

Stimulating Teachers' Continuous Professional Development in the Netherlands

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ARTICLES

Stimulating Teachers' Continuous Professional Development in the Netherlands

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Abstract: Planned Continuous Professional Development (CPD) in the past and current international initiatives are frequently based on an implicit deficiency assumption or gap-based model. This study answered the research question "To what extent can teachers be triggered to participate in CPD following a sequential, gap-based model and what is the relation with personal and psychological factors?" Specifically, the influence of personal and psychological factors on three phases of teacher CPD according to the I-Change model (awareness of the need for CPD, motivation to take part in CPD and taking action) was studied. The analysis of 119 questionnaires showed that not all teachers participate in all three phases. Surprisingly, few teachers had a performance gap and even a smaller number had the motivation to improve. The results showed that teachers with high scores on Core Self Evaluations (CSE) were less likely to become aware of or formulate a CPD goal than teachers with lower CSE scores.

Keywords: I-Change model; continuous professional development; personal factors; psychological factor

Introduction

Continuous Professional Development (CPD) of teachers is featuring more prominently in international literature on education (Day et al., 2007). Different countries use different strategies or policies to support CPD (Jones and O'Brien, 2011; Forsberg and Wermke, 2012). However, these efforts do not always pay off and teachers are not always willing

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to participate in CPD activities (Van Eekelen et al., 2006; Reynders, 2011)

The literature on CPD is multifaceted. Some authors advocate for CPD that fits the needs of participants (Avalos, 2011; Kennedy and Clinton, 2009) or personal characteristics of teachers (Kwakman, 2003). Other authors emphasise the importance of contextual factors (Van der Heijden, 1998). Some authors combine these factors. For instance, Dymoke and Harrison (2007) consider the importance of both personal and professional needs, while Walker and Cheong (1996) discuss the importance of a balance between individual and organisational needs. Guskey (2002) stated that the majority of CPD programmes fail because of two important factors - teachers' motives and the process of teacher change. While authors reviewed emphasise different factors influencing CPD, the need for triggering CPD in order to enhance engagement in CPD is a constant factor.

Over the years, different models were developed for triggering CPD. For instance, models that focused on teacher change and pointed at CPD programmes as the initial trigger for CPD participation (Gusky, 1986). In addition, motivation was acknowledged as an important factor for participation in CPD activities as it affects teachers' beliefs and attitudes. While Guskey's model focused on how the process of CPD participation started, it did not give any detailed description of how to stimulate teachers to participate in planned CPD.

Loucks-Horsley et al. (1998) presented a continuous and circular design of CPD, starting with goal formulation, leading up to reflection on the CPD activity undertaken. In contrast to Guskey's model, the latter model did not explicitly incorporate teachers' motivation.

Other more general models of behavioural change focused mainly on motivation and intentions to engage in certain behaviour (e.g., Theory of Planned Behaviour, TPB, Ajzen, 1991, and Social Cognitive Theory, SCT, Bandura, 1986). These models considered intentions as a proximal measure for actual behaviour.

In the last decade, multi-phase models of behavioural change were developed, taking into account different influencing factors in different phases of the process. The Integrated Model for explaining motivational and behavioural change, in short, the I-Change model (De Vries et al., 2008), integrates a number of motivational- and multi-phase models, more specific the TPB (Ajzen, 1991), SCT (Bandura, 1986), the trans-theoretical model (Prochaska and Velicer, 1997), and the health belief model (Janz and Becker, 1984).

The I-Change model (De Vries et al., 2008) is a phase model for behavioural change. It includes three phases: an awareness phase, a motivation phase, and an action phase. The model provides insights into factors relevant to each phase. It also gives directions on how to influence these factors in order to reinforce behavioural change. While this model is applied predominantly in health prevention and health education, it is relevant and applicable to the domain of teachers' CPD participation. CPD participation can thus be seen as a phase model where awareness of the need to participate in CPD comes first, motivation to participate second, and finally action follows.

While the I-Change model could be applied to multiple kinds of CPD, in this study it was applied exclusively on teachers' deliberate learning processes. For three reasons the focus was on teachers' deliberate learning processes. First, it was important for the school-practice that teachers learn to better articulate what they have learned in performance and development interviews. Kennedy (2011) showed that teachers do not mention these learning events when asked what CPD activities they have undertaken. Second, to focus on deliberate learning processes was to be in line with many national and school policies, which tried to stimulate teacher engagement in specific CPD activities. These policies focused on closing a gap in teacher performances compared to the standards set by policy makers or school-management. Third, some teachers should participate in CPD to keep up with standards. The proposed I-Change model could provide guidance on triggering teachers to take part in CPD activities that could facilitate deliberate learning processes.

As indicated earlier, the I-Change model was developed within the field of healthcare where many CPD-models referred to awareness related to unhealthy behaviour that needs to be changed. With regard to teachers' CPD, the need to change was a performance gap. Saunders (2012) explained that many professional development programmes assume a gap and therefore only support short-term learning and practice-change to close that gap. Such a gap-approach was often implicitly present (Gallant and Mayer, 2012; Opfer and Pedder, 2011; Pedder et al., 2010). Examples of such deficiency/gap models are the onion model (Korthagen, 2004) and the phase model for core reflection (Korthagen and Vasalos, 2005). Both assume that changing behaviour should start from a tension or discrepancy between the current and ideal situations. The reflective practitioner model (Schön, 1983) states that change can occur only when individuals become aware that the current practice is insufficient and when they want to improve performance. These models incorporate awareness of a gap as an important phase preceding the actual change of behaviour. After awareness is reached, new possibilities for improved practice could emerge (Posthom, 2008). While awareness constitutes a form of professional awakening, Van Eekelen et al. (2006)

conclude that awareness alone is an insufficient condition for participation in CPD.

Wiersma et al. (2002) assert that not all teachers go through their three conditions – insight into their own potentials, constraints and interests, define goals, and take action -automatically. This is in line with the assumption within the I-Change model where not all teachers pass automatically through the three phases - awareness, motivation and action.

Triggering CPD turned out to be a complex process due to the delicate balance between optimal contextual characteristics and individual factors. The I-Change model incorporates multiple factors (distal and proximal) influencing the actual behaviour, in this case participating in CPD. Figure 1 contains the three phases within the I-Change model (the awareness phase, the motivation phase, and the action phase) and their influencing factors (de Vries et al., 2008).

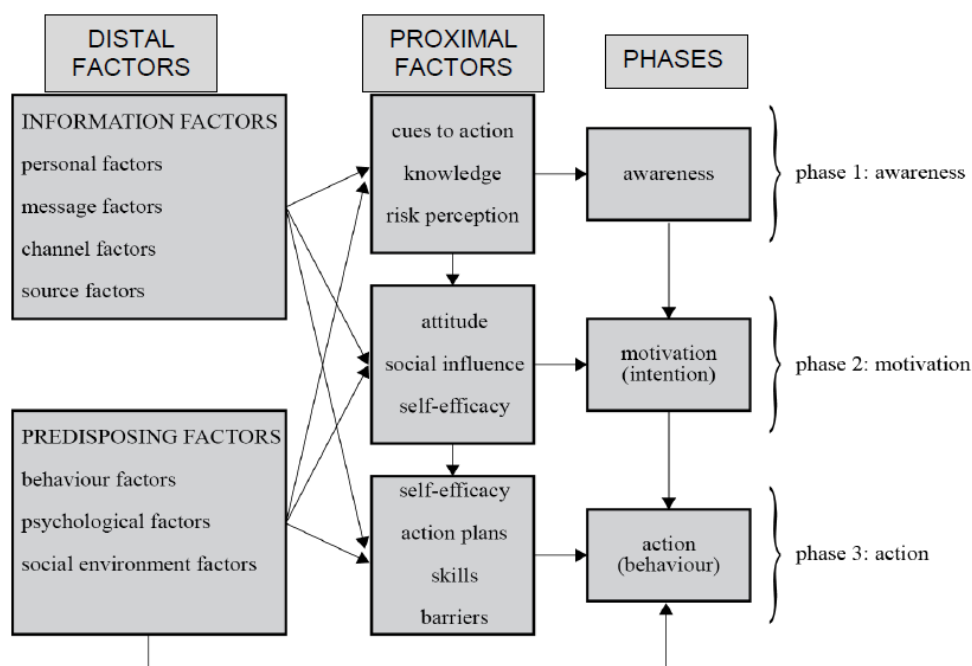


Figure 1: The I-Change behaviour phase model: the awareness phase, the motivation phase and the action phase.

In the awareness phase the target population (i.e., teachers) becomes aware of the current behaviour, that is, the behaviour itself, its performance and consequences. Awareness means that knowledge about the behaviour moves from an unconscious state to a conscious state. A number of factors are involved in the awareness process, namely, cues and hints (cues to action),

the feedback given (knowledge), and the information sources about what the desired behaviour should entail (risk perception) (see Figure 1).

The motivation phase is the phase wherein the target population (i.e., teachers) reaches a state in which it forms the motivation to engage in the desired behaviour. Motivation is determined by the proximal factors attitude, social influence and self-efficacy. Attitude is the individual's overall sympathy or antipathy towards the consequences or outcomes of performing the behaviour. Social influence is a combination of subjective norm (as in the TPB), social modelling, and social support (Broekhuizen et al., 2010). Subjective norm was defined by Fishbein and Ajzen (1975) and referred to the extent to which individuals believe that most people who are important to them might like them to perform that specific behaviour. Social modelling and social support refers to how many people in an individual's surrounding perform that specific behaviour and how supportive an individual's surrounding is in performing that specific behaviour (Broekhuizen et al., 2010). Self-efficacy consists of the 'beliefs in one's capabilities to organise and execute the courses of action required to produce given attainments' (Bandura, 1997, p. 3).

The final phase is the action phase. As the name suggests, in this phase the target group (i.e., teachers) perform the desired behaviour. The action phase is regulated through self-efficacy, action plans and skills. Self-efficacy influencing the action phase is a different kind of self-efficacy than that which influences the motivation phase. More specifically, within the motivation phase, self-efficacy is related to the intention of behaviour, whereas in the action phase, motivation refers to the maintenance of behaviour (Schülz et al., 2009). Action planning encompasses specific goal setting to raise the chance of actual execution (Latham and Locke, 1991). Skills refer to the actual skills an individual needs to perform the specific behaviour. Finally, barriers refer to an individual's anticipation of possible barriers.

In short, each phase of the I-Change model is influenced through a specific proximal factor (see Figure 1). However, these proximal factors (and thereby implicitly the outcome of each phase) are influenced by distal factors. Distal factors are facilitators and barriers that might help or obstruct the transition between phases. Within the I-Change model the distal factors are subdivided into information factors and predisposing factors.

The information factors consist of personal-, message-, channel-, and source factors. Some scholars identified personal factors as demographics, interests, and the need for variety (Kwakman, 1999). Message factors refer to the actual information individuals gather. Sachs (2010) argues that standards for teacher performance can be used to improve performance, improve the status of teachers (quality of teaching seen by others) or trigger CPD participation

(Ingvarson, 1998). Standards serve the role of a message on “how to perform”. When a school had formulated a CPD policy, teachers seemed to be more motivated to participate in learning activities (Geijsels et al., 2009). However, many schools lack such specific CPD policy (Opfer and Pedder, 2011; SCP, 2009) and therefore do not offer enough message information to their teachers. A wide range of channels to get information across could be used and are also of influence. In the Netherlands, in the context of CPD participation, most information is presented in writing or face to face. In addition to the channel, source factors were an important distal factor influencing proximal factors and thereby influencing the phases of the I-Change model (see Figure 1). The credibility of the information source is important (Ilgen, Fisher, & Taylor, 1979). For instance, knowledge in the form of feedback given by a respected colleague is more likely to influence intention and behaviour than feedback from an emotional pupil. The school-managers’ competence is shown to significantly influence teachers’ CPD (SBL, 2006).

The predisposing factors incorporated in the I-Change model are behaviour-, psychological-, and social environment factors. Within schools where not many teachers are engaged in CPD, teachers rarely see other colleagues participate in CPD. In other words, in such cases the social environment of teachers is not ideal to increase CPD. Most CPD that could be observed is still limited to participation in courses and training, but these types of CPD are not evaluated as highly effective by teachers (Daly et al., 2009). Using the metaphor of the iceberg, psychological factors are the underwater characteristics and include, for example, self-esteem, self-efficacy and locus of control.

The I-Change model could be helpful in gaining more insights into distal and proximal factors from an educational perspective. This could shed more light on why some teachers do not move from phase to phase and do not engage in CPD. These insights could lead to interventions that help teachers to overcome hurdles within a particular phase. This article discusses the results of the study in which we verified the usefulness of the I-Change model in educational practice. The main research question is: To what extent can teachers be triggered to participate in CPD following a sequential, gap-based model, and what is the relation with personal and psychological factors? Subquestions include:

1. How many teachers in the current study who became aware of a performance gap, were motivated to do something about it and subsequently take action?
2. In what way were awareness, motivation to participate in CPD and action influenced by personal and psychological factors?

In order to make the results of this study useful for practice and science, the study was carried out in a specific situation (a group of three schools gathered under one school board). By focusing on teachers within one school board, the contextual elements such as HRM policy were considered stable. In the Netherlands, a school board is one group of managers for different schools at different locations. This stability made it possible to study the influence of our focus variables (i.e., personal and psychological factors) on CPD.

Psychological factors

For this study, we focused on a specific set of psychological factors proven to be relevant within the field of education.

Core Self Evaluations

Extensive research corroborated the existence and value of Core Self Evaluations (CSE) as a construct that encompassed four psychological variables: neuroticism; self-esteem; self-efficacy and Locus of Control (Judge et al., 1997). The evidence of a common construct for neuroticism, self-esteem, self-efficacy and locus of control led to the development of the Core Self Evaluations Scale (CSES) (Judge et al., 2003). Neuroticism was defined as the tendency to be anxious, contrite, and insecure (Costa and McCrae 1988). Judge et al. (1998) defined self-esteem as the overall value people attribute to themselves. Bandura (1997), as was described before, defined self-efficacy as “belief in one’s capabilities to organise and execute the courses of action required to produce given attainments” (p. 3). The fourth core construct, locus of control, was defined as the degree to which a person believes he or she has control over his or her own life (Rotter, 1966).

The four core variables of CSE were related to the four out of five factors of the Big Five (agreeableness, openness, conscientiousness and extraversion). Judge et al. (2002) found a strong to moderate relationship between CSE and both conscientiousness and extraversion as well as a weak relationship or no relationship between CSE and agreeableness and openness. In addition, there was a strong relationship between CSE and neuroticism (within the Big Five), but CSE was shown to be a broader construct than neuroticism alone.

The construct of CSE has been studied over the years, thus providing more evidence for its existence and value. Judge et al. (1997) tested this core construct primarily in the fields of work and organisational psychology, but CSE had not yet been linked to CPD. However, the connection between the separate constructs and CPD was made by different authors as presented hereafter.

The relationship between self-efficacy and awareness was supported by the research of Schunk and Ertmer (2000) and Ross and Bruce (2007). These researchers found that self-efficacy determined how accurately people perceive their own performance. Van Dinther et al. (2011) and Ross and Bruce (2007) found that self-efficacy influences the way people set goals and the effort people make to obtain their goals (proximal factors within the I-Change model).

Locus of control could also be linked to the phases of the I-Change model, because it influenced peoples' response to feedback (part of the information factors) (Ilgen et al., 1979). In addition, locus of control influenced how active and motivated a teacher is in establishing goals (Van Amersfoort, 2009) that is, how genuinely a teacher intended to take part in CPD.

In order to include the CSE as a psychological factor in future studies, the reliability had to be examined. Although the CSES (Core Self Evaluations Scale) was an established questionnaire in the Netherlands and beyond, there was no guarantee that teachers as a subgroup would act according to its expectations. To examine the practical relevance of the chosen variables in addition to their theoretical relevance, existing databases were consulted. This pre-study intended to answer the question, "Is the CSES a reliable measure for teachers?"

The database consisted of 79 teachers from different secondary schools in the Netherlands. The distribution of men and women was respectively 22.8 and 77.2 per cent and the mean age was 34.8 years (SD = 12.5). The Dutch Core Self Evaluations Scale (DCSES) (de Pater et al., 2007) consisted of 12 items scored on a 5-point scale ranging from totally disagree (1) to totally agree (5). The 12 items of the DCSES had a mean score of 36.13 with a standard deviation of 5.32 and a Cronbach's alpha of .79. On the basis of this reliability, we concluded that the DCSES was acceptable as a psychological test and could be used in future studies.

The personal factors measured in this study were age, experience and whether the teacher was employed in pre-university education.

Age

Many studies incorporated age as a control variable. Age influences multiple aspects of CPD (Hustler et al., 2003). For instance, age influenced teachers' perceptions of the kinds of activities that fall under CPD, and older teachers had more negative attitudes toward CPD than their younger colleagues. In addition, there was a relationship between age and motivation to learn and learning (Colquitt et al., 2000).

Experience

Experience was defined as the number of years a teacher was engaged in the teaching profession. Experience influenced the learning needs of teachers (Nabhani and Bahous, 2010).

Although age and experience were closely related variables, they were both included in the study. People who entered the teaching profession after a career in another field might develop a different way of going through the I-Change model.

Teaching in pre-university Education

In the Netherlands, secondary schools offered different education systems. Pre-vocational secondary education included vocationally focused training (ages 12 to 16). Senior general secondary education included more theoretical studies (ages 12 to 17) and pre-university education had the most scientific content (ages 12 to 18). The student and teacher populations of these education systems differed accordingly.

Method

Participants

The underlying assumption of the I-Change model were that some teachers did not become aware of the need to develop as professionals. Therefore, working in pairs of one teacher and his/her team coordinator were important because the team coordinator could give information (feedback) to the teacher in order to raise awareness. The online questionnaire (available through the first author) was presented to 408 pairs consisting of a teacher and a team coordinator constituting the total population of three different schools under the jurisdiction of the same school board. From the invited pairs, 119 completed the entire questionnaire (29.2%). The distribution of the sample was 56.4% men and 44.6% women. The mean work experience in education was 16.2 years (SD = 13.3). The mean age was 44.2 years (SD = 18.8). This sample was representative of the Dutch teacher population in secondary education (Inspection of Education, 2010).

Procedure

An online questionnaire seemed the most suitable research method because it could be made part of the process of teacher assessment within the schools, and it was least time consuming for both teachers and researcher. When teachers have to invest a lot of time and energy in research participation, the return rate would drop drastically.

All team coordinators and teachers received a pre-notice email about the questionnaire before their Spring break, signed by the director of the school board. After the recess, each participant received an invitation by mail to complete the online questionnaire. Approximately one month after the invitation, the team coordinator and teachers who had not completed the questionnaire received a reminder.

First, the team coordinator completed the questionnaire assessing the teacher's performance. Next, the teacher responded to an extended questionnaire. The teacher also assessed his/her own performance followed by immediate information about the team coordinator's feedback. Hereafter, the team coordinator answered questions about his or her response to that feedback. The combined results (answers of the team coordinator and answers of the teacher) were the unit of analysis for this study.

Instruments

For collecting data on teacher's performance, a suitable topic had to be chosen. In a pilot study a focus group of five teachers discussed a variety of possible topics for assessing teachers. The criteria the five teachers used to judge the suitability of the topics were: 1) recognisable for teachers; 2) the use of similar definitions among different teachers; 3) possibility of differentiation of competence between teachers; and 4) opportunity for teachers to score themselves as having a need to improve. Participants measured each topic against the criteria and checked if they had a shared meaning for those topics. To summarise, the focus group named three topics (giving instruction, use of student-activating teaching methods and differentiation in the classroom) suitable for assessing. In the end, the panel of teachers found that the topic "ability to use student-activating teaching methods" was most suited for analysis. Additionally, a study by Freedman et al. (2012) showed that teachers were still searching for active teaching methods to promote deeper levels of information processing. Student-activating teaching methods were examples of student-centered approaches to learning which emphasise the responsibility and activity of students regarding learning ultimately leading up to deep learning and understanding (Baeten et al., 2010). The first draft of the questionnaire was reviewed by the same panel of five teachers. After this pilot phase, the topic of student-activating teaching methods was incorporated to score teacher performance and a few textual adjustments were made to make it better suited to the educational setting.

Team coordinators received the questionnaire about teacher performance. This questionnaire consisted of two main parts; part one referred to the contact between team coordinator and teacher regarding quantity and quality, while part two incorporated the scoring of teacher performance by the team coordinator. The teacher questionnaire consisted of the same two parts, and two new parts were added. The first new part showed each

individual teacher the scoring the team coordinator gave and asked for a response (for example “To what extent do you agree with the feedback of the team coordinator?” scoring from totally disagree to totally agree). The second new part of the teacher questionnaire contained personal factors and the CSE. The Core Self-evaluations Scale (Judge et al., 2002) was translated and validated into the Dutch Core Self-evaluations Scale (de Pater et al., 2007). The Dutch Core Self-evaluations Scale ($\alpha = .81$) consisted of 12 items (3 items per sub-scale) with a five-point response scale ranging from totally disagree (1) to totally agree (5). One of the indicators for locus of control was ‘I decide what happens’.

Analysis

To answer the first research question ‘How many teachers in this research project become aware of a performance gap, are motivated to do something about it and take action?’, insight into the flow of participants through the phases of the I-Change model was needed (Figure 2).

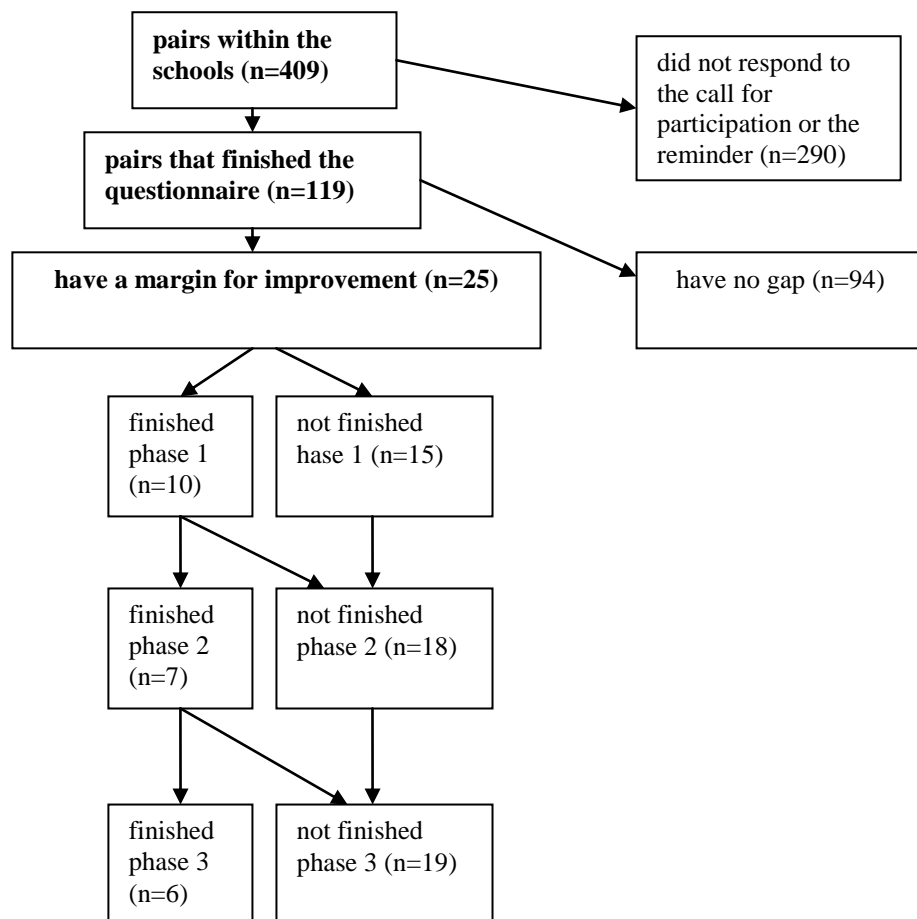


Figure 2: Flow of participants throughout the study

The first step of the flowchart was to assign whether teachers had a performance gap and thus the possibility of becoming aware of a gap. In other words, not every teacher needs to improve his/her performance in using student-activating teaching methods. This precondition was determined through the comparison of the teacher performance scores (on a scale of one to ten) given by the team coordinator and the teacher. In other words, the individual questionnaires of the team coordinator and teacher were combined, resulting in one data set. When the two scores differed by at least two points, room for improvement or, in other words, a gap was present.

Teachers had two possible ways of being assigned to the awareness phase:

- 1) The team coordinator gave a higher score than the teacher and the teacher disagreed. For example, if the team coordinator gave the teacher a seven and the teacher gave a score of five.
- 2) The team coordinator gave a lower score than the teacher and the teacher agrees with the score of the team coordinator.

The motivation phase included teachers who intended to take action. Motivation was measured with the question: 'To what extent do you want to do something to optimise the use of student-activating teaching methods?' (five-point scale: 1 = I will certainly take no action; 5 = I will certainly take action).

Teachers participated in the action phase if they had formulated a goal. Goal formulation was used since the actual behaviour could not be performed yet. Moreover, goal formulation was closely linked to the formulation of an action plan, one of the proximal factors of action. Goal formulation was measured with the question: 'Do you have specific development goals to optimise the use of student-activating teaching methods?' (four-point scale: 1 = not at all; 4 = multiple).

In the analysis, the successive order of the I-Change was accounted for; analysis for motivation phase (phase 2) only included teachers who completed the awareness phase (phase 1), and analysis for action (phase 3) only included teachers who have completed the previous phases.

Control analyses were performed to check for the influences of personal and psychological factors. In other words, a check was performed to ensure that these factors did not differ before teachers entered a phase.

The CSE and personal factors (age, experience) were tested with an independent T-test. The variables were set as testing variables and inclusion in the analysis of the research questions was set as the grouping variable. The

possible significance of being employed in pre-university education was evaluated using χ^2 .

The only significant variable was teacher's experience. The group of teachers who became aware of a gap had less experience ($M = 11.52$, $SD = 8.83$) ($t(41) = -3.16$; $F = 39.71$; $p = .003$) than teachers who did not become aware of a gap ($M = 17.86$, $SD = 12.59$). As a consequence, experience was not incorporated in the analysis of the second research question.

To answer the second research question 'In what ways are awareness, motivation to participate in CPD and action influenced by personal and psychological factors?', the Mann-Whitney U test was performed using the CSE and age as testing variables and teacher's inclusion (or not) in a phase as the grouping variable. The possible significance of being employed in pre-university education was again tested using χ^2 (results are discussed below).

Emerging themes

Few teachers became aware of a performance gap

Figure 2 shows the flow of participants through the phases.. With regard to the use of student-activating teaching methods, of the 25 teachers with performance gaps, ten (40%) became aware of the gap. From this group seven (28%) had the motivation to overcome the gap and six (24%) formulated a goal in order to take action. Less than a quarter of the teachers became aware of a performance gap or did have the intention to take part in CPD.

The I-Change model holds the assumption that not all teachers complete all the phases, and indeed, some teachers got stuck in a phase. Based on the feedback of the pilot study, we did not anticipate that so few teachers would have a gap with regard to using student-activating teaching methods. Possible explanations will be given later on in this article.

From our study, we could not predict how many of the 24% of the teachers who intend to take action will actually take part in CPD. An unexpected finding in our study was the low number of teachers (only 25 out of 119 teachers) having a gap and an even lower number (6) was ready for action.

Core self evaluations and age partially influenced the transition from awareness through motivation to participate in CPD to action. CSE was significantly related to completion of awareness and action (phases 1 and 3 of the I-Change model) (resp. $U = 33.0$, $p = .019$ and $U = 29.0$, $p = .039$). Teachers who finished phases 1 and 3 had a lower mean score on the CSE than teachers who did not finish these phases. This might indicate that CSE was an important variable to consider in planning the CPD process. In other words,

teachers who had more self-efficacy, higher self-esteem, emotional balance, and an internal locus of control were less likely to become aware and take action. Note that the mean score in the lower group on CSE was still above the theoretical mean (theoretical mean = 36 and lowest group mean = 43.7). This indicated that all teachers scored relatively high on CSE. Thus, teachers with an above average score on CSE were more likely to finish the awareness and action phase than those who had an extremely high score on CSE.

Although CSE had a significant influence on two of the three phases of the I-Change model, the results contradicted our expectations, namely that teachers with high CSE scores were more likely to complete the phases than those with low CSE scores. In the case of self-esteem, a possible explanation could be that the high scores might reflect overconfidence, which can result in less self-reflection and receptiveness to the input of others (distal factor of the I-Change model; see Figure 1).

An explanation for the contribution of the other two components of CSE (emotional stability and locus of control) was less obvious. People who were emotionally stable should be able to move toward CPD more easily than people who were not as stable because a high score on emotional stability indicates less anxiety and insecurity. The results of this study, however, contradicted this common sense notion.

Along the same line of reasoning, teachers with a more internal locus of control were likely to attribute failure to themselves and, accordingly, should become aware more easily than people with an external locus of control. The results of this study, again, contradicted this common sense notion. Perhaps an explanation could lie in the fact that this study did not take the content of teachers' CPD goals into account. Teachers with an external locus of control might have set CPD goals that did not refer to their own actions but to changes other people could make.

Age was significant for coming into the awareness phase: teachers who finished the first phase were older ($M = 47.4$, $sd = 10.01$) than teachers who did not finish the first phase ($M = 35.6$, $SD = 11.64$). Schunk and Ertmer (2000) found that older students use more self-regulating strategies than younger students. This distribution could persist later in life, thus supporting our findings.

Being employed in pre-university education was not significantly related to the transition between phases (Table 1). This may mean that the type of educational system in which a teacher teaches had little influence on how he or she developed the intention to participate in CPD.

Table 1 Influence of employment in pre-university education on completion of each of the three phases

| Individual factor | phase 1 | | | | phase 2 | | | | phase 3 | | | |
|--|----------|-------------------------|-----------|----------|----------|-------------------------|-----------|----------|----------|-------------------------|-----------|----------|
| | <i>n</i> | <i>Chi</i> ² | <i>df</i> | <i>p</i> | <i>n</i> | <i>Chi</i> ² | <i>df</i> | <i>p</i> | <i>n</i> | <i>Chi</i> ² | <i>df</i> | <i>p</i> |
| Being employed in pre-university education | 25 | .33 | 1 | .653 | 25 | .11 | 1 | 1.000 | 25 | .38 | 1 | .606 |

**p*<.05

As expected, CSE and age influenced the transition between phases. But neither CSE nor age influenced all the phases. As a result, the hypothesis that personal and psychological factors influence the transition between phases was partially confirmed.

CSE was only significantly related to completion of awareness and action (phases 1 and 3 of the I-Change model). A potential explanation for the nonsignificant relationship between CSE and motivation (or intention) could be found in the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1991). In short, the Theory of Reasoned Action stated that intention was influenced by a person's subjective norm and attitude toward behaviour. The Theory of Planned Behaviour extended this view by incorporating the influence of perceived behavioural control (very similar to self-efficacy). One's attitude toward behaviour was the product of his or her belief about the outcome and the value that he or she placed on that expected outcome. A person's subjective norm was a combination of the beliefs of others and the extent to which a person wanted to conform.

Unlike Fishbein and Ajzen (1975), who measured intention more extensively, we measured motivation very straightforwardly with one question ('To what extent do you want to do something to optimise the use of student-activating teaching methods?').

Concluding observations

The group of teachers who detected a performance gap applying student-activating teaching methods was relatively small: 25 out of 119 teachers (21%) (Figure 3). However, we assumed—based on previous studies (Freedman et al., 2012; Baeten et al., 2010) and the pilot study performed earlier—that this was an underestimation of the size of the group with a gap.

The phases of the I-Change model were presented as consecutive phases, with each phase comprised of teachers who had successfully finished the previous phase. Abandoning this assumption revealed that some participants did not finish the awareness phase but did finish the motivation phase as well as participants that did not finish the motivation phase but did finish the

action phase. Though this study did not take these teachers into account, it was interesting to speculate on how they were able to skip phases.

One possible explanation for teachers coming in the action phase without being aware or motivated was that these teachers may have been forced to formulate a goal. Probably, this group resembled the old fashioned way of collective CPD, where the CPD subject was set in a fixed programme. In other words, teachers were forced to select one of the pre-set subjects (goals).

This study supports the assumption that few teachers participated in planned CPD activities (Kennedy, 2011). The expectation that feedback (information factor) about a performance gap would increase motivation and participation in CPD was not confirmed.

Additional qualitative research has been performed to obtain further insights into the reasons why so few teachers showed the intention to take part in CPD activities. Preliminary (unpublished) results showed that teachers and team coordinators (22 pairs who also participated in this article's quantitative study) had a shared definition about the topics, and the content of their assessment closely resembled each other. However, when teachers were interviewed individually, they mentioned CPD goals which were not discussed in their assessment conversation. It seems that teachers were more easily motivated to take part in CPD and to formulate goals based on their interests and fields of expertise. Desimone et al. (2006) found that teachers with strong content knowledge were more likely to engage in CPD compared to teachers with low content knowledge. In other words, teachers without a knowledge or performance gap showed more intention (and took action) to participate in CPD.

A positive psychology view can enrich the results obtained by psychologists and the corresponding insights they offer the world (Seligman and Csikszentmihalyi, 2000), and even weaker areas may improve as a 'side effect' (Tjepkema and Verheijen, 2005). 'Strength based development' is becoming more and more common in a wide variety of institutions and companies, but little is known about its effects (Van Woerkom et al., 2011). Patrick et al. (2010) stated that for an autonomous professional to emerge, we should shift from a performance management approach to a developmental approach. The strength based development approach positively impacts well-being and extra role behaviour (Van Woerkom et al., 2011). Greater well-being leads to more innovative behaviour and better task performance and leads to positive results for many institutions and companies. However, in the educational field not much research from this perspective is performed.

Limitations and Future Directions

Although the authors only studied the Dutch context, they used measurement instruments originating in other countries (e.g., the CSE). Therefore, it could be expected that the results serve international purpose. Nevertheless, future research is needed to verify the results in an international context.

The authors opted to study the usability of their model within one schoolboard. This choice had two advantages. The first one was a close relationship between schools (three within the one district) and researcher. The researcher was familiar with the schoolboard and numerous key persons within the schools (principal, coaches, team coordinators, teachers etc.). The second advantage was the stability of the contextual factors. But the approach had also some drawbacks. This specific schoolboard gave priority to CPD of their teachers, which might not be the case with other schools. Hence, the results found in this study might not be applicable to school boards with a different focus.

CSE and other personal factors had a significant effect on the phases teachers go through. However, the incorporation of environmental variables could give another dimension to triggering CPD for teachers.

Future research could shed light on why out of 25 teachers who had a performance gap, only six intended to take part in CPD activities. What made them decide not to take action to overcome their gap?

A better understanding of the contribution from the separate components of CSE is needed in order to make specific guidelines how to trigger CPD. Future research should incorporate tests for self-esteem, self-efficacy, locus of control, and emotional stability.

Implications

For far too long teachers and schools have been engaged in CPD that was not planned to meet the needs of the individual, the school and the students. To reach effective CPD within schools, certain criteria should be met. First, the results of this study indicate that although some teachers follow logical steps (awareness, motivation and action), others just were motivated or formulated a goal. Thus, when the aim of a school was to trigger CPD, they should not try to force teachers to take every step of the process at a conscious level. CPD has to be planned but not every step in the process leading up to CPD participation has to be written down in advance. Qualitative research (submitted) showed that sometimes teachers become aware of a need after a CPD activity was undertaken. Secondly, our model which was based on a

deficiency approach -as were many planned CPD initiatives within schools- did not lead to large numbers of teachers who became aware of a performance gap. Therefore schools, HR-services or researchers should be careful in following the frequently used (sometimes implicit) gap assumption since CPD is a complex process, influenced by multiple factors and not always following chronological steps. In short the previous two criteria indicate that planning CPD should be done with care. If planned CPD is too rigid, teachers participating in more spontaneous CPD activities will not be triggered to make explicit what they have learned. Therefore, school leaders should not try to enforce procedures regarding CPD but should frequently ask teachers questions on what they have learned, what they do different than before etc. Another implication for practice centers more on the effectiveness of CPD policies. Many schools search for ways to trigger CPD. This study gives them some guidelines. Personal and psychological factors seem to influence the course of CPD. When schools take these factors into account, they can create more effective policies. For instance, older teachers become aware more easily of a CPD goal than younger ones. It might be good to implement a mentor system that pairs older and younger teachers in order to teach the younger ones how they can become aware of a need. Notice that here the term need is used and not performance gap. It could hinder the relationship when the focus is on poor performance rather than building on strengths. This leads to a last important finding regarding the effectiveness of CPD. Schools should not only be flexible in the way CPD is planned but should also offer teachers the chance to excel in their strengths.

In summary, this article shows that only a limited number of teachers intended to participate in CPD explicitly following three consecutive phases, being influenced by personal and psychological factors on teachers' participation in CPD. It raises some doubts about the gap-approach, however this approach may be useful in certain situations, such as underachievement or preparing for new tasks/situations. When teachers need to develop new basic skills a gap analysis is essential. It is interesting to explore whether a positive approach might motivate more teachers to improve their performance and excel in their strengths.

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