Supporting medical teachers' learning : redesigning a program using characteristics of effective instructional development
Min-Leliveld, M.J.

Chapter 5

Medical teachers' learning visualized:
their learning processes in
an instructional development program

5. Medical teachers' learning visualized: their learning processes in an instructional development program[6]

Instructional development programs are important for teacher learning. Literature is available on characteristics that can improve the effectiveness of those programs. The study described in this chapter is an in-depth investigation of teachers' learning processes while they participate in a course that meets the criteria of effectiveness described in the literature. We used a model of teachers' professional growth to visualize the learning process of four medical teachers in detail, in order to understand what they had learned from the instructional development program and what specific components of the program contributed to their learning. For each teacher five learning diagrams could be drawn on the basis of interviews with these teachers. The diagrams showed that all participants reported having learned from the program, but the session about using 360° feedback from students resulted in complex learning patterns. The combination of theory and practice and the inclusion of student feedback (e.g., by means of an assignment) seemed to be important for teachers' learning.

5.1   INTRODUCTION

Medical specialists who also teach students differ from teachers in primary and secondary schools, because teaching is often their second (or even third) priority. As specialists become ever busier in their own clinical practice it becomes more challenging to be an effective teacher, because of the reduced time for teaching (Prideaux et al., 2000). Medical teachers, just as other professionals, are expected to engage in lifelong learning and this requires that they keep abreast of new technologies and maintain and improve their competences (Educational Council of the Netherlands, 2006).

Teaching in the clinical environment can be defined as teaching focused on, and usually involving, patients and their problems (Spencer, 2003). Harden and Crosby (2000) identified six major types of medical teacher roles: (a) information provider, (b) role model, (c) facilitator, (d) assessor, (e) curriculum/course planner, and (f) resource material creator. Many of these roles require a teacher to be more than a medical expert. In many educational settings teachers may have a only a limited number of roles at the same time, but clinical teachers often play many roles simultaneously, even switching from one role to the other during the same encounter in the work practice (Ramani, 2006). Given those complexities, clinical teachers need to possess a variety of teaching skills (Skeff et al., 1997).

In medical education in the clinical environment students are assumed to learn from experts in their work environment how to think and act as medical professionals. This type of learning is often referred to as the "cognitive apprenticeship model" of learning. Exposing students to this context is generally assumed to be preferable to a learning environment that is further removed from medical practice (e.g., the classroom) (Billet, 1996). A problem with the clinical learning environment in the context of medicine is that it is primarily intended for patient care rather than student learning. Also, because of time constraints only a few cases are discussed with an attending physician in this environment, and students can only see a narrow range of patient problems in a single clinic (Dolmans, Wolfhagen, Gerver, De Grave, & Scherpbier, 2004). When cases are discussed the interactions are mostly short, focus on management and treatment options, involve little teaching, and yield almost no feedback (Irby, 1995).

5.1.1   Learning from experience

Learning from experience also plays an important role in learning to teach. However, having experience is no guarantee that a person will actually learn (Mansvelder-Longayroux, 2006). The learners have to understand their

experiences if they are to be able to build up their (practical) knowledge (Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2003).

Teacher learning is closely connected to teacher change, not only with respect to teachers' ideas and beliefs about teaching, but also with respect to actual behavior. There may be differences in the direction, depth, and results of learning (Bolhuis, 1995). Teacher learning most often takes place in teachers' daily teaching practice and in interaction with peers. This "situated learning" has been extensively described in the literature (e.g., Putnam & Borko, 2000). From this perspective teacher learning cannot be separated from the context in which it takes place. Meirink (2007) defines this type of teacher learning as an ongoing work-related process of undertaking activities that lead to a change in cognition (e.g., knowledge, beliefs, and attitudes), in behavior, or in both.

A way for learners to reach an understanding of their experiences which might influence their practices is by reflection. This involves a reconstruction of experiences (Korthagen et al., 2003) leading to a new comprehension of a situation, of self-as-a-teacher, or of teachers' own assumptions (Grimmith, 1988). In general, reflection is seen as a way of systematically thinking about experiences, frequently coupled with action in educational practice, and arising from a problem from actual practice (Hatton & Smith, 1995). Reflection depends on the context and can take various forms (Ovens & Tinning, 2009). McAlpine and Weston (2000) show that medical teachers who are considered excellent teachers know a lot about their students, both as groups and as individuals, and use this knowledge when reflecting on the impact of their teaching.

5.1.2 Using feedback for teacher's learning

Feedback is one of the most powerful factors affecting learning and achievement, but this impact can be either positive or negative, depending on type of feedback and the way it is given (Hattie & Timperley, 2007). Feedback can inform teachers about the impact of their teaching and can stimulate teachers' reflections on their teaching. The focus of the feedback is critically important. Hattie and Timperley (2007) identify four major levels. First, feedback can be about a task or product, such as whether work is correct or incorrect. This level may include directions on how to acquire more correct information (e.g., "you need to include more information on"). The second level is feedback about how to accomplish a task. This kind of feedback focuses on processing information, or on learning processes that are necessary for understanding or completing a task (e.g., "this can be improved if you use the strategies discussed earlier"). The third level is feedback about self-regulation, including skills in self-evaluation or confidence to engage in the task. Such feedback can have major influences on self-efficacy, self-regulatory proficiencies, and self-beliefs about students as

learners (e.g., "you already know the students well, try to use this knowledge to motivate them for this topic"). The fourth level is about the self as a person. It is often unrelated to task performance (e.g., "you are doing well as a teacher"), and therefore not as effective as the other three levels.Feedback from students is a powerful tool for teachers to learn from, as their students are the target group of their teaching. Student feedback can be used to enhance the quality of teaching but should never be used in isolation (e.g., Harvey, 2001; Williams & Brennan, 2003). In medical education there are specific instruments by which to obtain feedback from students (Copeland & Hewson, 2000; Dolmans et al., 2004; Litzelman, Westmoreland, Skeff, & Stratos, 1999; Lockyer & Clyman, 2008). Dolmans et al. (2004) state that most feedback instruments are not theory-based. They developed a new instrument consisting of 18 items on a five-point Likert scale, based on the five forms of learning environments as identified by Choi and Hannafin (1995): modeling, scaffolding, coaching, collaborating, and fading.

Another strategy to get feedback is 360° feedback, which has now been introduced in the medical post-graduate education in the Netherlands. This consists of feedback from different sources, such as students, colleagues, and secretarial staff, so that an overall assessment may be obtained of the competences of a medical specialist. An advantage of this type of feedback is that many sources are used, thus reducing the "one person/one perspective" bias (Lockyer & Clyman, 2008).

5.1.3   Instructional development programs

In order to help medical specialists develop their competences as teachers instructional development programs are available. Given the importance of feedback for learning it is advisable that in these programs considerable attention is paid to enhancing feedback skills.

Most clinical teachers have had a great deal of training in medical knowledge and skills, but little to none in teaching (Ramani & Leinster, 2008). In other words: they are experts in *what* they teach, but most have had little or no training in *how* they teach (MacDougall & Drummond, 2005). If medical teachers attend an instructional development program they may discover that education is also a field of research, just as the study of medicine. McLeod et al. (2008) found that participants in an instructional development course on basic pedagogical principles were surprised to discover the existence of an extensive body of pedagogical science underlying teaching and learning. In an earlier study McLeod et al. (2004) found that clinical teachers already possess a reasonable amount of tacit knowledge of basic pedagogical principles. Morrison, Shapiro, and Harthill (2005) report that medical teachers who participated in teaching as well as in a 13-hour teacher-training program expressed a greater

enthusiasm for teaching, used more learner-centered approaches, and had a richer understanding of teaching principles and skills than teachers who did not attend the program. More of these teachers wanted to continue teaching after the training program than teachers from the control group, who were more easily frustrated by time constraints, and often expressed cynicism and blamed learners.

Clarke and Hollingsworth (2002) state that to facilitate the teachers' instructional development it would be necessary to understand the details of the learning processes and the conditions that support teachers' learning.

In the study described here we used a model to better understand the underlying learning processes stimulated by a specific instructional development program. The program met the 16 criteria of effectiveness derived from a literature study, which were also accepted by both medical teachers and teacher educators as appealing and relevant in medical education. The procedure for selecting those criteria and for devising the program based on the criteria has been extensively described in Chapters 2, 3, and 4. Understanding how the various components in an instructional development program influence teachers' learning might yield indications on how to improve instructional development programs in the future.

The following research questions will be answered:

How can teachers' learning in the adapted instructional development program be visualized?

What kind of learning sequences can be recognized in the various components of the program?

5.1.4 Visualizing teachers' learning by means of a model

In order to promote instructional development we must understand how teachers learn. The focus of most research in the psychology of learning and education has been on student learning (ICLON, 2009); only recently have the learning processes of teachers been given greater attention (Borko, 2004; Hammerness, 2005).

Teachers' learning can be visualized by the use of a model. For a long time it was mostly linear models that were used to visualize teacher learning and its consequences: teacher education or teacher development programs were supposed to change teachers' knowledge, beliefs, and attitudes. This would subsequently lead to a change in their everyday practice, and this, ultimately, would influence student outcomes (e.g., Richardson & Placier, 1986). Later ideas about teacher change focused more on learning by reflecting on teachers'

everyday practices (Guskey, 1986; Korthagen et al., 2003). Guskey (1986) developed a model based on the assumption that instructional development programs caused a change in teachers' practice, which in turn led to change in student learning and ultimately to a change in teachers' knowledge, beliefs, and attitudes. These linear models were criticized by for instance Borko (2004), for not being suitable to show the complexity of processes in teachers' learning.

Clarke and Hollingsworth (2002) developed a non-linear model of teachers' professional growth (Figure 5-1), which was inspired by earlier linear models (e.g., Fullan, 2001; Guskey, 1986). The model can be used to study and describe teachers' learning. We have chosen to use this model in our research because it fits our aim to visualize teachers' learning and learning processes and because, given its non-linear character, it can show teacher-learning processes starting from different domains. It can display complex learning patterns, it includes actions as well as reflections, and it can also show which factors are important in learning. With the help of this model it is possible to obtain insight into the underlying factors that are crucial for the learning process. In our study we used the Clarke and Hollingsworth (2002) model as a tool to analyze the learning processes reported. 'Learning" is defined here as a change in teachers' cognition and/or behavior (Zwart et al., 2007).

Clarke and Hollingsworth (2002) used empirical data from three longitudinal studies to distinguish four different domains that are important in the teachers' learning: (a) Personal domain (teachers' knowledge, beliefs, and attitudes that influence their learning), (b) External domain (external resources of information or stimuli available to the teacher, e.g., instructional development programs), (c) Domain of practice (professional experimentation, e.g., teaching students), and (d) Domain of consequence (salient outcomes related to classroom practice, e.g., student results). They also introduced "the change environment", meaning all context factors that indirectly influence the learning process, for example the management, resources, and the curriculum in the institution.
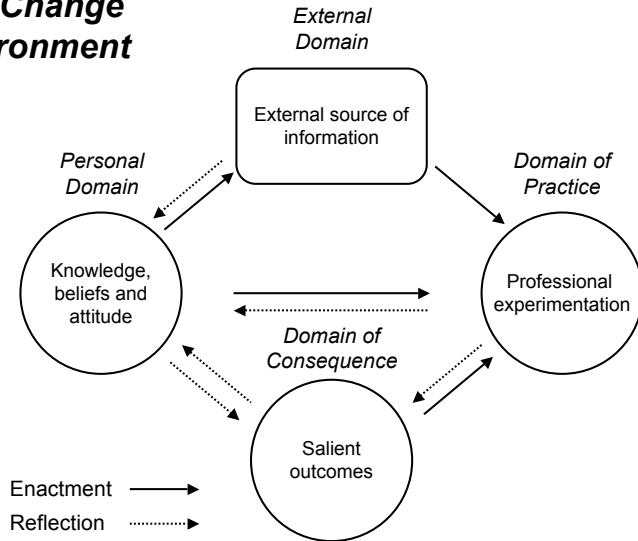
Figure 5-1. The interconnected model of teachers' professional growth (Clarke & Hollingsworth, 2002)

In the Clarke and Hollingsworth model (Figure 5-1) a change in one domain leads to changes in other domains through the mediational processes of "enactments" or "reflections". The term *enactment* (solid arrow) refers to something that a teacher does as a consequence of what 'the teacher knows, believes, or has experienced' (Clarke & Hollingsworth, 2002, p. 951). For example, a teacher has learned (in the External domain) about a new method to provide feedback to the student and uses this new method in everyday practice (in the Domain of practice). The term *reflection* (dotted arrow) refers to a set of mental activities intended to construct or reconstruct experiences, problems, knowledge, or insights (Zwart et al., 2007). For example, the teacher receives feedback from the students about their difficulties to plan an appointment with the teacher and thinks about explanations why he/she is difficult to access. Justi and Van Driel (2006) developed a coding system for the various enactment and reflection arrows (relationships) between the domains. Clarke and Hollingsworth (2002) state that through these processes of enactment and reflection change can occur, for example, if teachers consider the fact that they are bus, they might change the planning of the working day, leaving more time to see students. These changes can result in either a single change sequence (a change involving two domains, indicated by one arrow), resulting in a limited change, or more

complex and an ongoing changes within a growth network (changes between various domains, indicated by two or more arrows).

We slightly adapted the model for use in our study by fine-tuning the External domain (see Figure 5-2). In line with Zwart et al. (2007) this domain was divided into two parts: the instructional development program the teachers participated in, and a general part (e.g., sources of information or support for the teacher, such as colleagues or articles). The subdomain 'instructional development program' was divided into content and process, on the basis of Guskey's classification (2000). In this classification content characteristics refer to the "what" of instructional development programs (e.g., new knowledge, skills, or understandings); process variables refer to the "how" of instructional development programs (e.g., types and forms of activities, such as workshops and presentations, and the way those activities are planned, organized, carried out, and followed up). Dividing the instructional development program into these two parts provided us with better opportunities to gain insight into the ways in which teachers use those parts in their learning.

In this study, the teaching practice (Domain of practice) means that the teacher observes a student during patient contact and provides feedback to the students about these contacts.
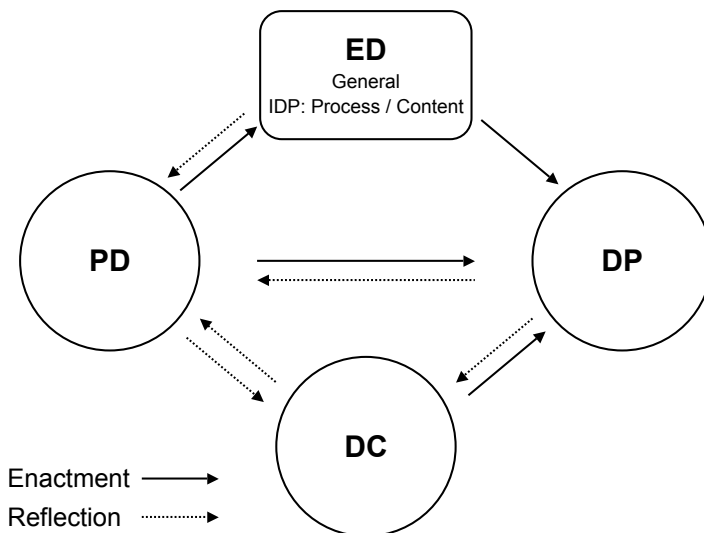

Figure 5-2. Adapted model of teacher's professional growth

In earlier studies (Clarke & Hollingsworth, 2002; Justi & Van Driel, 2006; Wongsopawiro et al., 2009; Zwart et al., 2007) the model of Clarke and

Hollingsworth (2002) was used to study teachers' learning in primary and secondary education. In those studies it was especially the External domain and the Domain of consequence that were found to be important with respect to teacher learning. Those domains were particularly important for the stimulation of enactment and reflection on the part of teachers. Zwart et al. (2007) studied teacher learning in the context of reciprocal peer coaching, and found a distinction between learning processes that included the External domain and processes that did not. If both the Domain of consequence and the External domain were included patterns of learning were more complex, and therefore more promising with respect to teacher growth. Wongsopawiro et al. (2009) studied in-service teacher learning in the context of action research, and they also found that both the External domain and the Domain of consequence were important domains with respect to more "promising" change patterns when seen from the perspective of teachers' learning.

5.2   METHOD

In order to visualize teacher's learning, four teachers reported in an in-depth interview about what they had learned in the various sessions of the instructional development program. This information was used to construct learning diagrams based on the model of Clarke and Hollingsworth (2002), which are meant to depict underlying factors that initiated the teacher's learning. Differences in the patterns could indicate differences in teacher learning during the different components of the program (sessions). In this section we will first present information about the various sessions of the instructional development program, and then go on to describe the participants we interviewed. Third, we will provide information on the data collection, and finally we will describe the data analysis.

5.2.1   Design of the instructional development program

Our study was conducted in the context of an instructional development program for medical specialists. This program was carried out from September 2008 to May 2009. The aim of the course was to create awareness in the participants about their roles as teachers and to develop their knowledge and skills, especially those related to providing feedback to their students. The course consisted of various sessions (Table 5-1): A two-day Basic Course (held five times in the period September-December) and three follow-up sessions (January to May). If participants were not able to attend one of the follow-up sessions they had to complete an alternative assignment in order to obtain accreditation points. Table 5-1 describes the instructional development program. The various sessions were designed using the 16 characteristics of effective instructional development programs as described in Chapter 4. All sessions offered room for discussion,

and because of the scheduling over a longer period sufficient time was provided for the participants to try to integrate the new knowledge and skills into their everyday practice. The sessions differed specifically in the amount of theory, methods, the nature of the assignments (and the practicing of feedback), and the involvement of students in the sessions. The "Basic Course" session was set up as an introduction program intended to enhance general pedagogical skills and knowledge, the other sessions were especially aimed at specific skills and knowledge (teachers' feedback skills, knowledge about feedback).

Table 5-1. Overview of the Instructional Development Program

Sessions
Basic Course Session (Two days)
This Basic Course session consisted of an interactive and varied program intended to enhance *general* pedagogical knowledge and skills. Many different topics were treated, combining theory (pedagogical knowledge) with some practical assignments (practicing). Those assignments mainly involved a practice session of one group member, while the others were observing. No students were involved in this course.
Video vignettes session, using a feedback form
This session was specifically aimed at enhancing the participants' feedback skills. In the session the teacher educator explained the theory about feedback and about the use of the feedback form. Video vignettes from students during patient contacts were used to practice filling in the specific feedback forms. Afterwards the feedback forms were discussed among the participants.
360° feedback session
This session was set up to introduce the concept op 360° feedback and to practice with written personal feedback from students. The teacher educator explained the use of this method. In this session the participants also discussed the way they used the feedback from the students about their functioning in the workplace. In the last part of the session a feedback form filled in by a student was discussed.
Peer group discussion
The aim of this session was to exchange ideas about specific cases via a peer group discussion. In two small groups the participants discussed cases from their work context, including a "challenging" situation involving a student.

5.2.2   Participants

To get a complete picture of all the sessions in the course, only those teachers were selected for the interviews that had completed all assignments of the sessions and had handed in feedback from at least two students. This resulted in four teachers being selected from all the participants for an in-depth interview (Table 5-2). They were either working in an academic hospital in the Netherlands, or at an affiliated general hospital near an academic hospital. They were experienced medical doctors, who were also involved in the training of students. All were male and aged above 45. They had much practical experience in training students, but did not have much theoretical background on how to train students. There were differences in the frequency with which they provided feedback to their students, and in the number of students per year that they trained.

Table 5-2. Characteristics of the Participating Teachers

Name	Specialist	Hospital	Number of students/year
Simon	Radiotherapy	Academic	8
Nigel	Internal medicine	General	12
Edward	Internal medicine	Academic	3
James	Surgery	General	8

5.2.3   Data collection

In order to gain an understanding of the teachers' learning process we carried out semi-structured interviews about teachers' reported learning. Those in-depth interviews were conducted one month after completion of the course. This interval was chosen in order to enable teachers to make changes in their everyday practice. In the interviews the teachers were asked to describe in general terms what they had learned from the course, and if they had used the new knowledge and skills in their daily work. In addition, the teachers were specifically asked to report what they had learned from the various sessions (see Appendix F). The interviews lasted 45-60 minutes and were held in the hospital where the participant was working. During the interviews the short reports that the participants had written after each session were used as input. For these reports the participants had been asked what they intended to change in their everyday practice, and also if they had reached the learning goals formulated in the preceding sessions, and if not, why.

5.2.4   Data analysis

All interviews were transcribed verbatim, and interview fragments that referred to a specific session of the instructional development program were grouped together and summarized. The interview fragments were examined and statements were selected that showed indications of change/learning. Indicators for change (derived from Zwart et al., 2007) were, for example, reported changes in cognition, including statements such as "I have learned that", "I know how to", "I understood why", changes in attitude or beliefs, including statements such as "I feel that now I can", "I believe now that", "I am confident in", and changes in perceived behavior including statements such as "I used to do…, but now I am doing…"," I tend to do more…," "I am doing things differently now, etc.".

We used the codes from Wongsopawiro et al. (2009), who adapted the codes for the various relations between the domains developed by Justi and Van Driel (2006), to visualize the teachers' learning in an instructional development program. We also identified in which domains the starting (entry) and end points occurred, and how this impacted the other domains.

Table 5-3 shows an example of part of a summary of interview fragments for one of the participants in the session on video vignettes. Figure 5-3 depicts the diagram that was derived from these fragments. In this example a teacher reported having learned to use feedback in a different way (Arrow 1, to Personal domain) due to the session on video vignettes (External domain) that he attended. This session was the starting point (entry point) of his learning. In his practice he introduced a new format of the feedback form to his students. After using this new format in everyday practice (Arrow 2, to Domain of practice) he noticed that his students (Arrow 3, to Domain of consequence) had not yet got used to this new way of working. On the basis of these interview fragments two "reflection arrows" and one enactment arrow could be drawn, using the codes from Table 5.3.

On the basis of the data, diagrams were drawn for each teacher of the reported learning processes they reported in the various sessions of the instructional development program (External domain). Five diagrams could be drawn for every teacher, about (a) the two-day basic course, (b) the session on the use of a specific feedback form, (c and d) the session on 360° feedback (theory and practice), and (e) the peer group session. For the session on 360° feedback two different diagrams were drawn for every teacher: one for the theoretical background of 360° feedback, and one for the assignment in which participants received feedback from their students. This resulted in a total of 20 diagrams. On the basis of the interview data two additional diagrams were identified, as two teachers reported two different learning outcomes in one session. Thus, ultimately 22 diagrams were constructed. We were specifically interested in the

Table 5-3. Summary of Interview Fragment

Interview fragments	Arrow (relationship)	Code (from Justi & Van Driel, 2006)
The teacher reports having learned from the instruction about how to fill in a feedback form in the session on video vignettes. He learned that before the observation he should choose which competences of the students he would focus on. This meant that he did not have to fill in the complete form, just the parts he selected. He thinks that this makes it easier for him, as he only has to focus on one or two different parts of the form.	1. ED to PD	When something that happened during the learning activities modified the teacher's initial cognitions or beliefs.
As a consequence of his considerations and ideas, he uses this new way of filling in the form in his workplace, and says that it simplifies his practice because he can be more focused during the observation. It also takes him less time to complete the form.	2. PD to DP	When a specific aspect of the teacher's cognitions or beliefs influenced something that occurred in the teacher's practice.
He says that his students have not yet got used to this new way of working (i.e., not using the whole form any longer) .	3. DP to DC	When a teacher noticed and reflected on something that he or his students did in the teaching practice that caused specific outcomes.

number of "enactments" and "reflections", and in the formats of the various diagrams. The diagrams that included the Domain of consequence were the most interesting for us, because these showed how the teachers reflected on the students.

To strengthen the reliability of the analysis the coding of the changes and the construction of the diagrams were done independently by two coders (Cohen, Manion, & Morrison, 2000). Comparison of the results obtained by the coders showed that in only a few cases (2 out of 22) there was a difference in the coding and the construction of the diagrams. In those cases, the differences were discussed until agreement was reached.
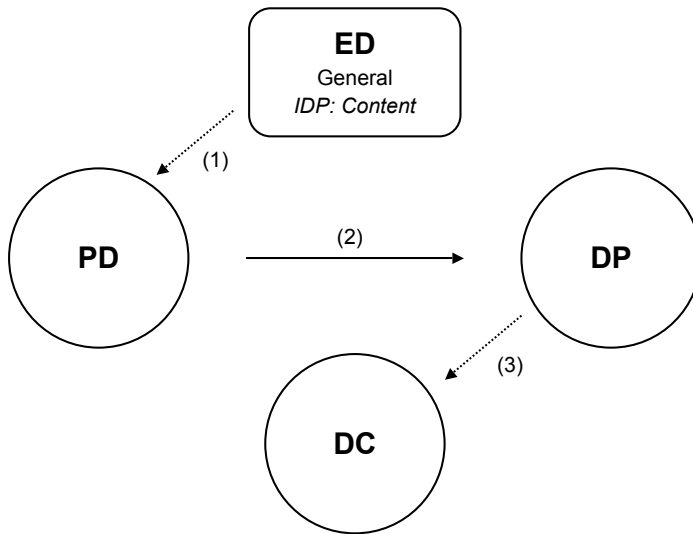
Figure 5-3. Example of a diagram based on the data for one of the teachers

5.3   RESULTS

Analysis of the different interviews resulted in 22 diagrams of the various sessions of the instructional development course. In this section we describe the patterns of those diagrams, and show the various diagrams that display the learning processes of the teachers in the four different sessions, as reported at the time of the interview. For each session we will use the diagram of one teacher to illustrate the visualization, and use quotes from the interviews to explain the typical enactments and reflections occurring in each of the pathways.

5.3.1   Basic Course session

The Basic Course session was set up as an introductory course on pedagogical knowledge and skills, scheduled over two consecutive days. Many different theoretical aspects were covered, and some assignments were included to practice presentation and feedback skills.

For this session three teachers reported what they had learned from the content of the course, and one participant reported what he had learned from both the content and the process of the course. We will first show the learning patterns of the first three teachers, and then that of the other participant.

The three teachers reported having acquired new knowledge (for example about the principles of adult learning and new methods of providing feedback) and having become more aware of being a role model for their students. On the basis of the interviews two types of diagrams could be drawn: one in which there

was a relation (reflection arrow and enactment arrow) between the External and the Personal domains (Figure 5-4), and one in which the Domain of practice was also included (Figure 5-5). We will discuss these diagrams in detail, using one of the teachers as an example.

James (Figure 5-4) reported that he had learned from the Basic Course (entry point: External domain) that there was a theoretical background on what is effective in medical education (e.g., adult learning), which changed his ideas about the phenomenon (Arrow 1). This change in his own thinking made him explain the theory to his colleagues (Arrow 2, to general ED). After he had informed his colleagues about his changed ideas, he reflected:

> We all have to realize that we have to change something in the normal daily practice, in the normal way of working. This takes time and needs motivation; it does not come of its own accord.
> (Arrow 3)

Edward (Figure 5-5) reported that from the presentations in the Basic Course (entry point: External domain) he had gained new knowledge about the process of learning and the reforms in medical education. As a consequence, he had also become more aware of his status (Arrow 1). On the basis of what he had learned, he subsequently implemented a structured way of supervising students (Arrow 2). He reported that in the past he had structured the supervision for "difficult students", but that he had now extended this to all his students. He reflected on this new way of teaching:

> I think it is good: explicating is good, so that beforehand you are aware of what you are going to do. (Arrow 3)

A more complex diagram was drawn for Simon (Figure 5-6). Unlike the other teachers, he reported having learned not only from the content of the course, but also from the various activities (process) in this course. Simon (Figure 5-6) says that from the presentations, assignments, and exchange of experiences in the basic course (entry point: External domain) he had learned that he should become more aware of how to provide feedback to students (Arrow 1). He also learned to fill in the feedback form in a more structured way, and focus more on specific parts of the form during observations. He reported having tested the new way of using the feedback form (Arrow 2), and noticed differences:

> (…) In the sense that you [Simon] more often have the idea that it makes sense, this is structured so that you also document this well, this form.
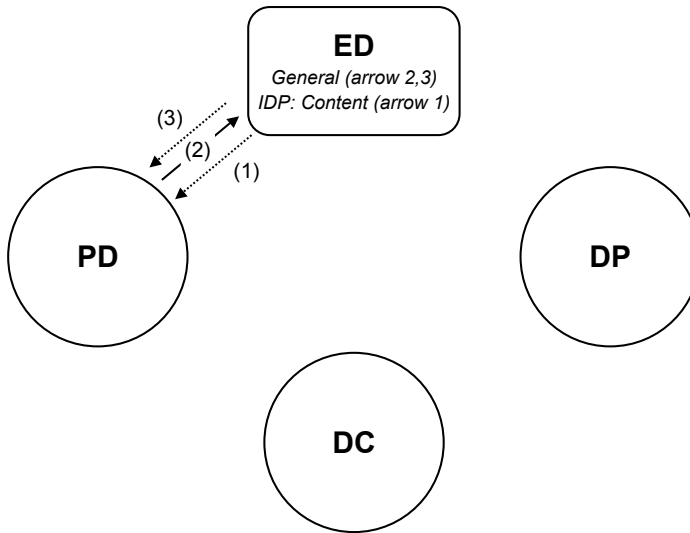> (Arrow 3)

Figure 5-4. Basic Course: Reported learning in two domains (James)

At the same time he had been practicing a new type of situation with a student, and after feedback from Simon the student practiced it again several times (Arrow 3).[7] He said that they both found this a very useful exercise. He reported being more aware now of potential learning situations. (Arrow 4).

So, the Basic Course resulted in various different patterns: one in which the teacher explained his knowledge and skills to his colleagues, one in which the knowledge was also used to change a teacher's behavior in everyday practice, and one that was more complex, including the Domain of consequence. This complex pattern was based on both content (theory) and process (practice) of the Basic Course. The ending point of all diagrams was in the Personal domain.

5.3.2 Video vignettes session

In this session theory about feedback was provided, and three video vignettes were shown on which to practice the use of a specific feedback form. These vignettes showed (real) students during their interaction with a patient. After every observation a discussion took place about the various scores and opinions of the participants.

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7   In line with Wongsopawiro et al. (2009) we included the option to draw two arrows that refer to the same moment
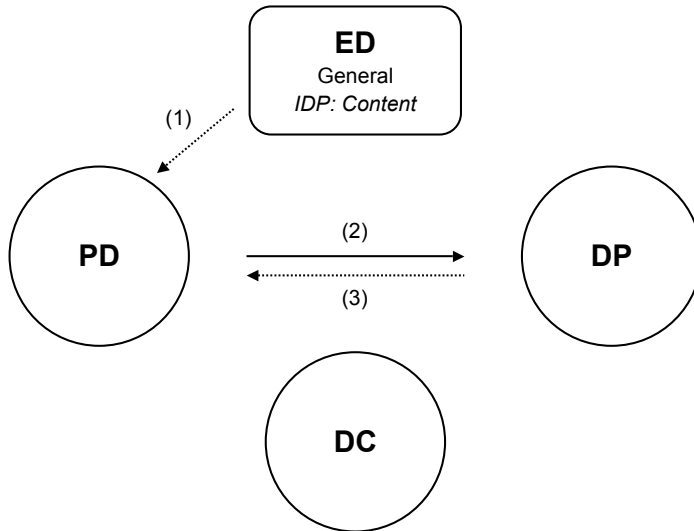
Figure 5-5. Basic Course: Reported learning in three domains (Edward)

The diagrams for these sessions displayed a mixed pattern: for two participants simple diagrams could be drawn in which two or three domains were included (Figure 5-7), and two participants required more complex diagrams, which also included the Domain of consequence (Figure 5-8).

Figure 5-7 (Simon) shows a simple diagram, in which the teacher has changed his daily practice. Simon reported having learned from practicing with the video vignettes (entry point: External domain) about ways to improve his feedback, by giving more positive feedback and adding more comments on the feedback form (Arrow 1). He reported that he now told patients more explicitly that he was present as an observer to provide feedback to the student, and that the student would be the one attending to the patient (Arrow 2).

Figure 5-8 (Edward) shows a complex pattern in which all domains are included. Edward mentioned that he had learned new things in the session in which video vignettes were used to practice feedback skills (entry point: External domain), especially the fact that participants could score the feedback form in different ways. He also reported having learned how to fine-tune his feedback (Arrow 1). His concern about the feedback form was that students could view filling in the feedback forms as an obligation (Arrow 2). He said:
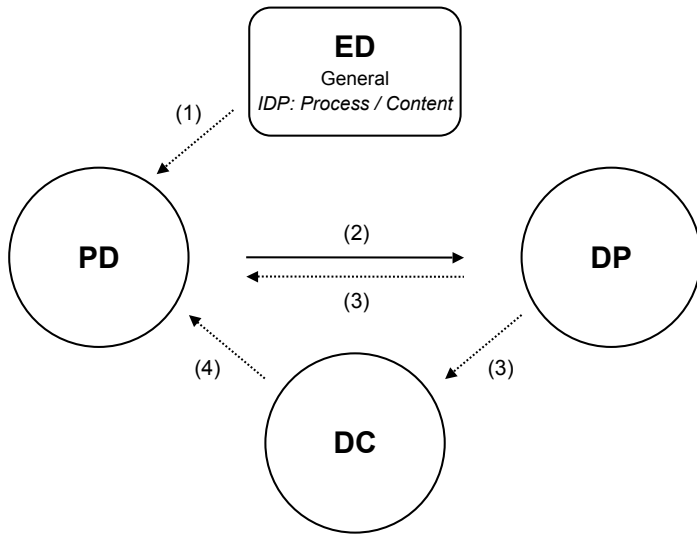
Figure 5-6. Basic Course: Reported learning in all domains (Simon)

> It [i.e., the feedback form] is a means, well, it should not be more than a means.

He saw it as his task to make sure that the feedback forms were used in such a way that studentes were not just filling in numerous forms, but also receiving valuable feedback (Arrow 3). He thought that the feedback forms were important for improving his teaching. He also thought that the idea of filling out of the feedback form during observation was not efficient. He said:

> What I really found absurd, really absurd that you have to be present in a consultation session of a student. I think you can arrange [to observe a student] more cleverly than by using an expensive staff member. The most expensive staff member should not be placed on a chair, doing, well let's not say nothing, but less efficient work.

He proposed the idea of transparent walls so that consulting rooms could be seen, in order to observe students indirectly (Arrow 4).

The session in which video vignettes were used to practice feedback showed a mixed pattern: two teachers received simple diagrams, and two teachers more complex ones, in which the Domain of consequence was included. The ending points of the various diagrams also differed (Domain of consequence, Domain of practice, and Personal domain).
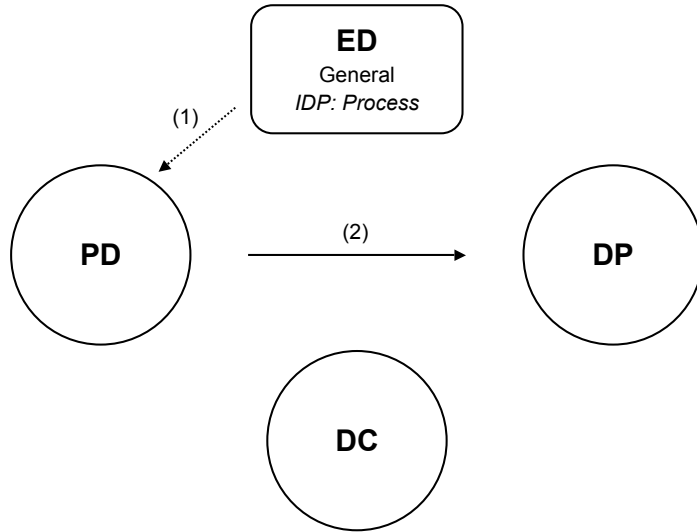
Figure 5-7. Video vignettes: A simple diagram (Simon)

5.3.3 Session on 360° feedback

In the session about 360° feedback the concept of feedback from various sources was introduced. Also, as a preparation to this session, participants asked their students to provide them with feedback about their functioning in the workplace. The participants reported about the content of the session as well as the feedback from students (process). The resulting diagrams for the content of the session were less complex than those for the process.

The feedback the teachers received from their students led to complex diagrams for all participants, and those patterns also included the Domain of consequence. All diagrams had two or more reflection arrows, and in three out of the four diagrams multiple relations (e.g., arrows 2 and 5 in Figure 5-9) between the various domains were established. James's diagram did not include relations between the domains, as he only reflected on the feedback:

> Yes, I learned from the feedback. Although, of course you always think for yourself: You are right, but but yeah, nobody is perfect, and nobody is the same (…) But I think that you use this feedback subconsciously.
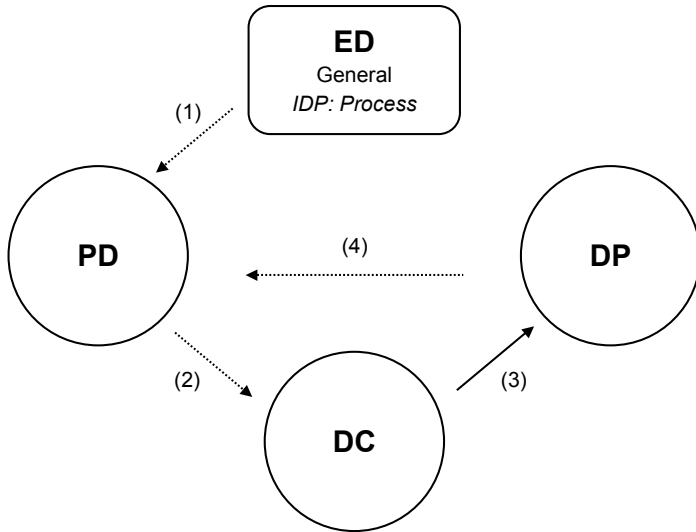
Figure 5-8. Video vignettes: a complex diagram (Edward)

Figure 5-9 shows the diagram for Nigel. Nigel carried out an assignment (entry point: External domain) in which he asked his students (Arrow 1) to provide him with written feedback (Arrow 2). From this feedback he learned that he did not take enough time for his students (Arrow 3). He said:

> But of course it has to do with the fact that as a trainer you are busy with a hundred thousand things (…) But apparently they feel this is necessary, so then you can say, OK, I'll try to take more time the next time, I am aware of that. (Arrow 4)

He reported that he understood the feedback, and he thought that some students liked his way of doing things, but that others would like to have more dialogue. He said:

> So, the moment that you, with all your good intentions, hear the feedback, you think again, "O, yes that was true", and then you can try to take it into account. (Arrow 5)

He reported that if in his everyday practice he is too busy and not available for his students, he now realizes this and takes action (Arrow 6).

Overall, the assignment involving feedback from students resulted in complex learning patterns for all teachers. In these patterns the Domain of consequence was also included. Teachers reported that they had become more
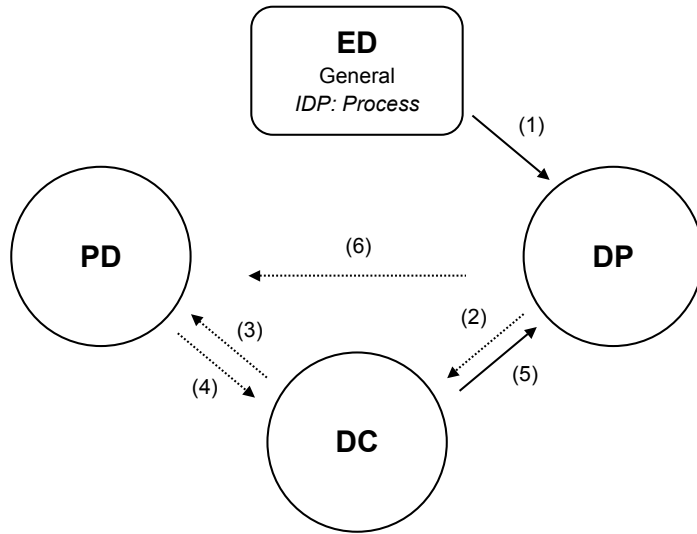
Figure 5-9. 360° feedback: A complex diagram (Nigel)

aware of what students might think of them. This was also shown by the fact that teachers displayed more reflections than enactments.

5.3.4   Peer group discussion

In the last session teachers participated in a peer group discussion. They discussed "challenging situations" involving a student. In the teachers' interview fragments no reports of having learned anything could be found. They only reported their opinion about the session. Edward said, for example:

> Yes, I think that in medicine it is good to pay more attention to this [peer group session], but it is not something very innovative.

> Thus, for this session no learning was reported and no diagrams could be constructed.

5.4   CONCLUSIONS AND DISCUSSION

Our study focused on the following research questions:

> *How can teachers' learning in the adapted instructional development program be visualized? What kind of learning sequences can be recognized in the various components of the program?*

> In this chapter we described how teacher learning in the various sessions of the programs can be visualized by using an adapted Clarke and Hollingsworth

model. This model can be useful in visualizing and describing teachers' learning in instructional development programs. Advantages of this model over other models for teacher learning are that reflections and enactments can represent different types of relations between the various domains, and that the entry points can be situated in all different domains. This would not have been possible with the linear models such as used by Fullan (2001) and Guskey (2002).

The participants reported various learning outcomes: they told us they had acquired new pedagogical knowledge, improved their feedback skills, and became more aware of their role as a teacher (e.g., a role model for students). The increased awareness might be a result of the program, in which teachers were helped to shift the focus in their Domain of consequence from patients to students by discussing the students in various ways: their performance in the video vignettes, feedback from students, and experiences with students (in the peer group discussion). In this way the participants may have started to realize that the students were also an important target in improving the quality of patient care. For the various sessions the teachers reported more reflections than enactments, as reflected in their diagrams. This might be related to the fact that teachers' awareness had increased, but that they still need to be stimulated to translate their learning into actual actions and changes in everyday practice. This awareness could indicate that the participating teachers had become more student-centered, which would be in line with for example the studies by Postareff et al. (2007) and Gibbs and Coffey (2004), who found increased student-centeredness in participants after they attended an instructional development program.

The various sessions showed different patterns in teacher learning. When comparing the diagrams of the various sessions, we found that the session about 360° feedback, which used the feedback from students, contributed most to teachers' learning: all teachers displayed complex patterns within this learning context. Other complex diagrams (many reflections, enactments, and the inclusion of the Domain of consequence) were found in the session on video vignettes (for two teachers) and in the Basic Course session (for one teacher). Comparing the diagrams from the various sessions we see the most complex patterns when the participant reported having learned from both content and process (Basic Course), when students were actually included in the sessions, either by video vignettes or by 360° feedback, and when there was a combination of theory and practice in which teachers could practice including students in their teaching (e.g., filling in a feedback form, collecting feedback from students). The students were included in the sessions in various ways: by discussing them, by using video vignettes in which students were showing their skills, and by using their feedback. It was especially the personal feedback from the students that seemed to be powerful, as it gave the participants much insight into their functioning.

From our study we can conclude that all teachers have learned from the course. The External domain can therefore be seen as a stimulator to enhance teachers' learning, especially when the Domain of consequence is included. This is in line with Wongsopawiro et al. (2009), who also found the External domain to be important in facilitating teachers' learning. We expect that these results will be applicable to other higher education settings as well, because in those settings, as in the situations in which we gathered our data, many teachers have not received any kind of formal training (Visser-Wijnveen, 2009) but do have experience in teaching.

5.4.1   Relevance and suggestions for further research

Exploring teacher change by using the adapted model of Clarke and Hollingsworth (2002) to visualize the learning process of teachers participating in instructional development programs in higher education has seemed to be successful. This model might also be of use for other programs in higher education, to find out which specific sessions facilitate teachers' learning. Instructional development programs that specifically focus on linking theory to practice and that actually include students (e.g., by means of an assignment about 360° feedback) will definitely facilitate teachers' learning.

By providing answers to the research questions we wanted to contribute to the understanding of the learning processes initiated by instructional development programs in higher education, and to understand the different learning processes in the various sessions. We identified the entry points of the various learning processes in order to obtain additional information about the factors that lead to those learning processes. This information is important for the further improvement of instructional development programs. For example, in this study we found that the assignment to ask students for feedback led to complex learning patterns. Teacher educators then would know that this specific part of the program should also be included in future programs. This information would not be available if only the regular evaluation forms were used, because they often only measure satisfaction with the course (Sparks, 1994).

Clarke & Hollingsworth's model of teachers' professional growth (2002) could be used to show the learning processes in the various sessions on the basis of the in-depth interviews. We interviewed the four teachers on only one occasion, but it would be interesting in further research to study teachers in more detail during one or two years. Besides, it would be interesting to compare the diagrams made for this program with diagrams for similar programs taught in other institutions.