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### The activities of a school-based teacher educator: a theoretical and empirical exploration

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## The activities of a school-based teacher educator: a theoretical and empirical exploration

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Teacher education all over Europe is increasingly becoming school-based oriented. This implies new roles for those who support student teachers learning in school. This article describes the way four school-based teacher educators fulfill their role as educators of student teachers who learn how to teach while participating in the workplace. Based on theoretical notions derived from the literature on teacher education and workplace learning, the Cognitive Apprenticeship Model was specified and used in a case study as a framework to describe the activity of these school-based teacher educators. They use tools (e.g., apprenticeship assignments) developed within the teacher education institute and rely on their professional knowledge as experienced schoolteachers. This results in student teachers being provided with useful tricks which, however, hardly helps them to interpret and elaborate their experiences from a more conceptual or theoretical perspective. Also the possibilities of the social context of the school as a learning environment are not systematically used.

**Keywords:** school-based teacher education; school-based teacher educators; cognitive apprenticeship model

### Introduction

In the 1990s in many countries there was a great deal of dissatisfaction with the education of teachers. Researchers pointed out the lack of relationship between educational content and methods, inconsistencies in coaching, and inadequate communication between teacher education institute and schools (see Down, Hogan, and Madigan 1995; Hagger and McIntyre 2006; Korthagen, Loughran, and Russell 2006). The OECD activity aimed at attracting, developing and retaining effective teachers in 2002 and its final report: *Teachers matter* in 2005 and the ETUCE campaign *Europe needs teachers!* launched in 2004 were important signals to educational policy-makers all over Europe to improve teacher education, the quality of teaching and the professional development of teachers (OECD 2005; ETUCE 2008). In addition there was a growing desire in schools to be responsible for training their staff themselves. In the Netherlands, the threatening shortage of teachers was an extra reason for the government to stimulate cooperation between schools and teacher education institutes (Lunenburg, Snoek, and Swennen 2000; Snoek and Wielenga 2001).

All these influences resulted in the Netherlands in a form of teacher education that is known as *Opleiden in de school* (school-based teacher education). It is characterised by school and teacher education institute partnerships with joint responsibility for the education and assessment of teachers and teacher education organised according to the principle of 'learning through participation in real, meaningful practices' (Ten Dam

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and Blom 2006, 649), partnerships which meant a considerable new task for schools and teacher education institutes.

The cooperation between schools and teacher education institutes in the Netherlands varies greatly (Maandag et al. 2005) but two important influences can be recognised. On the one hand, we find characteristics from the school-based teacher education movement (SBTE) in the UK, in which the emphasis is on practical questions and problems (Furlong et al. 1996). On the other hand there are similarities to the professional development school (PDS) movement in the US. In the latter case, the emphasis is on the development of the school as a result of the cooperation between school and teacher education institute, as well as on teacher education (Holmes Group 1990; Ten Dam and Blom 2006; Verloop and Wubbels 2000).

Although school-based teacher education in the Netherlands is a widespread phenomenon we do not know how many student teachers are educated in the different forms of partnerships between schools and teacher education institutes mentioned by Maandag et al. (2005) and despite of its prevalence, we also know very little about how teacher educators in the school shape a learning environment which promotes the workplace learning of student teachers. In this article we aim to focus on this. We present a theoretical framework and a case study on how four schoolteachers fulfill their role as teacher educators in two (out of nine) partnership schools of CETAR VU in Amsterdam. In this partnership a collective aim was formulated: realising a substantial part of the teacher education curriculum in school with attention paid to mentoring and substantive understanding of general pedagogical matters (CETAR VU, confidential memo, 2004).

Section 2 of this article describes the theoretical framework. 'Learning to be a teacher' is seen here as slowly growing into a *community of practice*, a community that acts as a living curriculum for the apprentice (Lave and Wenger 1991) in which coaching and instruction are absolutely essential (Fuller et al. 2005). We present the Cognitive Apprenticeship Model (Collins, Brown, and Newman 1989; Collins, Brown, and Holm 1991) as a framework for describing the way teacher educators in school give shape to this coaching and instruction. On the basis of insights into teacher education and learning in the workplace we have specified the CAM further to create a descriptive framework.

The central question in the case study is, 'Which concepts and principles from the specified CAM can we recognise in the way school-based teacher educators fulfil their role as teacher educators and to what extent?'

Section 3 explains the methods used in this study. In Section 4 we describe the results of the case study in terms of the actions and behaviour of four teacher educators in schools. The last section, Section 5, gives some conclusions and points for discussion, including whether the CAM is a suitable framework for describing the actions and behaviour of school-based teacher educators.

### **School-based teacher education: teacher education and learning in the workplace**

School-based teacher education prompts the question how the learning of student teachers in school can be conceptualised. In this article we follow Hodkinson and Hodkinson (2005) who see becoming a teacher as an example of learning in the workplace, and therefore argue for combining insights from the literature on that field with insights from the literature on the development of (prospective) teachers.

***Learning in the workplace, legitimate participation in a community of practice***

School-based teacher education is a form of learning in the workplace, which is directed at ‘becoming a teacher through being a teacher’ (Klarus 2003). One day a week student teachers attend classes at the teacher education institute. The rest of the week they participate in school practice in a way which can be described as legitimate peripheral participation in a *community of practice*, a community that acts as a living curriculum for the apprentice (Lave and Wenger 1991). In this apprenticeship approach, the traditional accent on the relationship between the apprentices and their mentors is therefore expanded into an accent on participation and identity transformation in a community of practice (Lave and Wenger 1991). During their time at school these students develop themselves into teachers and grow a new (professional) identity by participation in the sociocultural system of the school. The ways student teachers act and think are formed by participating in the school as is necessary and customary within that system and by the discourses based on dynamic interrelationships with the other members of the community (Guile and Young 1998).

Participation alone, however, is not sufficient to become a teacher who fulfills the requirements laid down in the law on occupations in education (Ministerie van OC&W 2004). Teaching, one of the core activities of a teacher, is a complex task. The knowledge needed to perform this task is not visible when the task itself is actually being performed. Moreover, the teacher is increasingly seen as an ‘extended’ professional, who not only functions in the classroom but also in the school as a community (Shulman 1998). This also involves complex tasks in which relationships with managers and colleagues and ideas about cooperation (often implicitly) play a role. The complexity of the profession and of the school makes it impossible to learn to be a teacher by merely participating in professional practice and being coached by experienced professional practitioners on daily problems within that practice (see also Ten Dam and Blom 2006). Participation alone (even when guided) is therefore not an adequate basis for actually becoming a teacher who meets the requirements of the profession. School-based teacher education demands pedagogical interventions in the workplace or its direct proximity and thus a curriculum of its own (Billett 2006; Fuller et al. 2005; Guile and Young 2003). This makes clear the necessity for a ‘teacher educator’, who is responsible for realising a learning environment in the workplace.

Although the teacher educator in the school is the most important link in integrating the possibilities for learning in the working place and the learning process of the student teacher, surprisingly, little research has been done on the way educators do this. Billett (2004) points out that research on coaching is mainly about the impact on the person being coached rather than on what the coach does. Verloop and Kessels observe that, ‘we must not only look at the organisational conditions but also at what actually happens in the interaction between coach and aspiring teacher’ (Verloop and Kessels 2006, 308).

***The Cognitive Apprenticeship Model, an aid for the teacher educator***

We follow the approach of Guile and Young (1998) who reconceptualise apprenticeship in a way that helps us to develop new pedagogic criteria for leaning in the workplace. Apprenticeship is seen as a pedagogical metaphor for professional preparation that enables the student teacher ‘to acquire the knowledge and skill, both conceptual

and practical, which the community of practitioners has built up over time' (Sullivan 2004, 7). In our view the Cognitive Apprenticeship Model of Collins, Brown and Newman (1989) can be used as the basis of a framework to help describe the way such apprenticeship can be supported by the school-based teacher educators.

Collins et al. based their Cognitive Apprenticeship Model on the classic *apprenticeship* model, which describes the development of the apprentice via journeyman to master. In the classic model, knowledge, as a condition for effective actions and behaviour, is explained and recognised in the current context of use. This traditional model is not adequate, however, when complex tasks are being learned that the apprentice must be able to perform in varied and changeable contexts. *Cognitive* refers to the focus on cognitive and meta-cognitive skills that are important in knowledge-intensive and complex work environments. The model therefore gives room not only to observing actions and behaviour but also asks the experts 'to make the thinking visible' (Collins, Brown, and Holum 1991).

The coaching of the beginner is not only directed at acquiring professional skills but also the associated cognitive development: knowing and doing go together and are connected. Developing a professional identity and getting to know the values of the profession are supported in this process (Collins, Brown, and Newman 1989; Guile and Young 2003; Onstenk 1997; Seezink and Van der Sanden 2005).

The model includes interventions that have proved to be effective from the traditional *apprenticeship* model. These have been supplemented by Collins et al. with elements from formal education theory and practice: strategies that make it possible to gain insight into the whys and wherefores of actions and behaviour, to develop the ability to adapt these actions and behaviour as changing conditions require, and to increase self directed learning (Collins, Brown, and Holum 1991; Wilson, Jonassen, and Cole 1991). This model therefore is relevant to the task school-based teacher educators are confronted with: designing high-quality learning in the workplace for student teachers, creating an environment in which student teachers focus on the type of learning outcomes needed for working as a teacher in this and future school contexts.

### ***The CAM as a descriptive model for the actions and behaviour of the teacher educator***

The CAM is in fact not a 'model' but rather a global, heuristic framework for thinking; it does not give instructions on how a learning environment should actually be designed for learning complex tasks in a working organisation (Van der Klink 2004). It is possible, however, to specify the model further, so that it can function as a design model (see also Seezink and Van der Sanden 2005).

In this research the CAM is used to describe the actions and behaviour of school-based teacher educators and determine which elements of the model are evident in their practices and in what way.

In the original model four dimensions, relevant when designing a learning environment, are distinguished: content, methods, sequence of learning activities and social context. The first two columns in Table A1 (see Appendix) are the original model.

*Content* refers to everything the school-based teacher educator talks about. The other categories cover possible interventions by the educators: what do they do? These interventions can be directed at the student teacher (methods), at transforming a work

task into a learning task or vice versa (sequencing), or modifying the social context in which the learning is situated (sociology). These categories do not exclude each other. Reflection (one of the possible methods) may be focused on specific content, articulation (another method) maybe focused on a specific task the student teacher performed while teaching.

For the purpose of this research, we have further specified the CAM to match the situation of teacher educators in the school. To do this, we searched for notions and descriptions in the literature about teacher education and workplace learning, for each of the four categories. The result is a model, a tool helping us to analyse and interpret the activities of a school-based teacher educator while educating student teachers in school.

The first category *content* not only pertains to the *subject knowledge* in question, but also the *pedagogical knowledge* that helps make it possible for the student teacher to teach pupils. For instance, it includes knowledge about pupils and their learning and development and also knowledge that makes reflection and research on the functioning of teachers possible (Guile and Young 2003; Loughran 2006). Cochran-Smith and Lytle (1999) defined this as knowledge for practice. In addition to this conceptual and factual knowledge, the *heuristic* (or *practical knowledge*) of the teacher educator as a teacher plays an important role (Korthagen and Kessels 1999; Verloop, Van Driel, and Meijer 2001). Following Clandinin and others, Black and Halliwell (2000, 104) describe this knowledge as: ‘personal practical knowledge that is assembled in forms that makes it possible to manage teaching practicalities’. It is knowledge about what is needed to be able to function as a teacher and in what way that knowledge can be deployed (Loewenberg Ball 2000). In Cochran-Smith and Lytle’s (1999) terms, it is knowledge in practice and knowledge of practice.

The *learning and control strategies* must be attuned to the learning styles and needs of the student teachers (Oosterheert 2001). Attention must also be paid to developing student teachers’ learning styles. The school as a learning environment is typified by the presence of many experts (such as teacher colleagues). Student teachers must learn to make adequate use of the coaching provided by both their direct coaches and other role models and experts. Lastly, paying attention to learning and control strategies concerns an approach whereby student teachers learn to acknowledge and recognise their own learning while they are teaching and be able to safeguard the quality of that learning as well as the quality of their work itself (Guile and Young 2003; De Jong 2004; Zanting 2001).

The second category of the CAM is *methods*, different ways to promote the development of expertise. *Modelling* in particular is an intervention which is described in the literature about teacher education. This principle is strongly coloured by the idea that teacher educators are an important role model for their student teachers (Loughran and Berry 2005; Loughran 2006; Swennen, Korthagen, and Lunenberg 2004). Explicit modelling (Lunenberg, Korthagen, and Swennen 2007) means more than the traditional imitation of the master, although that has a place. As role models teacher educators must particularise and validate the knowledge they have and the choices they make. Moreover, they must put forward these choices for discussion so that student teachers learn to understand and discuss the whys and wherefores of their actions and behaviour (Guile and Young 2003; Loughran 2006; Lunenberg et al. 2007). This critical discussion is also important to overcome the one-way movement from the expert to the novice – a possible restriction of the situated learning approach



– by questioning authority, criticism and initiation of change (Engeström and Miettinen in Lambert 2003, 234). Next to their knowledge teacher educators model their ‘teaching values’, judgements about a right way of teaching. This concerns values teacher educators find important in their own teaching, as well as in the teaching of their student teachers (Swennen, Lunenberg and Korthagen 2008, 534). Also this modelling can be made explicit.

The descriptions used here of *articulating*, *coaching* and *scaffolding* are derived from Seezink and Van der Sanden (2005). In addition, the importance of transfer-oriented *reflection* as a means of permanent learning is discussed at length in the literature about teacher education (Billett 2004; Kelchtermans 2001; Korthagen 1998; Loughran 2006). This involves student teachers comparing their experiences and linking them with theoretical knowledge and the knowledge that exists in the school (Guile and Young 2003). Transfer-oriented reflection helps student teachers develop the capacity to think beyond their immediate situation and understand why and how it is necessary to generate new knowledge (Guile and Young 1998). With the help of the didactic measures mentioned, teacher educators can support the student teachers in the acquisition of knowledge and in explaining their practical experiences (Loughran 2006).

The third category *sequence of learning activities* refers to the order in terms of the *diversity* and *complexity* of the content of the activities (sub-tasks), which student teachers become involved in when growing into the community of teachers, and the relationship of these subtasks with the *task as a whole* that is to be learned. The importance of carefully structuring the sequence of learning activities raises the question of how working as a teacher can actually provide an adequate learning situation for the student teacher (Billett 2004): how can the questions and problems emanating from the dynamics of the work of the teacher educator be used so that such a structure is created? (Billett 2006; Moore 2004).

The last category is *sociology*, the school as a learning environment, the social context in which the student teachers learn and the teacher educators educate. In this social context, the student teachers can interpret and share the knowledge and expertise of experienced teachers by working with them and talking to them (Eteläpelto and Collin 2004). Thus the learning of student teachers is emphatically *situated* in and supported by the *community*. The community indeed acts as a living curriculum for student teachers as stated by Lave and Wenger (1991).

The *exploitation of collaboration* between student teachers and *competition* by confronting them with different forms of task performance is extended in the model with communal evaluation and reflection, with a view to critically questioning experiences, the choices that have been made and possibilities for change and development (Parsons and Stephenson 2005).

## Research methods

### *Research design*

This article studies the actions and behaviour of school-based teacher educators with the help of an instrumental case study (Stake 1995; Yin 2003). The case study here is suitable research design: first because we have little knowledge on this form of teacher education and second because we want learn about how these school-based teacher educators act in their concrete and complex everyday context (Yin 2003). The case

study is descriptive, the specified CAM functioning as a descriptive framework (Huberman and Miles 1994).

The case study is on how four school-based teacher educators fulfil their role, their actions and what they take into consideration in sessions with student teachers (Yin 2003). The basis of the sessions is an 'apprenticeship assignment', which is a large assignment on a specific theme to be carried out by the student teachers. This assignment is derived from the teacher education institute's curriculum. For this study, four representative sessions were chosen. These sessions were held at two different schools and involved four teacher educators. Student teachers from both schools were always present during the sessions. The subject of the two sessions at School 1 was mentoring pupils. The school-based teacher educators involved are Peter and Frits.<sup>1</sup> The school psychologist also attended the first session. Both the sessions at School 2 were on the subject of lesson design (by teacher educator Arend), with special attention to direct instruction and cooperative learning as ways of activating pupil learning (by teacher educator Maaike).

### ***Research context and setting***

The Onderwijscentrum of VU University Amsterdam, a university-based institute for teacher education in Amsterdam since 2003 has partnerships with nine secondary schools aimed at the collaborative education of student teachers. The way work experiences for student teachers were organised before 2003 can be characterised as the 'experiential model' with an emphasis on providing work experiences and briefing and de-briefing conversations (Guile and Griffiths 2001). The new partnerships aimed at developing an environment for student teachers' learning in school. Teacher education involves a one-year post-master programme (60 credits<sup>2</sup>) in which a subject specialist develops professional teaching competencies. In addition to the regular 30 credits practical time, nine credits of the total teacher education programme are now taught by teacher educators in the school where they also teach. About 20% of our student teachers are educated within these partnerships.

School-based teacher educators educate student teachers in school in sessions based on apprenticeship assignments set by the teacher education institute. Themes of these assignments are: preparing and evaluating classes, communication and interaction with pupils, pupil mentoring, classroom management and methods of activating pupil learning. Each week student teachers spend three days in school practising and one morning at the teacher education institute. In addition to the school-based teacher educator, a subject teacher supervises the student teacher during lessons. The teacher educators deal with general pedagogical themes in sessions on the apprenticeship assignments.

Student teachers based in school have fewer sessions on these themes than those based at the institute. They are given extra assignments and readings to compensate for this. The school-based teacher educators also hold individual coaching sessions and supervise groups. They jointly are responsible with the university-based teacher educator for assessing student teachers competence at the end of the course. The requirements are the same as those for 'regular' student teachers.

The teacher educators in the schools form a network and work together (in various combinations) in preparing and holding the sessions with student teachers. They are autonomous in the way they organise their teacher education and supervisory



activities. Professionalisation sessions are held six times a year at the VU. These are a follow-up to the programme preparing the school-based teacher educators for their new role. Moreover, a dedicated Blackboard site provides support for both the students and teacher educators (Van Velzen, Bezinna and Lorist 2008).

### *The data collection*

The database was compiled using different forms of data collection to achieve triangulation. Direct observation, different types of interviews, and written materials were used. The sessions were observed and significant moments related to the research question were identified (Miles and Huberman 1994). The school-based teacher educators' actions and behaviour during the sessions were recorded on video, and their written preparations and evaluations were studied.

After one of the sessions, a cued interview was held at each school with one of the teacher educators involved, on the basis of the video recording (Seezink and Van der Sanden 2005). The objective of this was to gain insight into the reflections of the teacher educators on their actions and behaviour (Raingruber 2003; Zanting 2001). On the basis of the observation of the session, the researcher choose moments where it was clear, either verbally or non-verbally, that the teacher educator had made a choice. The teacher educator was also asked to indicate when this occurred. The interviews centred on the following questions: What did you do here? Why did you do that? What did you feel? What did you think? At the institute a meeting with of all school-based teacher educators, (including some institute-based teacher educators) was held in which the school-based teacher educators discussed their aims and purposes in these sessions. Finally, two semi-structured interviews were held with one of the participants at each school, based on their written preparations and reflections of sessions and other mentoring practices.

### *Analysis*

The school-based teacher educators' activities were systematically analysed during and after the data collection. A global description of the organisation and conduct of the sessions was always made first on the basis of the material collected. The written material was analysed to understand the aims and choices before and during the sessions. All the audiotapes were transcribed and analysed. The videotapes were used to complete the observations.

Following this, a matrix was made of the activities of each school-based teacher educator with the help of the specified CAM categories (Huberman and Miles 1994; Yin 2003). Then the statements from the cued interviews were related to their behaviour, being interpreted as reflecting the motives behind their choices. In this way a matrix was built for each school-based teacher educator, indicating their actions and their statements about their actions for each CAM category (vertical analysis).

Finally, a horizontal analysis was carried out in order to determine the similarities and differences between the participants (Miles and Huberman 1994).

Several quality safeguards were built into the project. The theoretical notions were presented to senior researchers from both teacher education and workplace learning, and the specified CAM was presented to experienced teacher educators. Based on a

first member check (Merriam 1998) with one of the school-based teacher educators the interview scheme was adapted. The analysis and results were submitted to the school-based teacher educators for comment. A research group of ‘critical friends’ discussed the data gathering, the data, the emerging analysis and interpretation, and the conceptualisation of the article. Based on the collaborative analysis of the first session by Frits and Peter, additional material was collected on the preparation and evaluation of the sessions.

## Results

In the sessions observed, practical questions were worked on through role-plays, short assignments and follow-up discussions. In the sessions on pupil mentoring the two teacher educators (Frits and Peter) formulated the questions and problems for the role-plays during the sessions on mentoring. One of the role-plays was about a pupil with behavioural problems, whose parents are divorced and who was caught smoking cannabis. In another there was a pupil in the sixth year of pre-university education who has problems with a teacher. In addition, the student teachers practised ‘positive labelling’ by reformulating their ‘bad’ characteristics with a positive twist. The second session centred on the situations observed by the student teachers. Student teachers’ lesson preparations were the subject of the sessions on designing lessons led by Maaïke and Arend. These sessions were linked to the themes of direct instruction and collaborative learning. Below we will analyse whether and in what way the categories of the CAM model were evident in the actions and behaviour of the teacher educators.

### *Category 1: content, types of knowledge required for expertise*

In the CAM model, domain knowledge, heuristic knowledge, control strategies and learning strategies are differentiated regarding content (the types of knowledge required for expertise). The content of the two sessions on mentoring can mainly be interpreted as *heuristic knowledge*. Peter introduced approaches that have proved to be effective in his own practice as a teacher. When *domain knowledge* in the field of pupil mentoring was dealt with, this was fragmentary and without a clear context. Peter briefly described a quiet, withdrawn pupil and asked the student teachers what they thought. They reacted with possible diagnoses and suggestions on what the teacher should do. The psychologist supplemented the diagnoses and gave the teacher concrete tips on alternative ways of dealing with this.

Peter gave references to the sources named in the apprenticeship assignment but the student teachers had to consult these themselves depending on their interest. They had to refer to the literature in their portfolio when justifying their choices regarding the mentoring activities they had undertaken.

Maaïke also was of the opinion that the student teachers must study and digest the literature themselves because there was not time for this in the sessions. Both also mentioned they lack the conceptual knowledge needed.

In the first session on designing lessons, conceptual and factual knowledge was evident in the form of questions asked by Arend on the compulsory literature. Both Maaïke and Arend used heuristic knowledge in the form of examples from their own personal practice to help the students to understand this literature. Brief

references were regularly made to items in the compulsory literature when the student teachers contributed something from their own practice. For example, after one of the student teachers had presented her lesson preparations, Maaïke asked: 'Are the characteristics of collaborative learning sufficiently represented? Have another look at page ...'.

*Learning strategies* were dealt with indirectly, in the form of a short, almost passing comment or tip on how the student teachers should tackle something:

How are you going to make sure that you also actually see those children? If necessary, make a sort of game of it and ask the mentor of a difficult class some of the symptoms of children without knowing their names. Then try and pick them out when you're in that class. (Frits)

References were also made to the help student teachers can request from their subject teachers, and they discussed ways of approaching the assignments. Frits made the student teachers responsible for organising their own learning: 'Then it will actually be on your curriculum: how are you going to make sure that you are in fact confronted with those things you want to learn?'

None of the teacher educators dealt with *control strategies*, for example strategies that enable student teachers to ascertain whether their interventions in discussions were adequate or whether their lesson plans supported pupils' learning in practice. Nor did they mention strategies for student teachers to monitor their own learning.

### ***Category 2: methods, the pedagogical interventions to promote the development of expertise***

The didactic measures differentiated in the CAM model are modelling, scaffolding and fading, coaching, articulation, reflection and exploration. All of the teacher educators used a range of measures. During the sessions on mentoring the teacher educators used many methods to simulate the student teachers' practice. Discussions were held and the student teachers practised role plays which both educators observed and to which they gave feedback. Here the teacher educators were mainly acting as coaches. They asked lots of questions, inviting the student teachers to explore and to a certain extent articulate. This was about exploring aspects of knowledge, useful skills, and emotions in their actions and behaviour in the class, as well as what the student teachers want to learn: 'John can you tell us what is stimulating or helpful in Anna's approach?' (Frits). Articulation was used, for example, when the student teachers were asked to explain different types of questions to each other and how they can be used. In the sessions on designing lessons the teacher educators mainly asked their students about their approach and, to a far lesser degree, about the reasons for choosing that approach (articulation): 'Did you completely design your lesson round the organisation? Which elements should you use in order to make the lesson helpful in activating pupil learning?' (Maaïke).

When we specified the model we pointed out that the literature on educating teachers pays a lot of attention to modelling and reflection, yet little of this (particularly modelling) was apparent in the actions and behaviour of the teacher educators. 'Explicit modelling', whereby educators validate and give arguments to support what

they are doing or demonstrating, did not occur at all. In the sessions on mentoring, Peter acted and behaved as he wanted the student teachers to. In the second session he explicitly demonstrated the actions and behaviour of a mentor. During a learning activity, an exercise in guiding a discussion as mentor, Peter stopped the student teacher who was playing the role of the mentor. He was not satisfied with the type of questions being asked and how the discussion was progressing, and temporarily took over the role of mentor (modelling). He briefly explained his approach by giving tips but did not discuss it with the student teachers. Peter seems aware of the risk of 'mimicry': do as I do (Gay 1994). However, with the example he gave, he did give the student teachers the opportunity to tackle the situation themselves. So they were not deliberately encouraged to be 'clones'. In the cued interview after this session he even wondered: 'am I not showing too clearly how I think it should be done?'. We did not encounter this form of modelling in the other teacher educators. All of them did indicate that they act in the sessions in the way they hope the student teachers will act and behave, but without giving any explanation. They all also gave examples, both positive and negative, from their own professional practice. As with Peter, these examples were not discussed.

The teacher educators regularly prompted *reflection* in the sessions, in different ways. Peter and Frits wanted to stimulate the student teachers in the sessions to reflect on their own approach and to develop an approach themselves. They did this by helping the student teachers ask critical questions about their experiences: 'The aim of the session is to work on learning to be a mentor. If you keep that in mind and compare it with the type of questions that you ask, what do you notice then?' (Peter). He also stimulated reflection in advance by emphasising that the student teachers must first think about what they want to learn and only then look for suitable activities. At the end of the session he asked them to reflect on the effect of what they had done in the session on the plans they had already made to start working on their apprenticeship assignment, and also on the outcome of both sessions. The student teachers said that they had gained more insight into their role as mentor but none of them mentioned specific points that they were going to work on.

During the sessions on lesson planning the student teachers used their own material. They were more successful in these sessions in linking insights from the literature they had studied with their own experiences. But here too, the school-based teacher educators did not extend this to the theory on the learning of pupils and various possibilities for stimulating and supporting this. Making a lesson plan, however, was linked to learning to work with three key questions in teaching: what must pupils learn, how do I gauge what they already know and can do, and how do I organise the learning process? The answers, however, were found in the discussions about the student teachers' experiences.

Through articulation and exploration they were challenged to think about how they would have liked to have started their lessons and the way in which they in fact had. The student teachers' experiences were always central. These were reinterpreted, for example, by exploring other possibilities when the starting situation of the pupils changed. In the second session Maaïke asked the student teachers to discuss their lesson plans with each other. They were challenged by her and by each other in the resultant discussion to reflect on the relationship between what they really wanted and the forms they had chosen.

In all of the sessions, ‘how’ questions were always asked but not the ‘why’. The practical knowledge of the teacher educator played a role in this but theoretical insight did not. So there was little evidence of transfer-directed reflection.

### **Category 3: the sequence of the programme, keys to ordering learning**

The CAM model specifies three desirable forms of sequence: the opportunity to orientate on the task as a whole before dealing with the parts, increasing complexity, and increasing diversity.

At the beginning of the sessions on mentoring, Peter and Frits paused for a moment to think about these tasks of the teacher without explicitly dealing with the sub-tasks student teachers may be confronted with and what demands these would make on them. Both sessions on mentoring focused on practising a specific type of discussion, namely exploratory discussions with pupils. There was no evidence of increasing complexity or diversity of the sessions.

In the sessions on designing lessons there was increasing complexity. The starting point for learning to design a learning environment was making a lesson plan. They started with the general objective and then focused on the beginning of the lesson. The lesson objectives were then dealt with and the student teachers discussed the structure of the lesson with each other. At the end they returned to the lesson plan as a whole, paying attention to the difference between the learning process of pupils and the desired learning outcomes, a difference that is difficult for student teachers to grasp. Maaiké asked the student teachers about the relationship between the lesson plans they had made and implementing them in the class. In that discussion there was increasing complexity and diversity. One student teacher wondered whether a particular assignment was too difficult for her class. Together they discussed the different aspects that can play a role and how they could adapt the assignment for that class. These were aspects that had not been dealt with before and the solutions demanded more and more of the student teachers. A sequence is evident in the series of sessions on lesson design; direct instruction was dealt with first, followed by forms of cooperative/collaborative learning.

### **Category 4: sociology, the social characteristics of the learning context**

Under the heading *sociology*, the CAM model specifies a number of possibilities for learning in an authentic social context. Situated learning exists within a community of practitioners; it promotes the intrinsic motivation to learn; and learning is possible through collaboration and competition with others.

In the sessions on mentoring, a general analysis was made of the role division in mentoring in the different schools and the accompanying responsibilities. Peter then paid attention to one of the mentoring tasks of the teacher: spotting possible problems that pupils may have and looking for possible causes. In this way he linked the individual thinking of student teachers about their role with their actions and behaviour in relation to the school context. The presence of the school psychologist during the first session is an example of utilising the expertise available in the school. Other teachers were referred to for possible exercises:

Your subject teacher may not be a mentor but there are a lot of mentors here in the school. Ask them if you can see children in the class. There are really difficult classes here but also some really easy classes. (Frits)

In role plays the authentic context was simulated, but in the second session an assignment executed within school was the central source for learning.

In the sessions on lesson planning, the student teachers in principle worked with their own material. However, this material was not always suitable for the activities during the session. In the presentations on teaching methods aimed at co-operative learning, Maaïke really wanted them to simulate an authentic situation. She asked them to give the explanation as they would in the class but because the student teachers had not prepared for this, they did not want to. She explained why she thinks it is important and said: 'do it then in your own way' (Maaïke). The students then gave an explanation of the teaching method. A form was developed for the lesson observations by the subject teachers or the student teachers while teaching. The form gave the student teachers the opportunity to observe the subject teachers and to discuss their approach. However, it played no role in the session.

The student teachers collaborated in all the sessions, owing to the teaching methods chosen. In the session on lesson planning and activating didactics this occurred, for example, by means of the expert group approach. In all of the sessions the student teachers were regularly asked to add to the contribution of other students and give each other feedback. Once or twice a student teacher was specifically asked to demonstrate something. The competition between the student teachers was not used.

### Conclusion and discussion

In this study, the initial education of teachers through school-based teachers is interpreted as a form of guided learning in the workplace. This form of learning is mainly described in the literature from the perspective of the further development of professional practitioners, and is predominantly found in domains other than teacher education. Research on learning in the workplace has identified problems that are related to the quality of learning and, in particular, the depth of learning (see Billett 2001; Tynjälä 2008; Van der Klink 1999). Similar problems are found in teacher education in the school (Hodkinson and Hodkinson 1999). The nature of the teaching profession demands a high-quality learning environment in which attention is paid to different types of learning and didactic interventions, making it possible to interpret practical experiences and broaden and deepen these experiences so the knowledge and insights acquired can be employed in other contexts. As a framework for describing how this learning in the workplace can be supported we chose a specified Cognitive Apprenticeship Model. The central question in the case study was, 'Which concepts and principles from the specified CAM can we recognise in the way school-based teacher educators fulfil their role as teacher educators and to what extent?'

Summarising, the analysis of the actions and behaviour of the school-based teacher educators in the school conducted with the help of the specified CAM shows the following. The *content* (the different types of knowledge) was only dealt with in a limited way and was mainly directly related to the experiences of the student teachers. The teacher educators reacted to this with their own heuristic (practical) knowledge. Learning strategies were mainly visible in the form of tips and suggestions; control strategies were not dealt with.

The teacher educators regularly used virtually all of the *methods*. They coached the student teachers by giving them a lot of varied feedback and suggestions. Questions



were mainly aimed at encouraging students to articulate their ideas and approach, and at exploring problems. Student teachers were regularly asked to reflect on their experiences and evaluate their approach. The teacher educators behaved in a way that they expected their students to behave but did not explicitly explain this behaviour or validate it. Hence there was no opportunity to discuss these actions and behaviour with the student teachers or reflect on them critically. This observation agrees with the finding of Swennen, Korthagen, and Lunenberg (2004) that teacher educators put their methodological ideals into practice but do not explain and validate their actions and behaviour to their students.

No comment can be made on the *sequence* of the curriculum in the school, given that very few sessions were observed. In the sessions observed, brief attention was paid to the task in question as a whole before the different aspects of the tasks were dealt with. There was a limited degree of sequence in the complexity and diversity of what was dealt with. The level of complexity and diversity was mainly determined by the nature of the student teachers' experiences that were dealt with.

The *social context* was used in various ways and 'the school' was recognisable in the assignments during the sessions, in the examples, and in the comments of the teacher educators. Student teachers' practical problems and the way they can be solved with others in the school were not yet an integral part of the teacher educators' approach. This means that collaboration and competition with others could not be sufficiently utilised.

In the situations studied the teacher educators mainly functioned as coaches for their students. With the help of their own practical knowledge, they helped them to interpret their experiences and seek new and different ways of behaving. 'Cognitive apprenticeship', however, had certainly not reached an optimal stage of development in the educational situations studied.

The case study especially shows what was not realised in these situations. To begin with, transfer-oriented reflection (Guile 2003; Kelchtermans 2001), whereby student teachers' experiences are compared and linked to theoretical knowledge and to knowledge as it exists in the school, was not realised, possibly because the student teachers' experience was still too limited. This is in line with McIntyre (1993, 43) who suggested that: 'the beginning teacher is more able to learn through deliberating about the nature of the expertise that he or she wants to develop than through reflecting on what is after all their very limited experience'.

We also saw that teacher educators do indeed have and use the practical knowledge, which their student teachers have yet to acquire, but the educators feel they do not know enough about theory to be able to play a role in developing theoretical concepts. These concepts must become part of the student teachers' 'toolbox' in order to realise the (by law) needed standard in teaching quality. The knowledge base of the teacher educators is that of an experienced teacher. Other studies also show that it is not easy for teachers to make this knowledge base explicit and share it with their students (Billett 2006; Edwards and Protheroe 2003; Loughran 2006). The underlying theoretical concepts, which are needed to make 'thinking visible', are mainly lacking.

This is one of the reasons why the modelling of the teacher educators remained strongly oriented on practical tips and advice, on dealing with direct requests for help and answering questions instead of revealing the underlying ideas and insights. All in all, there was a large chance that the student teachers would in this way learn how to function in a technically instrumental way and how to bring structure into their own

experiences, but that their theoretical development would fall short (Korthagen 1998) and they would not be educated as all-round professionals.

We also saw that the opportunities for learning offered by the social context of the school were not made sufficiently visible to student teachers. The aspects named by Fuller et al. (2005) that are important for learning in a work environment, such as relationships between colleagues and collaborating and exchanging experiences with 'old' colleagues and 'newcomers', scarcely played a role. Besides the apprenticeship and coaching sessions, there were no structural situations in which student teachers could enter into discussion with professional practitioners in the school and relate to their knowledge. Using the workplace as a learning environment seems to be very much left to the initiative of the individual student teacher, a situation that is no different from that of university-based students who do practice teaching in schools. However, the researchers possibly did not witness such processes, as data was only collected during and in relation to sessions on apprenticeship assignments.

CAM indeed offers a possibility to design and describe a learning environment in schools for student teachers. However, it should be recognised that not all appropriate aspects are yet part of the specified model as such. For example, the quality of the interpersonal relations is not an explicit aspect of the model. It is however, an important condition in the effective use of the methods involved in the model and the learning and identity formation of student teachers (see Calderhead and Shorrock 1997; Day and Leitch 2001). Also, we need insights into how to use the social school context for learning: how to change a workplace into a learning place for (student) teachers (see Fuller et al. 2007; Hodkinson and Hodkinson 2005).

Because the study focused on the actions and ideas of a limited number of teacher educators, it is not possible to make generalised statements about this form of teacher education. Nevertheless, the case study does provide insight into the way teachers shape their role of teacher educator, how they use their own experiences as a teacher and thereby demonstrate to student teachers what is important in their development as a teacher. The study has also provided a more precise picture of the limitations and problems associated with teacher education in school, limitations which policy makers also express concerns about and which are consistent with the problems discussed in the literature about workplace learning.

Another limitation of the study is that it focused on only one aspect of teacher education in these schools, namely the sessions about an apprenticeship assignment. This is, however, the part in which an explicit attempt was made to enact the curriculum of the teacher education institute in school by the school-based teacher educators. The sessions in the form chosen are the quintessential moments for student teachers to link their own experiences with the knowledge present both in and outside school.

The focus of this article was the role of the school-based teacher educators while educating student teachers at school during sessions. In further research attention must be paid to the other mentors in school, especially the subject teachers who also play an important role in school-based teacher education. How can they, as role models, support the learning of student teachers? Can teacher educators and mentors together give form and content to educational activities – mentioned in the specified CAM – that do more justice to learning by participation in a community of practice, on the one hand, and yet go further than giving direct instructions in response to the current problems and questions of student teachers, on the other? Further research is needed on how school-based teacher educators and mentors can supplement their 'toolbox'

and equip themselves to give better shape to aspects of the Cognitive Apprenticeship Model (content, methods, in particular modeling and reflection, and the utilisation of the school social context), in order to develop a community which indeed acts as a living curriculum for their students. Furthermore, the effect of their actions and ideas on the learning of student teachers must be studied. Lastly, improving the relations between school-based teacher educators and their university-based colleagues and building communities of practice together will be an important issue in the years to come.

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### Notes

1. All names are pseudonyms.
2. One credit in the European Credit Transfer System (ECTS) represents 28 hours of full-time study, and 60 credits represent one year.

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### References

- Billett, S. 2001. Guided learning at work. *Journal of Workplace Learning* 12, no. 7: 272–85.
- Billett, S. 2004. Workplace participatory practices. Conceptualising workplaces as learning environments. *Journal of Workplace Learning* 16, no. 6: 312–24.
- Billett, S. 2006. Constituting the workplace curriculum. *Journal of Curriculum Studies* 38, no. 1: 31–48.
- Black, A.L., and G. Halliwell. 2000. Accessing practical knowledge: how? why? *Teaching and Teacher Education* 16: 103–15.
- Calderhead, J., and S.B. Shorrock. 1997. *Understanding teacher education: Case studies in the professional development of beginning teachers*. London: Falmer Press.
- Cochran-Smith, M., and S.L. Lytle. 1999. Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*. <http://rre.sagepub.com>.
- Collins, A., J. Brown, and S. Newman. 1989. Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In *Knowing, learning and instruction essays in honor of Robert Glaser*, ed. L. Resnick. Hillsdale: Lawrence Erlbaum Associates.
- Collins, A., J.S. Brown, and A. Holum. 1991. Cognitive apprenticeship: Making thinking visible. *American Educator* Winter. [www.21learn.org/arch/articles/brown\\_seely.html](http://www.21learn.org/arch/articles/brown_seely.html).
- Day, C., and R. Leitch. 2001. Teachers' and teacher educators' lives: The role of emotion. *Teaching and Teacher Education* 17: 403–15.
- Down, B., C. Hogan, and R. Madigan. 1995. School-based teacher education: The lived experience of students, teachers and university staff. In *A focus on learning*, Proceedings

- of the 4th Annual Teaching Learning Forum, Edith Cowan University, February, ed. L. Summers. Perth: Edith Cowan University. <http://lsn.curtin.edu.au/tlf/tlf1995/down.html>.
- Edwards, A., and L. Protheroe. 2003. Learning to see in classrooms: What are student teachers learning about teaching and learning while learning to teach in schools? *British Educational Research Journal* 29: 227–42.
- Eteläpelto, A., and K. Collin. 2004. From individual cognition to communities of practice: Theoretical underpinnings in analysing professional design expertise. In *Professional learning: Gaps and transitions on the way from novice to expert*, ed. H.P.A. Boshuizen, R. Bromme, and H. Gruber. Dordrecht: Kluwer Academic Publishers.
- ETUCE. 2008. Teacher education in Europe [http://etuce.homestead.com/Publications2008/ETUCE\\_PolicyPaper\\_en\\_web.pdf](http://etuce.homestead.com/Publications2008/ETUCE_PolicyPaper_en_web.pdf).
- Fuller, A., H. Hodkinson, P. Hodkinson, and L. Unwin. 2005. Learning as peripheral participation in communities of practice; a reassessment of key concepts in workplace learning. *British Educational Research Journal* 31: 49–68.
- Fuller, A., L. Unwin, A. Felstead, N. Jewson, and K. Kakavelakis. 2007. Creating and using knowledge: An analysis of the differentiated nature of workplace learning environment. *British Educational Research Journal* 33: 743–59.
- Furlong, J., G. Whitty, G. Whiting, S. Miles, L. Barton, and E. Barrett. 1996. Re-designing Partnership: Revolution or reform in initial teacher education? *Journal of Education for Teaching* 22, no.1: 39–55.
- Gay, B. 1994. What is mentoring? *Education and Training* 36, no. 5: 4–7.
- Guile, D., and T. Griffiths. 2001. Learning through work experience. *Journal of Education and Work* 14, no.1: 113–31.
- Guile D., and M. Young. 1998. Apprenticeship as a conceptual basis for a social theory of learning. *Journal of Vocational Education and Training* 50, no. 2: 173–92.
- Guile, D., and M. Young. 2003. Transfer and transition in vocational education: Some theoretical considerations. In *Between school and work: New perspectives on transfer and boundary-crossing*, ed. T. Tuomi-Grohn, and Y. Engestrom. Amsterdam: Pergamon.
- Hagger, H., and D. McIntyre. 2006. *Learning teaching from teachers: Realizing the potential of school-based teacher education*. Maidenhead: Open University Press.
- Hodkinson, H., and P. Hodkinson. 1999. Teaching to learn, learning to teach? School-based non-teaching activity in an initial teacher education and training partnership scheme. *Teaching and Teacher Education* 15: 273–85.
- Hodkinson, H., and P. Hodkinson. 2005. Improving schoolteachers' workplace learning. *Research Papers in Education* 20, no. 2: 109–31.
- Holmes Group. 1990. *Tomorrow's schools: Principles for the design of professional development schools*. East Lansing, MI: Holmes Group. [www.holmespartnership.org/Tommorows\\_Schools.pdf](http://www.holmespartnership.org/Tommorows_Schools.pdf).
- Huberman, A.M., and M.B. Miles. 1994. Data management and analysis methods. In *Handbook of qualitative research*, ed. N.K. Denzin, and Y.S. Lincoln. Thousand Oaks: Sage Publications.
- Jong, J. de. 2004. De praktijk is totaal anders [Practice is completely different]. In *Leren op de werkplek*, ed. J.N. Streumer and M.R. van der Klink. Gravenhage: Reed Business Information.
- Kelchtermans G. 2001. *Reflectief ervaringsleren voor Leerkrachten. Een werkboek voor opleiders, nascholers en stagebegeleiders. Cahier voor didactiek* [Reflective experiential learning: A workbook for teacher educators]. Antwerpen: Wolters Plantyn.
- Klarus, R. 2003. *Leraar worden door leraar te zijn* [Becoming a teacher through being a teacher]. Arnhem: HAN en STOAS Hogeschool.
- Korthagen, F.A.J. 1998. *Leraren leren leren* [Teachers learning how to learn]. Amsterdam: Vossiuspers AUP.
- Korthagen, F.A.J., and J.P.A.M. Kessels. 1999. Linking theory and practice. Changing the pedagogy of teacher education. *Educational Researcher* 28, no. 4: 4–17.
- Korthagen, F., J. Loughran, and T. Russell. 2006. Developing fundamental principles for teacher education programs and practices. *Teaching and Teacher Education* 22: 1020–41.

- Lambert, P. 2003. Promoting developmental transfer in vocational teacher education. In *Between school and work: New perspectives on transfer and boundary-crossing*, ed. T. Tuomi-Gröhn and Y. Engeström. Amsterdam: Pergamon.
- Lave, J., and E. Wenger. 1991. *Situated learning: Legitimate peripheral participation*. Cambridge: University Press.
- Loewenberg Ball, D. 2000. Bridging practices: Intertwining content and pedagogy in teaching and learning to teach. *Journal of Teacher Education* 51, no. 3: 241–7.
- Loughran, J. 2006. *Developing a pedagogy of teacher education. Understanding teaching and learning about teaching*. London: Routledge.
- Loughran, J., and A. Berry. 2005. Modelling by teacher educators. *Teaching and Teacher Education* 21, no. 2: 193–203.
- Lunenberg, M., F. Korthagen, and A. Swennen. 2007. The teacher educator as a role model. *Teaching and Teacher Education* 23, no. 5: 586–601.
- Lunenberg, M., M. Snoek, and A. Swennen. 2000. Between pragmatism and legitimacy: Developments and dilemmas in teacher education in The Netherlands. *European Journal of Teacher Education* 23, no. 3: 251–60.
- Maandag, D.W., J.F. Deinum, W.H.A. Hofman, and J. Buitink. 2005. Teacher education in schools: an international comparison. *European Journal of Teacher Education* 30, no. 2: 151–73.
- McIntyre, D. 1993. Theory, theorizing and reflection in initial teacher education. In *Conceptualizing reflection in teacher development*, ed. J. Calderhead and P. Gates. London: Falmer Press.
- Merriam, S.B. 1998. *Qualitative research and case learning applications in education*. San Francisco: Jossey-Bass Publishers.
- Miles, M.B.S., and A.M. Huberman. 1994. *Qualitative data analysis*. Thousands Oaks: Sage Publications.
- Ministerie van Onderwijs, Cultuur en Wetenschappen 2004. *Beroepen in het Onderwijs*. [Law on occupations in education.]. [www.minocw.nl/onderwijsperoneelenkwaliteit/266/index.html](http://www.minocw.nl/onderwijsperoneelenkwaliteit/266/index.html).
- Moore, D.T. 2004. Curriculum at work. An educational perspective on the workplace as a learning environment. *The Journal of Workplace Learning* 16, no. 6: 325–40.
- OECD. 2005. Teachers matter: Attracting, developing and retaining effective teachers. [www.oecd.org/document/52/0,3343,en\\_2649\\_39263231\\_34991988\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/52/0,3343,en_2649_39263231_34991988_1_1_1_1,00.html).
- Onstenk, J. 1997. *Lerend leren werken. Brede vakbekwaamheid en de integratie van leren, werken en innoveren* [Learning while working. Professional competence and the integration of learning, working and innovation]. Diss., Delft, Eburon.
- Oosterheert, I. 2001. How student teachers learn: A psychological perspective on knowledge construction in learning to teach. Diss., Groningen, Rijksuniversiteit Groningen.
- Parsons, M. and M. Stephenson. 2005. Developing reflective practice in student teachers: collaboration and critical partnerships. *Teachers and Teaching: theory and practice* 11, no. 1: 95–116.
- Raingruber, B. 2003. Video-cued narrative reflection: A research approach for articulating tacit, relational, and embodied understandings. *Qualitative Health Research* 13, no. 8: 1155–69.
- Seezink, A., and J.M.M. Van der Sanden. 2005. Lerend werken in de docentenwerkplaats: Praktijktheorieën van docenten over competentiegericht voorbereidend middelbaar beroepsonderwijs. [Learning and working within a teacher's work place: practical theories about competence-oriented prevocational secondary education.] *Pedagogische Studiën* 82, no. 4: 275–92.
- Shulman, L.S. 1998. Theory, practice and the education of the professional. *The Elementary School Journal* 98: 511–26.
- Snoek, M., and D. Wielenga. 2001. *Teacher education in the Netherlands Change of gear*. [www.see-educoop.net/education\\_in/pdf/workshop/teseen/dokumenti/countries\\_nederlands.pdf](http://www.see-educoop.net/education_in/pdf/workshop/teseen/dokumenti/countries_nederlands.pdf).
- Stake, R. 1995. *The art of case research*. Thousand Oaks: Sage Publications.
- Swennen, A., F. Korthagen, and M. Lunenberg. 2004. Congruent opleiden door lerarenopleiders. [Congruent teaching by teacher educators]. *VELON Tijdschrift voor lerarenopleiders* 25, no. 2: 17–27.

- Swennen, A., M. Lunenberg, and F. Korthagen. 2008. Preach what you teach! Teacher educators and congruent teaching. *Teachers and Teaching: theory and practice* 14: 531–42.
- Ten Dam, G., and S. Blom. 2006. Learning through participation. The potential of school-based teacher education for developing a professional identity. *Teaching and Teacher Education* 22: 647–60.
- Tynjälä, P. 2008. Perspectives into learning at the workplace. *Educational Research Review* 3: 130–54.
- Van der Klink, M.R. 1999. Effectiviteit van werkplekopleidingen [Effectiveness of on-the-job training]. Diss., Enschede, Universiteit van Twente.
- Van der Klink, M.R. 2004. Benaderingen voor het ontwerpen van opleiden en leren op de werkplek [Approaches in designing the training and learning at the workplace]. *Handboek Effectief Opleiden* 36, no. 5: 5.7–10.1, 5.7–1.23.
- Van Velzen, C., C. Bezzina, and P. Lorient. 2008. Partnerships between schools and teacher education institutes. In *Becoming a teacher educator*, ed. A. Swennen, and M.R. van der Klink. Dordrecht: Springer Publishers.
- Verloop, N., and J.W.M. Kessels. 2006. Opleidingskunde: ontwikkelingen rond het opleiden en leren van professionals in onderwijs en bedrijfsleven [Training and development: learning of professionals in education and corporations.] *Pedagogische Studiën* 83, no. 4: 301–21.
- Verloop, N., J. Van Driel, and P. Meijer. 2001. Teacher knowledge and the knowledge base of teaching. *International Journal of Educational Research* 35: 441–61.
- Verloop, N., and T. Wubbels. 2000. Some major developments in teacher education in The Netherlands and their relationship with international trends. In *Trends in Dutch teacher education*, ed. G. Willems, J. Stakenborg, and W. Veugelers. Garant: Leuven.
- Wilson, B., D. Jonassen, and P. Cole. 1991. A review of cognitive teaching models. *Educational Technology Research and Development* 39, no. 4: 47–64. [www.cudenver.edu/~bwilson](http://www.cudenver.edu/~bwilson).
- Yin, R.K. 2003. *Case Study Research Design and Methods* London: Sage Publications.
- Zanting, A. 2001. Mining the mentor's mind. Diss., Leiden, ICLON Graduate School of Education.



**Appendix**

Table A1. Specification of the CAM concept.

Cognitive apprenticeship model		
Categories		What can the teacher educator talk about?
Content: types of knowledge required for expertise	Conceptual and factual knowledge	Conceptual, procedural and factual knowledge of the subject area in question (knowledge for teachers): <ul style="list-style-type: none"> <li>– Subject knowledge.</li> <li>– Knowledge about pupils, their learning and development.</li> <li>– Pedagogical knowledge aimed at supporting pupil learning.</li> <li>– Knowledge on reflection and practical research.</li> <li>– Why this knowledge and for what purpose?</li> </ul>
	Heuristic (practical) knowledge	Effective techniques and approaches that can be regarded as ‘the tricks of the trade’: <ul style="list-style-type: none"> <li>– Approaches which are developed and/or used in the school.</li> <li>– Approaches that work for the teacher educators as teacher (knowledge based on their own actions and behaviour and reflection on these: knowledge of teachers).</li> </ul>
	Control strategies	Support strategies for student teachers to: <ul style="list-style-type: none"> <li>– Plan, monitor and manage the implementation of their work tasks.</li> <li>– Plan, monitor and manage their (learning) objectives.</li> </ul>
	Learning strategies	Support strategies that student teachers can use to acquire knowledge, learn strategies and tackle new problems: <ul style="list-style-type: none"> <li>– Prior reflection on what is coming: what will this new situation possibly require?</li> <li>– Learn to utilise the coaching adequately.</li> <li>– Learn to utilise role models and experts adequately: observation of colleagues by the student teacher and learn to use these observations.</li> <li>– Extending tasks and experiment in an aware way?</li> <li>– How do I (student teacher) recognise that and what I learn as I go along?</li> </ul>
		What can the teacher educator do?

**Appendix** Table A1. (Continued).

Cognitive apprenticeship model		
Categories		What can the teacher educator talk about?
Methods: interventions directed at ways to promote the development of expertise	Modelling	<p>Show how an expert or a fellow student teacher can perform a task and justify that approach:</p> <ul style="list-style-type: none"> <li>– Do what student teachers are supposed to do (teach how I teach).</li> <li>– Show and talk about how they think, what feelings play a role when they themselves are teaching, coaching, reflecting, consciously modelling. Model their teaching values and virtues.</li> <li>– Make aspects of the student teachers' actions and behaviour, both seen and unseen, visible. Evaluate and discuss shared experiences, paying attention to every practice, not just good practices.</li> <li>– Select aspects of task performance that should be drawn to the attention of the student teacher(s).</li> <li>– Help student teachers to understand why these aspects are important even if they will not immediately be useful.</li> <li>– Discuss explanations and statements other than those of the student.</li> <li>– Present different perspectives on performing tasks.</li> </ul>
	Scaffolding and fading	<p>Offer specific help for difficult parts of a task. Only take over those parts of a task that a student teacher cannot perform independently.</p>
	Coaching	<p>Coach the student teacher in the acquisition and integration of knowledge and skills, for example, by using feedback and suggestions.</p>
	Articulation	<p>Justify each method used by the student teachers to acquire and consolidate their knowledge, their way of reasoning and solving problems.</p>
	Reflection	<p>Urge student teachers to compare their own learning process and approach to tasks with those of other student teachers, thereby making use of codified knowledge and linking this with the knowledge that exists in the school.</p>

**Appendix** Table A1. (Continued).

Cognitive apprenticeship model		What can the teacher educator talk about?
Categories		
		<p>This is possible, for example, by:</p> <ul style="list-style-type: none"> <li>– Inviting student teachers to reflect openly on the relationship between the objectives of teacher education and their own learning objectives, and between the objectives formulated and what they actually do.</li> <li>– Paying attention to the differences between what the student teachers do and what their original intentions were. Help make the resultant dilemmas visible, which shed new light on the practice.</li> <li>– Helping student teachers to study and refine their own images and suppositions by means of systematic reflection on their own practical experiences, particularly the details.</li> <li>– Investigating with student teachers, via open questions, what significance they give to words, images and behaviour etc they encounter in the school.</li> <li>– Helping student teachers to reflect on literature (conceptual and factual knowledge).</li> <li>– Helping student teachers to link their experiences with conceptual/factual knowledge and/or heuristic knowledge, thereby broadening and deepening reflection and increasing the chance of transfer.</li> </ul>
	Exploration	Stimulate student teachers to orientate themselves and to recognise and solve problems.
Sequence: keys to ordering learning: interventions directed at the workplace as a learning environment	Increasing complexity	As far as possible, introduce a sequence into the tasks and task environments which demands more and more knowledge and skills of the student teacher.
	Increasing diversity	Increase the diversity of tasks as carefully as possible.
	Global before local skills	Place the task in the work process of the student teacher as teacher, in sessions or assignments that first give student teachers the chance to study what the complete task is and demands, before looking at it and tackling it in more detail.

**Appendix** Table A1. (Continued).

Cognitive apprenticeship model		
Categories		What can the teacher educator talk about?
Sociology: interventions aimed at using the social school context	Situated learning	Helping to carry out tasks and assignments in authentic environments that challenge student teachers to use different sorts of knowledge and skills. The creation of a learning environment in which the participants communicate about the meaning of competent behaviour and participate in practices that require such behaviour. Expertise is seen here as the possibility to solve problems and perform tasks in accordance with the standards of the community in question.
	Community of practice	
	Intrinsic motivation (to do the job)	Fostering intrinsic motivation in different ways, which is linked to being prepared to do the things that are part of the teaching profession and of learning to be a teacher.
	Exploit collaboration	Let student teachers collaborate (also with colleagues), thereby stimulating the co-operative solving of problems and they support each other in evaluating and reflecting on the choices they make or have made.
	Exploit competition	Confront student teachers with the way in which others have performed a particular task.

Source: Based on Seezink and Van der Sanden (2005, extended).