Ethos

Educate Together schools are recognized by the Department of Education and Skills in Ireland (DES) and work under the same regulations and funding structures as other primary schools.

What distinguishes Educate Together schools is their work in developing a culturally inclusive and democratic ethos. This has pioneered unique approaches to the inclusion of minority opinions and faiths in the Irish context. Educate Together schools have developed education programmes that open the eyes of children to the naturally positive contribution that social, religious and cultural diversity and difference of viewpoint and opinion make to society.

The other characteristic feature of these schools is that they are democratically organised and governed. This maximises the potential for building a genuine part-

nership between the professional, objective role of the teacher and the personal involvement of the parent in their children's education.

The guiding principles of Educate Together schools are equality of esteem and access for all children, irrespective of their social, cultural or religious background. The principle of equality can be very important in helping to generate and maintain positive community relations – particularly in Ireland's newest suburbs.

Ethos

Educate Together schools have a distinct ethos. This has been defined in the following terms:

1. **Multi-denominational**, i.e. all children having equal rights of access to the school, and children of all social, cultural and religious backgrounds being equally respected.
2. **Co-educational** and committed to encouraging all children to explore their full range of abilities and opportunities.
3. **Child-centred** in their approach to education. Educate Together schools are committed to active learning techniques that encourage children to interact with their peers and teachers while they learn.
4. **Democratically run** with active participation by parents/guardians in the daily life of the school, whilst positively affirming the professional role of the teachers.

Ethical Education Curriculum

Students in Educate Together schools follow an ethical education curriculum, the *Learn Together* curriculum, which is taught in place of Religious instruction during the school day.

This curriculum has four strands or modules:

Strand 1: Moral & Spiritual
The general aim of the strand is to help develop in children a critical knowledge, understanding and awareness of right and wrong and a heightened awareness of social, ethical and moral standards through reflecting on the meaning and purposes of life. The strand should encourage and develop the individual on the journey to inner discovery and empower the child to make informed moral decisions.

Strand 2: Equality & Justice
The general aim of this strand is to develop in children a critical knowledge, understanding and awareness of issues relating to human rights, equality, culture and diversity, social justice and social inclusiveness and to empower them to make a difference.

Strand 3: Belief Systems
The general aim of this strand is to develop in children a critical knowledge, understanding and awareness of the teachings of religious and non-theistic belief systems and how these systems relate to our shared human experience. The emphasis will be placed on an exploration of the infinite variety and richness of humankind through nurturing a respect for a person's right to hold and practice individual belief systems and through creating spaces where values can be articulated and critically examined.

Strand 4: Ethics & the Environment
The aim of this strand is to develop in children knowledge, appreciation and respect for their environment and to empower them to take an active role in its stewardship.

Good practice

Under the Moral and Spiritual strand, for example, students develop and create an awareness of core values such as freedom, happiness, honesty, love, peace, respect, responsibility, kindness, caring, safety and security. They also address negative feelings, for example disappointment, isolation, frustration, and jealousy and are encouraged to talk about and, thereby, normalise these feelings. Stillness and meditation are also promoted in Educate Together schools and the sense of awe and wonder in the natural world that we tend to lose as we move into adulthood is acknowledged and celebrated.

An example of good practice in one of our schools would be that as a reward or affirmation, pupils are allowed to spend time in a quiet part of the classroom by themselves. They can read or look out of the window or simply sit there, but the message that it is hoped this practice sends is that spending time on your own is natural and good.

Developing our network

We work hard to raise funds and build alliances with local partners so that parents in every county can access an Educate Together primary or second-level school for their children. At the end of 2012 Educate Together was supporting 40 different groups of parents across Ireland who are campaigning for an Educate Together school in their area. While all of our schools are state-funded, our work with communities and partners is not, so we rely on the generosity of our supporters to give their time and money to help us change the Irish education system.

For more information, go to www.educatetogether.ie.

Ann Ryan
Educate Together
ann.ryan@educatetogether.ie

Education in Wales, as Seen by Study Visit Programme Participants

Dominik Dvořák, Ann Ryan

This report has two aims: to inform about recent developments in Welsh school system, and to pay tribute to the Study Visits Programme that enabled us to learn about education in Wales from first-hand experience.

Travelling abroad, visiting the schools in a foreign country and gathering the experience in more or less systematic way was common in the early days of the discipline that is now known as comparative or international education. Obviously, comparative education has advanced to much more sophisticated methods since then. However, we are deeply convinced that there is no substitute for first-hand experience of different educational systems, their institutions, and administrators, teachers and pupils. One argument to support this claim might be the fact that many educational practices (e. g. rules of school life, temporal and spatial arrangements) are based on tacit knowledge. These implicit – maybe inexplicable – ways of doing things in schools seem so obvious both to local practitioners and researchers that they are often not listed in reviews and comparative reports. When covered, their description might go un-mentioned by readers without the appropriate experience of target school system. Exactly for these reasons the school visits used to be a popular part of the international conferences and congresses. However, in recent years it seems to be more and more difficult for a scholar to get into the schools in foreign countries, probably because of the increased emphasis on the safeguarding of school children. So it is an appreciated move that the programme of the study visits to schools abroad, originally intended mainly for decision-makers (school leaders, inspectors, representatives of local and national authorities etc.), was opened for educationalists and academicians recently. The darker side of this measure is the fact that the programme is to be closed down soon.

The Study Visits Programme, intended primarily for education and vocational training specialists and decision-makers, was started as the first peer-learning programme in the EU. The programme has been coordinated by Cedefop (The European Centre for the Development of Vocational Training in Thessaloniki, Greece). The study visits have covered various themes in line with the priorities of the European policy agenda in the field of education and training. As both authors of this report are primarily interested in general education, we highly appreciated the decision to include issues of primary and general secondary education in the programme. Both primary and lower secondary schooling (not to mention pre-primary education) is the

necessary foundation for all subsequent vocational training and lifelong education.

Our visit took place in March 2013. As the goal of the Study Visits programme is the improvement of education policies at local, regional and national level, we met people from at least four levels of Welsh school system:

1. National level – officials from the Welsh Government (Department for Education and Skills), school inspectorate (including Her Majesty's Chief Inspector of Education and Training in Wales), national associations of directors and local governments;
2. Local level (staff members of county councils responsible for education, training and lifelong learning);
3. School level (primary and secondary head teachers and/or their deputies in two primary and three secondary schools);
4. Classroom level (we had the opportunity to observe a number of lessons in the schools we visited).

When devolution took place in Wales in 1998, establishing the Welsh Assembly, education and training became one of the areas of responsibility devolved to the Welsh government. Previously, the education system in England and Wales had been governed by the UK government. It is interesting to note that the population of Wales is approximately 3 million and 20% of them speak Welsh as the first language. Some 22% of 7 year olds are educated through Welsh. The structure of Welsh school system is similar to English schooling. Struggling for their identity, the Welsh governments (with mainly Labour, or social-democratic orientation) took steps to split from the educational policy of the London (now Conservative) ministry. However, recent outcomes of Welsh pupils have been disappointing on a range of measures. According to PISA 2009, pupil performance in Wales was lower in 2009 than in 2006. According to the math test, the highest achieving pupils in Wales were one year behind their peers in OECD countries. It is obvious, then, that quality assurance in schools – the theme of our visit as well as many other study visits within the programme (Cedefop, 2011) – became one of the hottest issues in Welsh educational system. The national priorities are improving literacy and numeracy (as measured by PISA) and reducing the negative impact of deprivation on pupil achievement and wellbeing.

The following components of Welsh initiatives were most interesting for us:

- focus on outcomes and quality of processes of teaching and learning;
- forensic data use for tracking individual students, school/local authorities' performance and disadvantaged groups;
- different kinds of support provided to pupils at risk of failure;
- wide use of ICT in learning, teaching, and management of schools (Digital Wales);
- external evaluation by a body independent of political influences (HMI) and self-evaluation and school development planning in schools;
- support to teachers and school leaders as a counter-balance to external demands.

Let us comment on some of these components briefly.

There is a need to secure the consistency of provision of services and standards at school, local, and national level. We have seen some excellent examples of turning

the trends in failing schools in some local authorities in Wales. The South Wales local authorities have extensive experience in school reforms or re-starts. Systemic leadership, connecting strong and weak schools with a belt wheel principle, federating etc. gives the weaker schools the chance to change school culture and to improve the quality of processes and outcomes. Values would be translated – including staff, curriculum, and economic principles.

Some European countries apply the system of early tracking of pupils when children from age approx. 11 years old attend different school tracks (e.g. in the Czech Republic, and some states in Germany). This early tracking is a major challenge to fairness/equity of educational opportunity. The comprehensive way of organising secondary schools we saw in South Wales exhibits a wide array of good practices into how the school could cope with a mixed ability student population and with different needs, e. g. painstaking efforts to facilitate the successful transition to secondary school (particularly of those in risk of failure) or innovative curriculum design tailored to suit school context and its pupils.

Since 2011, the United Nations Convention of the Rights of the Child was made a statutory obligation for all institutions in Wales, and the Welsh Government requires schools to put the convention "at the heart of its policies, practice and ethos" (Lyle, 2013, p. 3). This means that children and young people should be given genuine opportunities for participating in debates about things affect them. Particularly, the traditional views of children as lacking the capacity to reflect on their learning and traditional power relations in schools are to be changed. At school level, we saw the *Making the Pupil's Voice Heard* programme in the Newport High School in Newport, Wales. Students are involved in planning school activities, in the Student Council, hold regular meetings with the head teacher. Students even played a role when the new school building was designed; all suggestions from each individual pupil are heard, first in their own "houses", then higher up.

Another example of national level initiative is the programme *Learning in Digital Wales* – a massive investment into infrastructure (connectivity, school wi-fi, national learning platform and repository of digital content) as well as into people (National Digital Learning Council and Digital Leader Team, continual professional development). Again, literacy, numeracy, and reducing the impact of poverty on attainment are priorities of the digital tools usage.

As several participants stated from their experience in their own countries, sudden and serious changes in policy negatively affect all the educational institutions and education itself. National education policy must be formed powerfully so long term strategic plans can be practised properly. In Wales, the stability and independence in educational system is achieved among other means by a strong local government voice and by formal and non-formal authority and the independence of Her Majesty's Inspectorate. The Welsh Local Government Association is a local government lobbying body that could prevent and ameliorate the impact of changes in central government policy, bringing consensus to educational policy and improving the governance of education. The high degree of independence of Her Majesty's In-

spectorate makes it a very effective element of stability and watchdog of quality in the systems. The HMI also oversees pre-service teacher training in tertiary institutions so that the necessary co-ordination could be assured.

The school buildings and classrooms we saw clearly reflect that there have been major investments in education in recent years in the local authorities we visited, and that education and training is a clear priority of the Welsh government. All the people we met, be it in schools or on the level of national and local governments, seemed to be very serious and creative in their efforts to turn the national goals for the educational system into reality. We are very grateful to Cedefop and local organisers for the opportunity to meet them.

To sum up, in Wales, the terms quality and excellence are clearly operationalised in terms of raising standards of literacy and numeracy. Equally important is 'closing the gap' among pupils coming from different socio-economic backgrounds; here, the receipt of free school meals serve as a single index that makes it possible to dis-aggregate data on achievement and address the problem of equity/disadvantaged pupils. The national policy is stated in clear and easily understandable statements and documents. This clear goal setting obviously helps in planning, implementing and evaluating the educational policy.

Wales is continuing its efforts to improve outcomes for its pupils across the country. We wish them luck in their efforts, but it may be more demanding than expected: the recent results of PISA 2012 show that there have been no changes to the overall picture, with Wales behind the rest of the UK in all three domains with no major changes in average performance since 2009.

On the other hand, at the close of the study visit, several participants felt an urgent need to stress that PISA is just one tool for the measurement of quality of education, and that the concepts of excellence, quality and efficiency must be challenged, re-thought again and again. Rather than one concept of quality in education, there are many qualities.

References

Cedefop (2011). *Evaluation for improving student outcomes: Messages for quality assurance policies*. Luxembourg: Publications Office of the European Union.

Lyle, S. (2013). Embracing the UNCRC in Wales (UK): Policy, pedagogy and prejudices. Paper presented at WCCES conference in Buenos Aires, June 24–29.

Dominik Dvořák
Faculty of Education, Charles University
dominik.dvorak@pedf.cuni.cz

Ann Ryan
Educate Together
ann.ryan@educatetogether.ie

Report on the Conference of the European Second Language Association (EUROSLA23)

Jitka Sedláčková, Michaela Šamalová

One of the fields which is of importance to education is the sphere of Second Language Acquisition. In Europe, scholars and researchers with interest in this field are associated in the European Second Language Association (EUROSLA, http://eurosla.org/home.html). Besides various specialised seminar meetings and workshops, the Association also organizes an annual conference which is an internationally recognized event. The 23th conference of the European Second Language Association was organized by the Amsterdam Centre for Language and Communication of the University of Amsterdam and took place on the University premises from 28th to 31st August 2013.

About 350 delegates from over 35 countries attended the conference this year and introduced and discussed the latest trends in the field of second language acquisition. 153 papers, 43 posters, 2 colloquia and 16 doctoral presentations provided a framework for wider discussions on the issue and gave the experts a unique opportunity to share new findings and exchange their knowledge.

The first day of the event was dedicated to two traditional pre-conference events: a roundtable discussion with the theme of *Acquisition orders in SLA: Perspectives from emergentism and dynamic systems theory* whose aim was to help researchers evaluate the relevance of literature on second language acquisition orders through the views of the two current approaches to SLA. The approaches were introduced by their leading representatives, William O'Grady and Wander Lowie together with Marjolin Verspoor. The second pre-conference event was the doctoral workshop which gave 16 emerging researchers an opportunity to present their research designs and first research findings and get valuable feedback from selected discussants as well as the audience. The focus of the emerging researchers' work covered a variety of topics, such as multilingualism and linguistic diversity, as well as languages studied, including English, French, German, Turkish and even Persian.

During the main conference four plenary talks were delivered. The conference was opened by a keynote speech by Alison Mackey *Methodology in SLA research: Past, present & future* in which the author presented an overview of methods commonly used in the past and explored the current state of methodological usage in the field. She also stressed the importance of research synthesis and replication for further development of the discipline and its research. The second plenary talk by Rens Bod called *What can computational modelling tell us about second lan-*

guage acquisition? focused on the Data-Oriented Parsing, a model of computational language learning which uses corpus fragments of formerly heard utterances to create new utterances. In her keynote speech *Early foreign language learning: Is it a child's play?* Marianne Nikolov introduced different views on early foreign language instruction and presented contemporary trends in the area based on recent research and studies. The fourth plenary talk *Linguistic convergence in dialogue: Interactive alignment as language learning* was delivered by Pavel Trofimovich and addressed the issue of the Interactive Alignment Model which is based on an idea that participants of a conversation gain mutual understanding by making connections between their linguistic representations. Based on empirical research, Trofimovich then presented the possible implications of this model for second and foreign language learning and teaching.

The presentations were divided into more than twenty strands according to their content. Some of the dominant topics were instructed SLA (focused on grammar and lexis, listening, speaking fluency, oral tasks and writing), experimental studies on implicit and intentional/incidental learning, interlanguage and cross-linguistic influence and the age factor. All these topics correspond to the current general discussion in the area of SLA. Each strand also demonstrated the width of possibilities and ways to approach each of the research problems. For example, the writing instruction was studied by comparing the effect of written corrective feedback on writing and acquisition of second/foreign language grammar (Guo), evaluating the success of individual and collaborative writing (Miranda and Manchón; McDonough, Crawford and DeVleeschauwer), the cognitive processes in operation during writing (Adrada Rafael) and investigating primed production in written synchronous computer mediated peer interaction (Michel). Similarly, the issue of cross-linguistic influence was explored by studying the influence of Chinese prosodic system on learning of English word stress patterns by Chinese learners (Li, Zhu and Zhang) or by an analysis of potential changes in the translator's first language linguistic system by analysing the interpretation of pronominal subjects in Italian (Milicevic and Kras). More information on the programme can be obtained from http://aclc.uva.nl/conferences/eurosla-23/programme/programme.html.

Although most contributions were research based, the programme also included methodological and theoretical strands. Methodological issues discussed involved linguistic complexity, fluency and task complexity; theoretical strands focused on topics such as the affective filter or third language acquisition. Two colloquiums presented a possibility for in-depth discussions on the topics of acquisition of visual languages and second language phonology.

Several delegates from the Czech Republic also participated in the event. The Masaryk University Brno was represented by K. Vlčková, I. Hudečková and K. Švejdíková (*Comparison of psychometric properties of foreign language learner strategy inventories: SILL, LSUS, and LASSI in their Czech adaptation*) and M. Šamalová (*Pedagogical translation in English language teaching and its influence on the development of learner's language skills: Research design*). The Palacký University Olomouc

was then represented by Š. Šimáčková and V. J. Podlipský (*The chemistry of foreign accents: Isolating elements of Czech-accented English*).

Each year, several papers are selected for a peer reviewed *EUROSLA Yearbook* which is published by John Benjamins and covered in LLBA index. The yearbook contains a choice of the most interesting contributions from the conference, covering a wide range of theoretical perspectives which cross different cultures and languages. Proposals for the EUROSLA Yearbook 14 from among the presenters at the EUROSLA 22 and EUROSLA 23 conference should be submitted until January 12th, 2014.

Next year, the 24th year of the EUROSLA conference is going to be hosted by the Centre for Language Learning Research, Department of Education, University of York.

Jitka Sedláčková
Masaryk University, Faculty of Education
40134@mail.muni.cz

Michaela Šamalová
Masaryk University, Faculty of Education
183825@mail.muni.cz

102 Viatcheslav Vinogradov: Mathematics for Economists. Made Simple
Praha, Karolinum 2010, paperback, 366 p., 1st Edition, 290 CZK

As the field of economics becomes ever more specialized and complicated, so does the mathematics required of economists. With Mathematics for Economists, expert mathematician Viatcheslav V. Vinogradov offers a straightforward, practical textbook for students in economics, for whom mathematics is not a scientific or philosophical subject but a practical necessity. Focusing on the most important fields of economics, the book teaches apprentice economists to apply mathematics algorithms and methods to economic analysis, while abundant exercises and problem sets allow them to test what they have learned.

ISBN 978-80-246-1657-5