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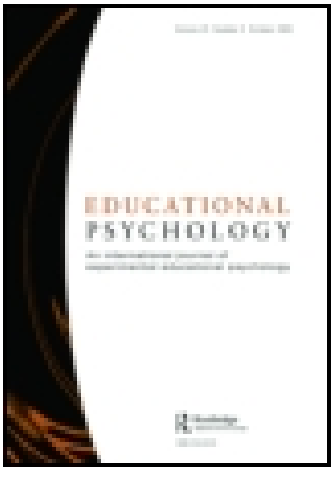




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# Influencing the psychological well-being of beginning teachers across three years of teaching: self-efficacy, stress causes, job tension and job discontent

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# Influencing the psychological well-being of beginning teachers across three years of teaching: self-efficacy, stress causes, job tension and job discontent

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In this study, the path of influence of support programmes for beginning teachers (BTs) is examined. Longitudinal relationships between self-efficacy and stress causes experienced by BTs and their job tension and discontent are investigated. Differential effects are explored in the relationships between the perceived psychological variables for induction and non-induction groups, after a period of three years. A total of 62 secondary schools and 338 BTs, in the Netherlands, were randomly selected to two context conditions. In the experimental condition, an induction arrangement was provided to the BTs. The remaining schools and BTs followed their regular (induction) arrangements. Results show that school and class efficacy are negatively related to job tension and job discontent. Stress causes were positively related to job tension and discontent. The link between classroom self-efficacy and stress outcomes is much stronger in the induction group. For school self-efficacy, however, the link is weaker in the induction groups. Implications of the findings for practice and theory are discussed.

**Keywords:** psychological well-being; beginning teacher; induction arrangements; multilevel growth curve analysis



Teaching is a complex task in a demanding environment. The complexity of teaching tasks frequently creates problems for many teachers. Research shows that teaching is more vulnerable for work-related stress, psychological distress and burnout than many other occupations (Johnson et al., 2005; Kyriacou, 2001). The chronic loss of well-being leads to teachers leaving their professions (i.e. attrition), which is a concern for countries with teacher shortages. Teacher shortage is recognised as a major threat to the quality of education (OECD, 2004). In the Netherlands, for example, vacancies in secondary education will increase by 6% in the upcoming years (Ministry of Education, Culture and Science, 2009). Vacancies are often filled by beginning teachers (BTs), either young qualified teachers or experienced professionals switching profession to pursue a career in teaching. However, on average, inexperienced teachers reveal less effective teaching behaviour in the classroom (Maulana, Helms-Lorenz, & Van de Grift, 2014; Van de Grift, 2007). It is therefore important to take action in order to prevent escalation of attrition in the near future, and at the same time to enhance the professional development of BTs.

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In order to promote teachers staying in their profession (i.e. retention), teachers should be supported adequately in their workplace. Research shows that social support plays a role in mitigating the negative impact of emotional demands on emotional exhaustion, feelings of low personal accomplishment and on job dissatisfaction (Kinman, Wray, & Strange, 2011). In our view, it is important that social as well as professional support should be provided in the beginning phase of teaching profession to BTs, for the reasons mentioned above.

Nearly 40% of the BTs in the United States leave the teaching profession within 5 years (Smith & Ingersoll, 2004). Reasons for leaving the teaching profession are related to stressors that are commonly experienced by BTs and to personal characteristics. Stressors comprise demanding job-related environments, such as high workloads, inadequate support by administrators and mentors, poor pupil motivation and misbehaviour, and poor relationships with colleagues. Personal characteristics entail low educational qualification and low self-efficacy (Boyle, Borg, Falzon, & Baglioni, 1995; Glazerman et al., 2010; Van Dick & Wagner, 2001). Because teaching is a profoundly emotional activity requiring BTs to manage their personal emotions effectively and stimulate the desired emotional state in pupils (Fried, 1995), it becomes important that BTs receive profound support from their working environments to maintain the emotional well-being of their pupils, but at the same time sustain their psychological and physical safety (Brennan, 2006; Hargreaves, 2000).

To address the problems BTs face, it is important to examine the relationships between psychological processes and identify specific psychological factors leading to BTs' retention or attrition. A recent study following BTs during the first year of their teaching shows that BTs' psychological processes are interrelated, suggesting that positive psychological well-being can be sustained through the maintenance of adequate social and professional support (Helms-Lorenz, Slof, & Van de Grift, 2013). However, this study is based on a pre-/posttest design analysed using single-level regression analyses. Consequently, the study ignored the hierarchical structure of the data. Given the hierarchical structure of the data, the application of traditional (single-level) regression analyses is less appropriate because the results produced will tend to be overestimated. Typically, ignoring the hierarchical data structure in the analysis 'will generally cause standard errors of regression coefficients to be underestimated. Correct standard errors would be estimated only if variation at ward and constituency level were allowed for in the analysis' (Rasbash, Steele, Browne, & Goldstein, 2009). Instead, multilevel modelling will be more appropriate for this type of data (Snijders & Bosker, 2012). Additionally, it is important to investigate whether a longitudinal (long-lasting) social and professional support have an impact for BTs' psychological well-being. Although past cross-sectional research shows that social and professional support play a role in (beginning) teachers' psychological well-being (Helms-Lorenz et al., 2013; Kinman et al., 2011), the longitudinal impact of support remains unclear.

In order to broaden the knowledge base concerning teachers' psychological well-being and the role of social and professional support in the context of BTs, this study investigates the relationships between BTs' psychological well-being and the role of induction arrangements as a means of support for BTs psychological well-being in a longitudinal fashion, taking into account differences between BTs and between schools where BTs work. Such research is essential to inform the development of effective interventions and programmes that are beneficial to enhance well-being, as well as to affect attrition rates.

***Teachers' psychological well-being: self-efficacy, stress causes and stress responses***

The social–psychological theory has been useful to serve as a framework for studying the relationships between psychological processes. Teacher Performance Motivation Theory (TP-M Theory; Blase, 1982) was one of the first theories positing that teachers, based on their perception of student needs, apply effort and exhibit coping activities to overcome obstacles (i.e. *stress causes*) towards the attainment of valued student learning outcomes. Although the TP-M theory describes psychological processes, it fails to provide insight into interventions aimed at stress management and stress reduction. The Theory of Preventive Stress Management (TPSM; Quick, Quick, & Nelson, 1998) addresses both issues. The TPSM states that the stress cycle flows from stress causes to stress responses to stress outcomes. Stress causes refer to causal factors (demand) which may be environmental or self-imposed. Experiencing stress causes triggers a psycho-physiological stress responses of the individual to fight or to flee (Quick & Spielberger, 1994). In turn, this stress response leads to a range of stress outcomes in either a positive (e.g. heightened alertness and enhanced performance) or a negative (e.g. psychological and behavioural distress) direction.

Research recognises several factors predicting teacher stress. Those factors include teaching preparation, large class sizes, workload and administrative demands, pupil misbehaviour, time/resource difficulties, professional recognition needs, perceived imbalance between efforts and rewards, and poor relationships (Boyle et al., 1995; Clunies-Ross, Little, & Kienhuis, 2008; Hastings & Bham, 2003; Griva & Joekes, 2003). Workload and pupil misbehaviour are considered as two major causes of teacher stress (Boyle et al., 1995).

When job-related stress causes are addressed improperly and coping activities fail, this leads to a negative *stress response*. A negative stress response refers to teachers' experience of job strain, such as (mental and emotional worries during work (i.e. tension) and/or (2) a lack of pleasure and commitment to the job (i.e. discontent). Job strain is considered as 'part of the job' when it is not bothering or destructive for teachers. It becomes problematic when the job strain becomes chronic over a longer period of time and when teachers cannot deal with it properly in the long run. Consequently, this will lead to negative *stress outcomes*. Sooner or later, this can cause burnout and leave the teaching profession (Betoret, 2006). In this study, we focus on stress responses, rather than stress outcomes, because the work exposure period of BTs is rather short. Job tension is defined as the amount of psychological discomfort experienced on the job. Job discontent is defined as the amount of dissatisfaction and lack of commitment experienced on the job.

Teachers' ability to cope with threatening situations seems to be mediated by their self-efficacy. Teachers' *self-efficacy* is defined as the beliefs concerning their capability to execute a certain course of action successfully. These beliefs determine whether actions will be initiated, how much effort will be spent, and how long it will be sustained in the face of obstacles and failures (Bandura, 1997). In general, there are four sources influencing self-efficacy beliefs: mastery experiences, vicarious experiences, verbal persuasion and psychological arousal, with mastery experiences postulated as the most potent source (Bandura, 1986, 1997). The sources of self-efficacy beliefs seem to be different between novice and experience teachers. Contextual factors, such as the teaching resources and interpersonal support, are important sources of self-efficacy for novice teachers, but less important for

experienced teachers (Taschannen-Moran & Woolfolk Hoy, 2007). Low levels of teacher self-efficacy precede burnout (Schwarzer & Hallum, 2008).

### *Social and professional support: the role of induction arrangements for teachers' psychological well-being*

There is evidence that workplace social support may prevent teachers' burnout (Greenglass, Burke, & Konarski, 1997). Social support has a powerful role in mitigating the negative influence of emotional demands on emotional exhaustion, feelings of personal accomplishment and job satisfaction (Kinman et al., 2011). Hence, social and professional support seems to be important for the development of teachers in schools. There is reason to argue that social as well as professional support is particularly important for BTs because of their lack of experiences at the workplace. Induction arrangements are often conceptualised as more or less planned and formalised programmes in which BTs are assisted and supported in gradually becoming competent and effective professionals (Beijaard, Buitink, & Kessels, 2010). Thus, induction can be regarded as a form of social and professional support for BTs. Wang, Odell, and Schwille (2008) identified three major components of induction arrangements: (1) teacher mentoring relationships, (2) different forms of collaboration among BTs and colleagues and (3) professional development of activities designed to affect teaching and student achievement. Until recently, studies examining the impact of induction arrangements on BTs' psychological well-being are scarce. A limited number of studies, however, have documented the important role of induction arrangements for BTs.

Moir and Gless (2001) found that inductions arrangements affect BTs' ideas about teaching. This is an important beginning step in BTs' teaching career because recognising the nature of main works in the profession may determine BTs' decision to stay or leave the teaching career in the early stage. Smith and Ingersoll (2004) discovered that induction arrangements beneficially affect BTs' decision to keep working at their current school and, thus, to stay in the teaching profession. They conclude that the most important elements of induction arrangements are having: (1) a mentor in the same field, (common planning time with other teachers in the same field), (2) regular scheduled collaboration with other teachers, and (3) the opportunity to participate in an external network of teachers. They also revealed that providing induction arrangement elements in concert has better impacts on teacher retention than providing them separately. Smethem and Adey (2005) found that induction arrangements are associated with increased reflection, improved collegiality, openness and communication, greater teacher autonomy, self-growth and personal efficacy. They also mentioned that, however, a climate of 'accountability' and raising 'standards' has increased the workload and thus may increase anxiety and burnout. This finding implies that the relationship between induction arrangements and BTs' psychological well-being requires deeper investigation.

Furthermore, Lazovsky and Reichenberg (2006) discovered a positive attitude of BTs following the induction programme, as most BTs would recommend continuing the programme. Glazerman et al. (2010) reported that induction arrangements positively affect students' (mathematics) achievement. Their study also revealed that no effects were found regarding the teacher-related effect measures, such as retention, teacher mobility, job satisfaction and feelings of preparedness, as well as the BTs' psychological well-being. Finally, Helms-Lorenz, Slof, Vermue, and Canrinus

(2012) demonstrated that induction arrangements help BTs experience less stress causes and more self-efficacy at the end of the first school year.

Notably, most research mentioned above is based on non-experimental studies, except the research of Helms-Lorenz et al. (2013). More experimental research in this research area is needed to determine causes and effects in a more precise way (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). Does support cause growth or do fast-growing beginners attract more support? Besides, most research mentioned above followed BTs for not longer than 1 year (cross-sectional data). Extending the investigation beyond only one year is useful to get a better understanding regarding the relationship between psychological well-being and the effect of induction arrangements on the BTs' psychological well-being longitudinally. Most of the research mentioned above was analysed in single-level statistical frameworks. Knowing that most data in educational research are hierarchically structured, multilevel analysis offers a better way of analysing such hierarchical data. Finally, the studies mentioned reveal that induction arrangement affects teacher well-being, teaching behaviour and even student outcomes. The unanswered question is *how* longitudinal support programmes influence the well-being and the behaviour of BTs. Our study contributes to the understanding this path of influence. This kind of knowledge is needed to improve the quality and impact of BT support programmes.

This study aims to fill the mentioned gaps by investigating the relationships between BTs' psychological well-being and induction arrangements after 3 years of teaching period, using an experimental design and incorporating a multilevel framework to analyse the data.

### *Conceptual model, aims and hypotheses*

Based on the literature reviewed earlier and the cross-sectional theoretical path of induction arrangements for BTs proposed by Helms-Lorenz et al. (2013), we constructed a longitudinal theoretical model underlying the relationship between the constructs (see Figure 1). The notion underlying the theoretical model is that the *context* in which BTs work affects their *psychological processes* and, thus, their perceived *stress* and perceived *self-efficacy* longitudinally. In this model, the context is defined as social and professional support provided by means of induction arrangements.

The induction arrangements aim to influence the BTs' control over their emotional responses. We expect induction arrangements to strengthen the relationship between self-efficacy and stress responses. By means of increasing the number of success experiences, teachers are gradually strengthened in their perception of their ability to handle complex situations. This influences their coping mechanisms and reduces stress responses.

We expect a weakened relationship between stress causes and stress responses caused by the mitigating influence of induction arrangements on stress causes (more colleague support, lessened workload, etc.). This manipulation of the context should protect the teacher form stress responses; giving opportunity to develop effective coping mechanisms. The support intervention reduces the severity of the events, creating psychological space to get a grip on the context, leading to a gradual shift of externalising stress causes to developing a notion of control over external events. This leads to milder (re)appraisals of contextual events.

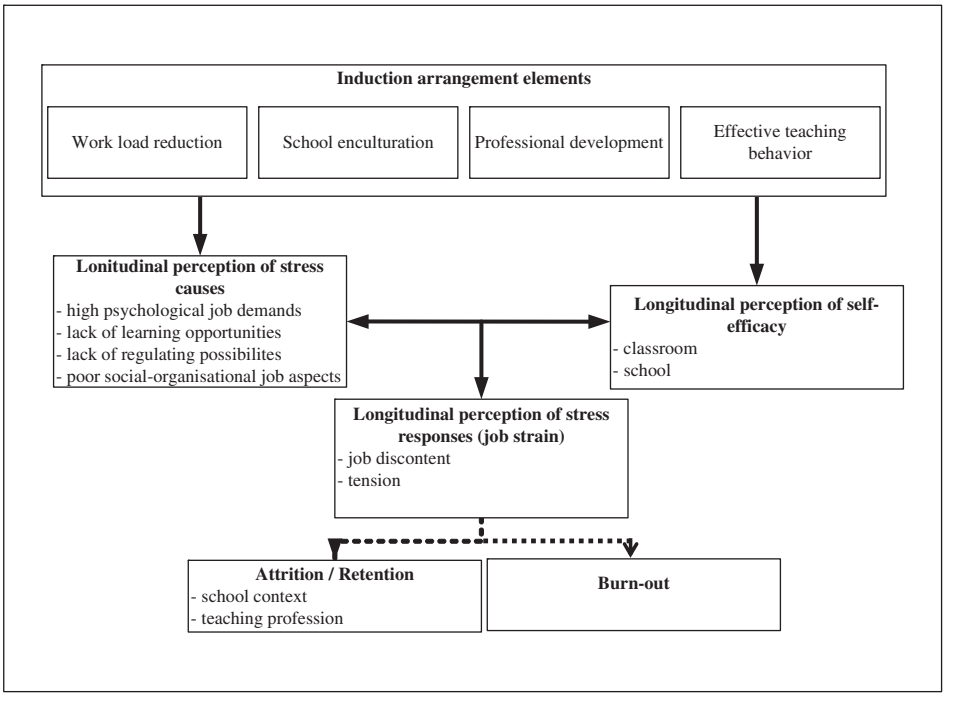


Figure 1. Theoretical influential path of induction arrangements.

Based on this model, the current study is aimed to: (1) examine the longitudinal relationship between BTs' perceived self-efficacy and stress causes and their perceived job responses and (2) investigate the differential relationship between the mentioned perceived psychological variables between BTs in schools providing induction arrangements and BTs in control schools (no induction provided). Consistent with the theoretical model and the literature reviewed, we hypothesise that:

(1) Self-efficacy is longitudinally, negatively related to job tension and job discontent.
(2) Stress causes are longitudinally, positively related to job tension and job discontent.
(3) The hypothesised relationship in hypothesis 1 is stronger in the induction condition.
(4) The hypothesised relationship in hypothesis 2 is weaker in the induction condition.

## Methods

### *Participants and research design*

In total, 338 BTs (55% female) from 62 different secondary schools in the Netherlands participated in this study. The participating BTs were as follows: 223 qualified teachers with less than three years of teaching experience, 80 unqualified teachers and 35 did not indicate qualification. To examine the effect of providing

Table 1. Background information of respondents.

| Year | Measurement occasion | Number of respondents | Response rate (%) |
|---|---|---|---|
| 1 | 1 | 338 | 89 |
| | 2 | 327 | 75 |
| 2 | 3 | 257 | 71 |
| 3 | 4 | 223 | 76 |

induction arrangements, the participating schools and BTs were randomly allocated to two conditions.

In the *experimental condition* ($n = 34$ schools, 180 BTs), an induction arrangement was developed and implemented in cooperation with the researchers, institute-based educators and school-based educators. In the *control condition* ($n = 28$ schools, 158 BTs), the schools follow their regular arrangement and did not receive any guidance. BTs completed four electronic questionnaires on psychological well-being. The questionnaires were administered four times across three school years. During the first year, the questionnaires were distributed twice, namely once in the beginning of the school year (baseline) and once at the end of the school year. In subsequent years, questionnaires were distributed at the end of the school year. Typically in longitudinal studies, a number of BTs left the study over time for various reasons, including moving to other schools (job-hopper), stopping the job (job-leaver), and unknown reasons. The response rates were comparable per questionnaire over the conditions. In Table 1, background variables of BTs are presented.

### *Development and implementation of induction arrangements*

During the school year, eight school-based collaborative sessions were arranged in the *experimental condition,* involving the school-based educator, a BT, a manager (i.e. director) and human resource officer. Experienced external educators guided the sessions in cooperation with the researchers. The induction guidelines served as an aid for the sessions (see Appendices 1 and 2 for more detailed information). The sessions were aimed to develop and implement an induction arrangement for a period of three years. In the arrangement, the following elements of social and professional support were focused on: (1) reducing workload, (2) supporting effective teaching behaviour in the classroom, (3) stimulating professional development and (4) facilitating activities to get familiar with school policy, school rules, and with colleagues. The development tasks as proposed by Feiman-Nemser (2001) were used as leading principle to streamline activities into a coherent arrangement encompassing 3 years. These principles are: (1) gaining local knowledge of students, curriculum and school context, (2) designing responsive curriculum and instruction, (3) enacting a beginning repertoire in purposeful ways, (4) developing a professional identity and (5) learning in and from practice.

The school-based educators visited the schools and monitored progress of the induction arrangement development. All experimental schools had successfully developed and implemented the induction arrangement after one school year. Although some schools required more time to develop and implement the programme for the second and third year, most of experimental schools had

documented programmes for 3 years of the induction arrangement after the sessions. Hence, developers of the induction arrangement dedicated three extra visits to the schools requiring extra time. Because past research discovered that BTs tend to participate in organised activities when the activities are obligatory (Timmermans, Poell, Klarus, & Niewenhuis, 2010), we made the induction activities obligatory in the experimental schools.

### *Measures*

#### *Perceived self-efficacy*

The measure of perceived *self-efficacy* is a Dutch translation of the Classroom and School Context teacher self-efficacy questionnaire (Friedman & Kass, 2002). The measure consists of two subscales: (1) classroom self-efficacy (19 items, $\alpha = .94$, example; 'To what extent are you capable to resolve order disturbances in the classroom without raising your voice?') and (2) school self-efficacy (14 items, $\alpha = .89$, example; 'To what extent are you actively involved in the decision-making process in your school?'). BTs responded on a five-point Likert scale ranging from 'never' to 'always'.

#### *Perceived stress causes and stress responses*

The measure of perceived *stress causes and outcomes* is the Monitor at Work questionnaire (Van Veldhoven, Meijman, Broersen, & Fortuin, 2002). The stress causes measure consists of four subscales: (1) high psychological task demands (25 items, $\alpha = .87$, example; 'How often do you believe that you have to work hard?'), (2) lack of learning opportunities (10 items, $\alpha = .93$, example; 'To what extent do you have the opportunity to learn new things?'), (3) lack of regulating possibilities (19 items, $\alpha = .90$, example; 'To what extent does your job situation enable to decide for yourself how you carry out your work?') and (4) poor-social-organisational job aspects (40 items, $\alpha = .85$, example; 'To what extent do you receive sufficient information about your functioning as a member of the organisation?').

The stress response measures consists of two subscales: (1) job tension measures the extent of reported mental and emotional worries (27 items, $\alpha = .94$, example; 'How often do you worry about your job in your spare time?') and (2) job discontent measures the extent of reported lack of pleasure and commitment to the job (21 items, $\alpha = .89$, example; 'How often do you consider to change jobs?'). Most items were rated on a four-point Likert scale ranging from 'always' to 'never' or from 'totally agree' to 'totally disagree'. The other items were rated on a dichotomous scale (i.e. yes or no). Higher scores on the scales indicate that BTs perceived more stress causes and/or more job tension and discontent. Intercorrelations between the constructs and the background variables can be seen in Table 2.

#### *Background variables*

The following background variables were included in the analysis: Teaching subject (0 = science, 1 = non-science), class size (0 = small class, 1 = large class), 0 = control group, 1 = induction group), grade level (0 = lower grade, 1 = higher grade,

Table 2. Correlations between self-efficacy, stress causes, stress outcomes, personal and contextual characteristics.

| Self-efficacy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | *M* Control | *M* Induction | SD Control | SD Induction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Self-efficacy class | – | | | | | | | | | | | | | 3.65 | 3.63 | .37 | .46 |
| 2. Self-efficacy school | .43** | – | | | | | | | | | | | | 3.17 | 3.15 | .56 | .52 |
| *Stress causes* | | | | | | | | | | | | | | | | | |
| 3. Psychological task demands | −.06 | −.02 | – | | | | | | | | | | | 9.70 | 9.71 | 2.19 | 2.02 |
| 4. Learning opportunities | −.12** | −.03 | .00 | – | | | | | | | | | | 3.91 | 3.55 | 2.15 | 2.06 |
| 5. Regulating possibilities | −.23** | −.18** | .22** | .37** | – | | | | | | | | | 2.74 | 2.42 | .16 | .14 |
| 6. Social-organisational | −.18** | −.16** | .33** | .40** | .47** | – | | | | | | | | 5.26 | 4.97 | 1.82 | 1.89 |
| *Stress response* | | | | | | | | | | | | | | | | | |
| 7. Tension | −.27** | −.19** | .51** | .11** | .27** | .44** | – | | | | | | | 3.87 | 4.02 | 2.46 | 2.59 |
| 8. Discontent | −.16** | −.16** | .53** | .30** | .27** | .48** | .37** | – | | | | | | 1.29 | 1.25 | 1.02 | 1.11 |
| *Background variables* | | | | | | | | | | | | | | | | | |
| 9. Teaching subject[a] | .06 | −.05 | −.01 | .06 | .03 | .03 | .04 | .04 | – | | | | | – | – | – | – |
| 10. Class size[b] | −.07 | −.09** | .07 | −.13** | .11** | −.06 | .05 | −.07 | .17** | – | | | | – | – | – | – |
| 11. Condition[c] | −.03 | −.02 | .01 | −.09* | −.05 | −.07 | .03 | −.02 | −.07 | −.03 | – | | | – | – | – | – |
| 12. Grade level[d] | −.03 | −.03 | .07 | .09* | .14** | .09* | .07 | .11** | −.10** | −.17** | −.06 | – | | – | – | – | – |
| 13. Certification[e] | .10** | .06 | −.04 | −.06 | −.06 | −.09* | −.03 | −.04 | −.04 | −.03 | −.02 | .09** | – | – | – | – | – |
| 14. Teacher gender[f] | −.14** | −.17** | .05 | −.08 | .17** | .08 | .21** | .02 | .08* | .05 | −.01 | −.07* | .05 | – | – | – | – |

*$p < .5$; **$p < .01$.
[a]0 = science, 1 = non-science.
[b]0 = small class, 1 = large class.
[c]0 = control group, 1 = induction group.
[d]0 = lower grade, 1 = higher grade.
[e]0 = not certified, 1 = certified.
[f]0 = male, 1 = female, *M* = mean, SD = standard deviation.

teacher certification status (0 = not certified, 1 = certified) teacher gender (0 = male, 1 = female).

### *Data analysis*

The data of this study were naturally and systematically ordered in a hierarchical structure (i.e. measurement occasions nested within teachers, teachers nested within schools). When the data are ordered hierarchically and longitudinally, a more complex multilevel modelling, multi-level growth curve modelling (MGCM), is the most appropriate. With this method, not only the hierarchical structure of the data is taken into account, but also the multiple measurements over time of self-efficacy, stress causes and stress responses variables.

Using multilevel models for longitudinal data are advantageous for several reasons. 'First, by modelling varying regression coefficients at the measurement occasion level, we have growth curves that are different for each subject. This fits in with the way individual development is generally conceptualised. Second, the number of repeated measures and their spacing may differ across subjects. Other analysis methods for longitudinal data cannot handle such data well. Third, the covariances between the repeated measures can be modelled as well, by specifying a specific structure for the variances and covariances at either level. Fourth, if we have balanced data and use Restricted Maximum Likelihood (RML) estimation, the usual analysis of variance based *F*-tests and *t*-tests can be derived from the multilevel regression results. This shows that analysis of variance on repeated measures is a special case of the more general multilevel regression model. Fifth, in the multilevel model, it is simple to add higher levels, to investigate the effect of family or social groups on individual development. Sixth, it is straightforward to include time-varying or time-constant explanatory variables to the model, which allows us to model both the average group development and the development of different individuals over time. Finally, it can include incomplete cases, which is a major advantage when incomplete data indeed occur' (Hox, 2010, p. 98).

To examine the longitudinal link between self-efficacy, stress causes and stress responses as well as the differential effects of self-efficacy and stress causes on stress responses, we performed three-level MGCM, with schools at level 3, teacher at level 2, and measurement occasion at level 1. Models were built in a stepwise manner, ranging from estimating empty model (null model) to full model. The modelling was done separately for job tension and discontent using a statistical programme MLwiN (Rasbash et al., 2009). Significant predictors at $p < .05$ were retained and reported in this study. The fixed effects in the model were tested using t-ratio coefficients for a significant effect of a variable (Snijders & Bosker, 2012).

## Results

### *Preliminary analysis*

We first looked at the distribution of the variance in perceived stress responses across levels. This inspection informs us regarding differences in job tension and discontent for each level. Based on results of the null model of the multilevel analysis for job tension, we found that nearly 0% of the variance is attributed to school level, 70% to teacher level and 30% to occasion level (Calculation was based on

Table 3. Multilevel models of the relationship between self-efficacy, stress causes and stress response variables (full models); parameter estimates.

| | Job tension | | | | Job discontent | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 1 | | Model 2 | |
| | Coeff. | SE | Coeff. | SE | Coeff. | SE | Coeff. | SE |
| *Fixed effect* | | | | | | | | |
| Intercept | 1.74 | 1.20 | 1.70 | 1.46 | −1.37* | .68 | −1.68* | .80 |
| Time | .16 | .19 | .20 | .19 | 2.74*** | .77 | 2.60*** | .77 |
| $Time^2$ | – | – | – | – | −1.09*** | .33 | −1.05** | .33 |
| $Time^3$ | – | – | – | – | .15*** | .04 | .14*** | .04 |
| *Background variables* | | | | | | | | |
| Condition | .07 | .06 | .40 | 1.96 | .30 | .27 | 1.32 | .96 |
| Teacher gender | 1.14** | .38 | 1.11** | .38 | −.35* | .17 | −.39* | .19 |
| Teaching subject | $.77^{+}$ | .43 | .67 | .42 | .61*** | .19 | .54** | .21 |
| Grade level | .39 | .39 | .41 | .39 | −.05 | .18 | −.03 | .19 |
| Class size | .22 | .42 | .24 | .41 | −.03 | .18 | .02 | .20 |
| Certification | −.77 | .61 | −.87 | .61 | .20 | .28 | .18 | .29 |
| Time × Condition | −.04 | .11 | −.09 | .12 | −.01 | .06 | .01 | .07 |
| Time × Teacher gender | −.13 | .11 | −.14 | .10 | .14* | .06 | .15** | .06 |
| Time × Teaching subject | −.18 | .12 | −.13 | .11 | $-.11^{+}$ | .06 | $-.10^{+}$ | .06 |
| Time × Grade level | −.10 | .11 | −.09 | .10 | .03 | .05 | .03 | .06 |
| Time × Class size | .02 | .12 | −.01 | .11 | $-.10^{+}$ | .06 | −.11 | .07 |
| Time × Certification | .01 | .13 | −.03 | .12 | −.21** | .07 | −.20** | .07 |
| Condition × Certification | −.01 | .66 | .20 | .66 | −.29 | .29 | −.23 | .31 |
| *Self-efficacy* | | | | | | | | |
| Self-efficacy_School | −.33* | .15 | −.90*** | .20 | −.19* | .08 | −.31** | .11 |
| Self-efficacy_Class | −.67** | .23 | −.11 | .32 | −.23* | .11 | −.03 | .16 |

(*Continued*)

Table 3. (*Continued*).

| | Job tension | | | | Job discontent | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 1 | | Model 2 | |
| | Coeff. | SE | Coeff. | SE | Coeff. | SE | Coeff. | SE |
| *Stress causes* | | | | | | | | |
| High psychological task demands | .38*** | .04 | .42*** | .06 | .11*** | .02 | .13*** | .03 |
| Lack of learning opportunities | .01 | .04 | .03 | .07 | .07*** | .02 | .07* | .03 |
| Lack of regulating possibilities | −.04 | .04 | −.06 | .06 | −.01 | .01 | −.01 | .03 |
| Poor-socio-organisational aspects | .34*** | .06 | .25** | .09 | .13*** | .03 | .13*** | .04 |
| Condition × Self-efficacy_School | | | 1.16*** | .29 | | | .27* | .14 |
| Condition × Self-efficacy_Class | | | −1.16** | .46 | | | −.45* | .23 |
| Condition × High psychological task demands | | | −.09 | .08 | | | −.03 | .04 |
| Condition × Lack of learning opportunities | | | −.05 | .09 | | | −.01 | .05 |
| Condition × Lack of regulating possibilities | | | .03 | .08 | | | .01 | .04 |
| Condition × Poor-socio-organisational aspects | | | .18 | .12 | | | −.01 | .06 |
| *Random effects* | | | | | | | | |
| Level 3 variance (School) | | | | | | | | |
| Intercept | 1.03 | 1.26 | 1.76 | .86 | .50 | .07 | .00 | .00 |
| Intercept × Time | | | | | .00 | .00 | .00 | .00 |
| Time | | | | | .00 | .00 | .00 | .00 |
| Level 2 variance (Teacher) | | | | | | | | |
| Intercept | 1.49 | 1.25 | .72 | .81 | .00 | .00 | .77 | .51 |
| Intercept × Time | | | | | .00 | .00 | −.23 | .43 |
| Time | | | | | .00 | .00 | .23 | .41 |
| Intercept × $Time^2$ | | | | | .00 | .00 | .04 | .08 |
| Time × $Time^2$ | | | | | .00 | .00 | −.05 | .08 |
| $Time^2$ | | | | | .00 | .00 | .01 | .02 |
| Level 1 variance (Occasion) | | | | | | | | |
| Residual | 1.46 | .12 | 1.39 | .11 | .30 | .03 | .28 | .04 |
| −2Loglikelihood (Deviance) | 1804.20 | | 1785.81 | | 1106.55 | | 1103.43 | |

$^{+}p < .10$; $*p < .05$; $**p < .01$; $***p < .001$.

null (empty) models, not included in Table 3). This means that there are large differences between BTs regarding their perceived job tension as well as changes in perceived job tension over time, but almost none between school differences in perceived job tension. For job discontent, the distribution of the variance is 2% at school level, 56% at teacher level and 42% at occasion level. This suggests that there are moderate between teacher differences in perceived job discontent as well as changes in perceived job discontent over time, and almost no between school differences in perceived job discontent.

When examining the effect of time on job tension and discontent, results show that perceived job tension tends to increase linearly (Calculation was based on models with time as fixed effects only, excluding effects on contextual and personal variables, not included in Table 3). The change in perceived job discontent is not linear, suggesting that there is a moment of increase, decrease, with deceleration and acceleration over the course of three years.



### *Longitudinal relationships between psychological well-being variables*

Based on models without including background variables (not included in Table 3), we found a negative longitudinal relationship between BTs' perceived school and class self-efficacy and their perceived job tension ($\beta_s = -.58$ and $-1.21$, $p < .001$, respectively). Similarly, BTs' perceived school and class self-efficacy are negatively related to their perceived job discontent ($\beta_s = -.49$ and $-.47$, $p < .001$, respectively). This suggests that the higher the level of perceived self-efficacy of BTs (over time), the lower the level of their perceived job tension and discontent tends to be. The effects of perceived self-efficacy on job tension and discontent remain significant even after adjusting for time and background variables (see Table 3, Model 1).

The longitudinal relationship between BTs' perceived job tension and perceived stress caused by: high psychological task demands, lack of learning opportunities, lack of regulating possibilities, and poor-social-organisational aspects is positive ($\beta_s = .45, .19, .16, .45$, $p < .001$, respectively). Likewise, the relationship between BTs' perceived job discontent with these perceived stress causes variables is positive as well ($\beta_s = .13, .16, .11, .26$, $p < .001$, respectively). This means that the higher the level of perceived stress causes (over time), the higher the level of perceived tension and discontent tends to be. After controlling for time and background variables effects, the main effects of stress caused by high psychological task demands and poor-social-organisational aspects on job tension and discontent remain significant (see Table 3, Model 1). The main effect of stress caused by a lack of learning opportunities on job discontent remains significant as well.

Differences in perceived self-efficacy and stress causes variables explain about 35% of the total variance in perceived job tension and 31% of the total variance in perceived job discontent. For perceived job tension, perceived school efficacy explains 5% of the variance, perceived class efficacy 10%, perceived stress caused by: high psychological task demands 23%, lack of learning opportunities 3%, lack of regulating possibilities 6% and poor-social-organisational aspect 17%. For perceived job discontent, perceived school self-efficacy explains 12% of the variance, class self-perceived efficacy 9%, perceived stress caused by: high psychological task demands 8%, lack of learning opportunities 11%, lack of regulating possibilities 9% and poor-social-organisational aspects 23%.

### *Differential effects between induction and non-induction teachers*

Results of MGCM show that differences between induction and non-induction teachers regarding the effect of perceived class and school self-efficacy on perceived job tension and discontent are visible (see Table 2, Model 2). The interaction effect between condition and class efficacy on job tension is negative for induction and non-induction groups. However, the effect of class self-efficacy on job tension is stronger for teachers in the induction group. Interpreting main effects and interaction effects together, results suggest that an increase in the class self-efficacy reduces the job tension of teachers in the induction group about ten times stronger compared to teachers in the non-induction group. In the non-induction group, in fact, the negative relationship is not significant. However, the interaction effect between condition and school self-efficacy shows a different story. In the induction group, there is a positive relationship between self-efficacy in the school and job tension, meaning that the higher the school self-efficacy of teachers, the higher their tension as well. Whereas in the non-induction group, there is a negative relationship between self-efficacy in the school and job tension, suggesting that the higher the school self-efficacy in the non-induction group, the lower their tension.

The effect of class and school efficacy on job discontent differs between the condition and non-condition group as well. Results show that the effect of class self-efficacy on job discontent in the induction group is stronger compared to the non-induction group. An increase in the class self-efficacy reduces the job discontent of teachers in the induction group about sixteen times stronger compared to teachers in the non-induction group. Finally, the effect of school self-efficacy on job discontent is about eight times weaker in the induction than the non-induction group. However, the effects in both groups are negative, suggesting that the higher the school efficacy, the lower the job discontent tends to be.

## Discussion and conclusions

This study has extended the body of knowledge concerning the path of influence of induction arrangements. This study generally confirms the model of the relationship between self-efficacy, stress causes and stress outcomes (Helms-Lorenz et al., 2013) examined from a longitudinal perspective. It adds new insights that refine the theoretical understanding.

Consistent with our first hypothesis, we found that BTs' perceived self-efficacy is longitudinally and negatively related to their perceived stress responses. BTs who believed that they were able to successfully carry out teaching-related activities in the classroom and in school tend to report lower levels of job tension and discontent (over time) and vice versa. Our finding confirms that teachers' perceived self-efficacy seems to have a powerful role when BTs face the burden of daily stress, resulting in less tension and discontent. This is in line with the findings of Schwarzer and Hallum (2008) revealing that low levels of self-efficacy among teachers precede burnout. Based on our findings and other studies mentioned earlier, it is clear that BTs' self-efficacy should be promoted in order to prevent negative stress responses leading to burnout and attrition. In general, Bandura distinguishes four sources influencing self-efficacy beliefs: mastery experiences, vicarious experiences, verbal persuasion and psychological arousal, with mastery experiences postulated as the most potent source (Bandura, 1986, 1997). Potential ways of stimulating mastery

experiences for BTs are by: giving adequately challenging teaching tasks, encouraging the implementation of peer models strategy, training specific and contextual teaching strategies and reinforcing effort and encouraging correct teaching strategy use (Margolis & McCabe, 2006). Encouraging self-regulation by teaching BTs strategies to monitor their own progress might add to their self-efficacy beliefs. All these strategies can be subsumed into induction programmes.

Our second hypothesis is confirmed as well. We found that BTs' perceived stress caused by: high psychological task demands, lack of learning opportunities, lack of regulating possibilities and poor-social-organisational aspects is longitudinally and positively related to their perceived job tension and discontent. The more BTs experience stress causes, the more susceptible they are to tension and discontent, and vice versa. This finding is in line with the TPSM theory positing a positive link between stress causes and stress responses. When coping strategies fail and teaching-related stress causes remain improperly attended, (beginning) teachers tend to experience tension and discontent (Helms-Lorenz, et al., 2013; Quick et al., 1998). These groups are very likely to experience burnout and leave the teaching profession, sooner or later (Betoret, 2006; Brouwers & Tomic, 2000). Emotionally and behaviourally tensed and discontent teachers may lead to teachers depersonalising their students, leading to less caring and more hostile attitudes towards students (Kinman et al., 2011). If this occurs, students may react negatively as well, resulting in less engagement and motivation in learning. This suggests that teacher–student (interpersonal) relationships may be threatened in classrooms of tensed and discontent (beginning) teachers. Because teacher–student (interpersonal) relationships are important factors for students' outcomes (Maulana, Opdeankker, & Bosker, 2013; Maulana, Opdenakker, den Brok, & Bosker, 2011; Maulana, Opdenakker, Stroet, & Bosker, 2013; Opdenakker, Maulana, & den Brok, 2012), classrooms with tensed and discontent (beginning) teachers need more particular attention for effective interventions. Therefore, it is important to reduce stress causes in order to prevent and reduce tension and discontent by means of induction arrangements.

When looking at the magnitude of the variance in stress responses explained by self-efficacy and stress causes, both self-efficacy and stress causes are strong predictors of job tension and discontent. However, perceived stress caused by high psychological task demands appears to be the strongest predictor of job tension for BTs. In more diverse teacher samples, high psychological task demands (i.e. time pressures, administrative demands) are recognised as stressors causing teachers' burnout (Burke & Greenglass, 1995; Griva & Joekes, 2003). Our study adds to the knowledge base that perceived high task demand is a major factor of tension in the context of BTs. For perceived job discontent, perceived stress caused by poor-social-organisational aspects appears to be the strongest predictor. Although past empirical evidence explaining this relational finding is not present, there is a strong reason to assume that if (beginning) teachers think that they fail to develop supportive relationships with colleagues and if they receive insufficient information about their functioning as a member of the school, then they would feel lack of pleasure and less committed to the job, causing discontent.

Our third hypothesis is partially confirmed, as we found that the effects of self-efficacy on job tension and discontent depend on the type of self-efficacy (class versus school context) and condition (induction versus non-induction). Perceived self-efficacy in the class appears to be a strong factor for mitigating the level of perceived job tension among BTs following the induction programme. This effect is not

visible for BTs in non-induction schools. This finding suggests that the induction arrangement appears to be a powerful means of social and professional support playing a role in sustaining self-efficacy in the class that mitigate the level of job tension. This is in line with the literature on the role of social support for teachers' well-being (e.g. Kinman et al., 2011). Nevertheless, we also found that a higher level of perceived self-efficacy in school corresponds with a higher level of perceived job tension for BTs in induction schools. Whereas for BTs in non-induction schools, a negative relationship between self-efficacy in the school and job tension is evident. Although reasons for this unexpected finding remains unclear, this finding may suggest that the induction programme at the school level requires fully committed participations of BTs, contributing to higher levels of job tension. Although they hold high self-efficacy beliefs in the school, they also perceived high levels of job tension as a result of this expected full commitment of following the (overwhelming) programme. This speculative interpretation should be studied in the future.

Finally, our last hypothesis is not confirmed. We found no significant differences concerning the relationship effects of perceived stress causes on stress responses between induction and non-induction groups. Although we may expect that BTs in induction group would experience less stress causes and stress responses as a result of providing more adequate social and professional support, it seems that the programme has not reached this goal yet. It can be argued that the relationship between stress causes and stress responses is not influenced by induction programmes as they also add to the workload. This might not lead to the desired psychological space to develop more contextual control. Perhaps, the content of the current programme contributes, to some extent, to causing stress for the majority of the BTs, resulting in a comparable degree of job tension and discontent as their peers in the control group. This can be a potential argument for refining and improving the programme in the future to make it less overwhelming and to focus on more context analysis by the beginner, supported by a mentor in the explanation of contextual influences.

Although the current study has contributed to the knowledge of the relationship between social and professional support and psychological well-being from the BTs context, it subjects to some limitations. First, the data obtained in this study were derived from self-report measures. It is fundamentally challenging to measure psychological well-being more objectively. Hence, the interpretation of the current study is limited to *perceptions* of BTs, suggesting instead that interpreting the results as *actual* phenomena should be taken with care. Nevertheless, including a more objective measure like heart rate, blood pressures or galvanic skin response may be beneficial to validate the current study. Second, although the current study confirms the theoretical model concerning the relationship between stress causes and stress outcomes and the potential role of induction arrangements as a form of social and professional support from a longitudinal point of view, it does not fully address the role of the induction arrangement for stress outcomes like burnout and retention/attrition. To confirm the model and prove the usefulness of the induction programme, a longitudinal research including burnout and/or retention/attrition rates is called for.

In summary, self-efficacy and stress causes are important predictors of stress responses. Therefore, school (psychologists) and educational (psychology) researchers are encouraged to help BTs boost their self-efficacy level and reduce stress causes to mitigate stress outcomes. Interventions such as induction arrangements seem to be a promising approach for this purpose. Particularly, BTs in induction schools seem to benefit more from having higher self-efficacy compared to BTs in

non-induction schools. However, high levels of school self-efficacy correspond to high levels of job tension in the induction group, while in the non-induction group, the relationship is negative. Future research should focus on this trade-off mechanism by investigating the impact of less overwhelming induction arrangements at the school level and focusing on support in the classroom on the one hand or whether higher tension leads to heightened alertness and enhanced performance (Quick & Spielberger, 1994) on the other hand. Future research should also focus on the specific nature of induction programmes. This could shed light on induction programme elements that reduce stress and enhance self-efficacy. Additionally, it is also worthwhile to include the role of school managers supervising BTs more intensely, as past research shows that positive and fair leaderships affect psychological well-being of employees, while negative and unjust leaderships cause employees psychological well-being like stress and distress, anxiety, depression and psychosomatic symptoms (Densten, 2005; Hoel, Rayner, & Cooper, 1999). By addressing all the mentioned issues in the refined induction programme in the future, we are more likely getting closer to preventing teachers from leaving their teaching profession in the long run.



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**Appendix 1. Guidelines to optimise working conditions; ensuring instructive work and reducing work pressure**

| Goals | Measure that leads to less stress | Examples of activities |
|---|---|---|
| Optimising organisational preconditions and optimising the working situation<br>Tailor-made measures: fine-tuning of work pressure, challenges and capacity | No extra tasks | • No tutorship (build up from 1 to 3); also made-to-measure; starting point as basis<br>• No extra tasks<br>• Reduced number of lessons<br>• Discuss perception of work pressure with coach<br>• Learn time-management<br>• Organise work efficiently, work goal-oriented<br>• Learn to be a chairman<br>• Keep guard over time, also after school |
| Give no assignments that cannot be accomplished: not too easy and not too difficult assignments | Attune work to BT's capacity | • Take care of tailor-made assignments:<br>• Provide the opportunity to reflect on workload<br>• Give possibility to change classes<br>• Make and keep tasks suitable<br>• Teach parallel classes preferably with experienced colleague |
| | Advantageous schedules | • Preferably no scheduled lessons at the end of the day<br>• Schedule weekly hour for support<br>• Secure confidentiality between BT and support provider<br>• Attune schedules of BTs and the subject coach<br>• Communicate well with schedules makers<br>• Reduce excessive commuting between buildings<br>• Provide BTs with own classrooms |
| Acknowledgement of the fact that development takes time | Develop induction arrangements for the duration of three years and see to a gradual increase of workload up to the normal end level | • Provide a quiet and good workplace<br>• Provide continual 'fitting' challenges |

(*Continued*)

**Appendix 1.** (*Continued*)

| Goals | Measure that leads to less stress | Examples of activities |
|---|---|---|
| Instructive workplace | Placement in particular classes and teams | • Provide accessible resources<br>• Placement in dynamic, helpful teams<br>• Trying to have the supporting teacher and the coach in the same team<br>• Organise weekly (peer) reflection sessions |

**Appendix 2. Guidelines to support the development of the BT**

| Domains | Developmental goals | Guidelines | Content of activities to accomplish goals (what?) | Activity (how?) |
|---|---|---|---|---|
| School organisation and context | To gain specific background knowledge of students, the curriculum, the school and the social context | Provide opportunity for informal, unintentional learning<br>Take school policy into account when developing an induction arrangement<br>Providing a coach of the same school and same subject field (matching teaching conceptions between mentee and mentor increases effectiveness)<br>Provide opportunities for formal learning<br>BT who had an appointment during their internship should be treated in the same way as BT who had their internship elsewhere | • Getting to know the content of student files (study progress and personal information) and learning how to use this information correctly<br>• Knowing what the roles of teachers is<br>• Getting to know the social context of the average student<br>• Knowing the mission, the identity and the uniqueness of the school<br>• Getting to know the structure, organisation and culture of all sections/ departments within school<br>• Being aware of pupil transition problems inside the school.<br>• Being informed about current social discussions concerning education | • Appoint a (senior) teacher to be responsible for BTs; for instance, a school educator or a team leader<br>• Activities directed to introduce the use student files<br>• Having informal conversations with students<br>• Have BTs participate with school trips, not as organisers<br>• Supply information about school structure, organisation and culture.<br>• Provide opportunities to attend different kinds of meetings<br>• Be transparent about decisions made by the school concerning the organisation of learning processes.<br>• Let BT's visit other teams, locations, levels, departments in- and outside of the school<br>• Make social developments accessible and discussible for instance using journal articles, newspaper articles, subscription to journals, either on paper or on internet<br>• See to it that social developments are discussed during meetings |
| | Cultivation of consciousness of the fact that you are a part of a team and an institution and knowing your responsibilities | Provide the opportunity for the BT to be a full member of the institution (in rights and duties) | • Getting to know the values and norms of the organisation and its members<br>• Getting to know the explicit and implicit rules of the organisation<br>• Learning to meet effectively | • Coach collegiality<br>• Provide transparency<br>• quality assurance system<br>• Learning effective time-management skills<br>• Attending meetings and workshops<br>• Learning effective meeting skills<br>• Discuss how to behave as a colleague during meetings and in the teams |

| | | | | |
|---|---|---|---|---|
| Pedagogical and didactical behaviour | Focus on learning of the students as a starting point of pedagogical and didactical behaviour | Stimulate lifelong learning | • Knowledge about theories of learning processes and integration thereof into the subject<br>• Continuous development of the notion of 'how learning works'<br>• Noticing (assessing, observing) if and how students learn | • Critical reading of learning theories from scientific publications and literature<br>• Using think-out-loud-protocols of students and analysing these<br>• Attending workshops about learning and teaching |
| | Deepening and extending subject content knowledge<br><br>Applying, extending and refining beginning behaviour repertoire | Lifelong learning<br>Building on a knowledge base that transcends the own subject matter<br>Provide opportunities for reflection on own behaviour<br>Developing a notion of how own classroom behaviour and how this effects pupils | • Keeping track of latest knowledge of the subject and latest developments<br><br>• Being informed about new developments in didactics<br>• Noticing differences between students (backgrounds, behaviour, development)<br>• Learning to treat (groups of) individuals differently in order to enhance overall learning<br>• Learning which differences call for didactic differentiation<br>• Improve effectiveness of own teaching<br>• Intensifying interaction with and between students | • Consulting scientific literature<br>• Attending courses/extra training/ congresses<br>• Consulting different teaching methods<br>• Attending thematic workshops or workshops with experts<br>• coaching on the job<br>• study literature and other relevant information<br>• develop evidence-based teaching<br>• specific observation and processing of feedback<br>• Watching and discussing video recordings of oneself and others<br>• Preparing lessons together: in pairs and/or in teams<br>• Asking feedback on a plan for a lesson<br>• Workshop about learning to develop strategies for teaching<br>• Observing the behaviour of an expert<br>• Giving space for experimentation through mutual observations in lessons |

(*Continued*)

**Appendix 2.** (*Continued*)

| Domains | Developmental goals | Guidelines | Content of activities to accomplish goals (what?) | Activity (how?) |
|---|---|---|---|---|
| | Knowledge about student counselling and being able to function as a tutor | Developing knowledge of counselling and exercising the skills | • Introduction to student counselling in general and in this school specific<br>• Develop communication skills<br>• Getting to know the limits of tutorship | • Getting training to be a tutor and growing into tutorship<br>• Training of conversation skills for conversations with students<br>• Being Informed about specific issues as incest, domestic violence, etc. |
| | The development of an effective learning climate in the classroom, for instance creating a safe pedagogical climate<br>Being aware of your role | Negotiating with students about the learning climate<br>Consulting with colleagues, reflection<br>Observation and feedback<br>Translate theory to practice | • Being informed about the rules of the school, protocols and being able to play with it<br>• Knowing theory about motivation, group behaviour, problem behaviour, bullying, etc.<br>• Being informed about group dynamics<br>• Setting boundaries/limits<br>• Knowledge of effects of own behaviour<br>• Managing individual differences<br>• Being able to name values and norms in the classroom and taking care of the execution of the rules | • Introduction to school rules<br>• Consulting and using literature<br>• Talking with tutors<br>• Attending thematic workshops<br>• Having conversations with students about values and norms. Exchanging thoughts with colleagues about this. Making consequences explicit |
| | Knowledge of the individual differences between students and their diversity<br>Skills to manage these differences<br>Special attention for and knowledge of the problems of students with special needs | Acknowledgement of the complexity of a heterogeneous group | • Understanding problem behaviour like ADHD, PDDNOS, dyslexia, dyscalculia<br>• Knowledge of facilities to support special needs<br>• Being informed about behaviour protocols like bullying behaviour and coping with grief | • Making background information available, journals, etc.<br>• Consulting these sources<br>• Attending student discussions in teams<br>• Coordinator of care gives information about set-up, content and structure of care |

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| | | | • Knowledge of the role of the teacher with regard to special needs<br>• Knowledge of roles and tasks of team that concerns special need children<br>• Learning to read action plans developed to support special needs learning to execute and evaluate these plans | |
| Learning of the own education practice, professional development | Strengthening the skills to study and improve the own practice of education<br><br>Develop an own vision and being able to change concepts | Being able to work together with different colleagues: in schools, with universities and colleges of higher education<br><br>Stimulating a developing attitude<br>Learning to see what influence the school policy (context) has<br>Acknowledgement of the relative autonomy of the teacher<br>Providing room for experimenting in this<br>Acknowledgement of the own strengths and further developing these | • Systematically reflection: analysing the own education practice<br>• Using results of this to improve education<br>• Processing theories<br>• Getting the opportunity to learn from experts<br>• Direct observation and learning<br>• tools<br>• integration of information gained from several sources: feedback on observations of lessons, feedback from students and performances of students<br>• developing own teaching concepts | • systematic reflecting on lessons; by using theoretical concepts, experiences and by paying attention to own development of concept of teaching<br>• systematic examination of the own concepts<br>• making a use of insights gained by research on ‘evidence-based effective teaching’<br>• generating systematic feedback<br>• working on this in a team<br>• being able to discuss this with someone else |

(*Continued*)

**Appendix 2.** (*Continued*)

| Domains | Developmental goals | Guidelines | Content of activities to accomplish goals (what?) | Activity (how?) |
|---|---|---|---|---|
| | Examining the practice of education<br><br>Increasing the self-regulation of the own professional development | Learning to act in a investigating way in and from authentic situations<br>Developing metacognitive skills and knowledge of the own learning process and development as a teacher | Developing an investigating method of working<br>• increasing awareness of the (own) on the job<br>• being aware of and making use of opportunity to experiment<br>• recognising own successes<br>• being able to regulate own professional development, not being a victim<br>• knowledge of system theory<br>• daring to distinguish yourself from others | • performing (action) research<br>• reading and interpreting research publications<br>• systematic experimentation<br>• developing a proactive attitude<br>• learning to take time to develop oneself<br>• reflection on own development<br>• gathering knowledge of ways to learn on the workplace and learning from experiences<br>• discovering and explicating an own style to learn on the workplace and learning from experiences |
| Balance | Finding a balance between work and private life | Acknowledgement that the beginning teacher is an employee for the first time | | • Time management course |