Supporting medical teachers' learning : redesigning a program using characteristics of effective instructional development

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Chapter 1

General introduction

1. General Introduction

1.1 BACKGROUND OF THE STUDY

> We all have to realize that we have to change something in the normal daily routine, in the normal way of working. This takes time and you need to be motivated; it does not happen of its own accord. (James, this thesis)

> What I really found absurd, really absurd that you have to be present at a consultation session of a student. I think you can arrange [to observe a medical 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. (Edward)

Medical specialists are busy; they have to take care of their patients, carry out their research, and on top of that they are the ones who teach students who are to become medical specialists. As specialists are busy in their own clinical practice, the time available for teaching is limited, which makes effective teaching a challenge (Prideaux et al., 2000). As other teachers in an academic setting, medical teachers have a high degree of autonomy in the way they teach, and they are busy doing research (Visser-Wijnveen, 2009), leaving teaching their second (or even third) priority. What is more, the status of teaching is perceived as low by many teachers (Palmer & Collins, 2006; Zibrowski, Weston, & Goldszmidt, 2008). The majority of these clinical teachers are experts in *what* to teach, and they have received a thorough training in medical knowledge and skills, but they are no experts in *how* to teach, because they have received little or no training in teaching (MacDougall & Drummond, 2005; Ramani & Leinster, 2008). Furthermore, during their work as supervisors they are more focused on the patients than on their students.

Medical teachers have many roles. Harden and Crosby (2000) identified six groups of medical teacher roles, on the basis of a literature review and the diaries kept by twelve medical teachers over a period of three months. These six roles are: (a) information provider (lecturer, clinical/practical teacher), (b) role model (on-the-job role model, teaching role model), (c) facilitator (mentor, learner facilitator), (d) assessor (student assessor, curriculum evaluator, (e)

planner (curriculum planner, course organizer), and (f) resource developer (study guide producer, resource material creator). Clinical teachers often play many roles simultaneously (Ramani, 2006): on top of the educational roles just listed they are also researchers and doctors.

We know that good teaching in education is important, because it has a positive effect on student's results (e.g., Floden, 2001; Hattie, 2009; Prebble et al., 2004; Wenglinsky, 2002). Therefore, we are interested in finding out how medical teachers can be stimulated to develop their competencies in the various teacher roles.

Teachers can be assisted in improving the quality of their teaching through instructional development programs, which can for instance take the form of workshops, seminars, and long trajectories (Prebble et al., 2004). These instructional development programs can be used to help medical specialists to be successful in their tasks as teachers (Harden & Crosby, 2000; Wilkerson & Irby, 1998) by acquiring new knowledge, skills, and attitudes (Skeff, Stratos, & Mount, 2007), and to prepare their students for the complex and stressful situations inherent in providing healthcare (Steinert et al., 2006).

In this chapter we will first give an overview of the literature on instructional development. In Section 1.2 we will describe what is known about instructional development programs in higher education, what different types of programs can be distinguished, and what the impact of instructional development programs is. In Section 1.3 we discuss what can be learned from the literature about how to design instructional development programs more effectively. We conclude the overview of the literature in Section 1.4 by identifying ways to study teachers' learning in such a program. Section 1.5 sketches a picture of medical education in the Netherlands in general, and in the Leiden University Medical Center in particular. The last section (1.6) gives an overview of this thesis, including the research questions and a short outline of the various chapters.

1.2 INSTRUCTIONAL DEVELOPMENT PROGRAMS

As mentioned above, medical faculty can be supported in their various teacher roles by means of an instructional development program. In line with Stes, Min-Leliveld, Gijbels and Van Petegem (2010) we have chosen the term "instructional development" to refer to programs that enhance teachers' competencies. In this section we will first define the term "instructional development", then go on to list different instructional development programs, and finally we will describe what is known about the effects of those programs in higher education.

1.2.1 Definition of instructional development

In the past, terminology regarding instructional development was often used inconsistently (Freeth, Hammick, Koppel, Reeves, & Barr, 2003; Taylor & Rege Colet, 2010). Taylor and Rege Colet (2010) developed a classification of different types of instructional development activities in which instructional development was subsumed under the overall term "educational development". "Educational development" refers to the whole range of (partly overlapping) terms for development activities: instructional, curriculum, organizational, professional, academic, staff, and faculty development. According to Taylor and Rege Colet (2010), instructional development can be described as any initiative [intended for teachers] that is planned specifically to enhance course design, with the ultimate aim to support student learning. The term "instructional development" excludes curriculum development, which focuses on the development and improvement of study programs as a whole. It also excludes organizational development, which focuses on creating institutional policies and structures that foster an effective learning and teaching environment (Stes, Min-Leliveld et al., 2010). According to Taylor and Rege Colet (2010) professional development, faculty development, and academic development are related to instructional development, but each of these concepts has its own specific focus. Whereas instructional development explicitly aims to help medical staff to grow in their roles as teachers, professional development concerns the whole career development, and as such is not limited to teaching, but also refers to research (Centra, 1989). The terms "academic development" and "faculty development" have the same focus as "professional development", but the first two also cover the aspect of organizational development. In the Australian, Asian, and British contexts the term "academic development" is used, while in North America "faculty development" and "staff development" are common (Taylor & Rege Colet, 2010). In this thesis we will use the term "instructional development", because we will focus on the development of faculty in their role as teachers. For consistency and clarity we will use the same term in our discussion of the available literature in teachers' development, even though in the publications in question other terms may be used.

1.2.2 Classification of instructional development programs

With respect to education in general, Sparks and Loucks-Horsley (1990) identified five models of instructional development: (a) the individually guided instructional development model, in which teachers plan and pursue activities that they believe will promote their learning, (b) the observation/assessment model, in which teachers are provided with objective data and feedback regarding their

classroom performances, (c) the development/improvement process model, in which teachers engage in developing curricula or a school-improvement program in order to solve general or particular problems, (d) the training model, in which teachers acquire knowledge and skills through appropriate individual or group instruction, and which comes closest to what teacher educators have in mind when thinking of instructional development; and (e) the inquiry model, in which teachers identify an area of instructional interest, collect data, and adapt their instruction on the basis of those data. Most of these models are based on research findings related to primary and secondary school teachers (also referred to as K-12 education), but we expect to find similar models in instructional development programs for teachers in higher education, including medical education.

Teaching in higher education is in various ways different from teaching in primary and secondary education (Menges & Austin, 2001): (a) higher education has different purposes, (b) teachers in higher education are primarily oriented towards disciplines rather than the profession of teaching, (c) teachers are specifically trained, not as teachers but rather as disciplinary specialists, (d) teachers in higher education have different roles and responsibilities, and (e) students in higher education are of a different age, experience, and development.

Various reviews on instructional development are available that focus on instructional development in higher education (e.g., Levison-Rose & Menges, 1981; McAlpine, 2003; Prebble et al., 2004; Steinert et al., 2006; Stes, Min-Leliveld et al. 2010; Weimer & Lenze, 1997). These reviews use various classifications, such as type of program (e.g., short training course, long trajectory), type of intervention, and duration of the program. This is different from the five models by Sparks and Loucks-Horsley (1990) outlined above, which classify the programs by the different programs and activities rather than length. All six higher education reviews include all types of instructional development programs except for the review by McAlpine (2003), which focuses on workshops only. Steinert et al. (2006) distinguish between the various instructional development programs on the basis of duration. They mainly took into account studies describing the effects of the more classical kind of face-to-face instructional interventions. The studies that they classified as “other” discussed the effects of instructional interventions such as grants, student feedback, consultation, or on-site training. Stes, Min-Leliveld et al. (2010) distinguish between (1) collective (e.g., short) versus individual (one-to-one support) courses, and (2) traditional (e.g., workshop) versus alternative (e.g., feedback from students) programs. Prebble et al. (2004) used the categories distinguished by Levinson-Rose and Menges (1981) and Weimer and Lenze (1997), and adapted those to also accommodate developments in the field (e.g., learning communities). This resulted in the following five groups:

(a) short training courses, such as workshops, seminars and training programs that take place apart from the day-to-day work of a teacher, (b) on-site training, where an activity is meant to meet the objectives of a specific academic group (e.g., learning communities), (c) consulting, peer assessment, and mentoring, (d) student assessment of teaching, and (e) intensive instructional development.

In this thesis we will use the classification of Prebble et al. (2004) because it is the most comprehensive. It is in line with the classification by Sparks and Loucks-Horsley (1990) mentioned above, but the only exception is that the inquiry model they distinguish is slightly more difficult to integrate into the Prebble et al. (2004) model. In the inquiry model teachers identify a "problem", collect data, and make changes in their teaching according to the analyses of these data. The inquiry model may be integrated in Prebble et al.'s (2004) last category, called "intensive instructional development".

1.2.3 Effects of instructional development programs

All six reviews of research on instructional development in higher education describe the effects of instructional development programs. Levinson-Rose and Menges (1981) report on 71 studies (from the mid-sixties to 1980) about interventions intended to improve college teaching. The results indicate that 62% of the studies they had rated as a "high quality study design" had a positive effect. Weimer and Lenze (1997) updated Levinson-Rose and Menges's (1981) review, but were unable to replicate these findings.

Prebble et al. (2004) collated all research into the impact of student support services and instructional development programs on student outcomes in higher education. Part of their report consists of an overview of the research evidence for the effects of instructional development programs. They concluded that short training courses tend to have only a limited impact on actual teaching practice, and had best be reserved for the dissemination of institutional policy information or the training of specific techniques. Other forms of instructional development were reported to have more positive effects: on-site training, (peer) consulting, student assessments, and intensive programs. These were described as potentially leading to significant improvements in the quality of teaching and student learning.

McAlpine (2003) addressed the question of how instructional development initiatives in higher education can be evaluated, and reviewed seven studies published between 1983 and 2002 reporting on the impact of workshops on both student learning and the organization in which the students worked. She concluded that it was difficult to measure the impact of instructional development initiatives, especially the impact that goes beyond the level of the individual participants, and that future research should concentrate on the

development of instruments to measure the effect on student learning and/or the institution.

A discipline-specific review was carried out by Steinert et al. (2006). They collated findings from 53 studies on the effects of instructional development interventions in medical education, covering the period 1980-2002. They concluded that literature regarding medical education mainly suggested a high satisfaction on the part of teachers with instructional development initiatives and positive changes in teachers' knowledge, attitudes, skills, and behavior, following participation in an instructional development activity.

The review by Stes, Min-Leliveld et al. (2010) differed from previous reviews because they did not cluster the studies on the basis of type of intervention but according to the impact on different "levels" (e.g., on participating teachers or on student results, see also Section 1.4 below). In a selection of 36 studies they found evidence that instructional development interventions that were extended over time had more behavioral outcomes than one-time events. Instructional development initiatives designed as a course seemed to have fewer behavioral outcomes at the teacher level, but more at the student level than initiatives focusing on, for instance, learning on the job. However, since the number of studies on the impact of one-time events and initiatives in other formats was small, further investigation was recommended by the authors.

The reviews discussed above show differences in the reported effects of instructional development. Levison–Rose and Menges (1981) and Steinert et al. (2006) indicate a positive effect for the majority of interventions, but Weimer and Lenze (1997) point out that results were inconclusive. Prebble et al. (2004) and Stes, Min-Leliveld et al. (2010) indicate that the difference in effect depends on the format of the instructional development activity.

Many studies described in the various reviews focus on the effects of instructional development programs, without paying attention to the specific design of the programs themselves (Pololi & Frankel, 2005; Quirk, DeWitt, Lasser, Huppert, & Hunniwell, 1998; Skeff, Stratos, Bergen, & Regula, 1998). The reviews distinguish between different categories of activities, but do not look into the design characteristics of these activities in detail. It is, therefore, very well possible that the differences in the effectiveness of instructional development programs can be explained by differences in design characteristics of those programs.

1.3 USING KNOWLEDGE DERIVED FROM LITERATURE, TEACHERS, AND TEACHER EDUCATORS TO DESIGN INSTRUCTIONAL DEVELOPMENT PROGRAMS

In order to design effective instructional development programs it is not only the results of the previous evaluation studies, but also the knowledge and conceptions of teachers and teacher educators that should be taken into account, as these influence teaching and learning.

1.3.1 Conceptions of teaching

Teachers' conceptions of teaching have been investigated extensively in higher education (cf. Dunkin & Precians, 1992; Kember & Kwan, 2000; Prosser & Trigwell, 1993; Samuelowicz & Bain, 1992; Van Driel, Verloop, Van Werven, & Dekkers, 1997). According to Kember (1997), in conceptions of teaching two broad orientations can be distinguished : (a) teacher-centered/content-oriented, and (b) student-centered/learning-oriented. The conceptions that teachers have will influence how they will actually teach (Konings, Brand-Gruwel, & Van Merrienboer, 2007). Konings et al. (2007) showed that if teachers viewed teaching as transmitting knowledge they were more likely to use content-centered approaches, and if they saw teaching as facilitative they tended to use learning-centered approaches. Prosser and Trigwell (1993) developed a quantitative instrument, the "Approaches to Teaching Inventory" (ATI), to measure teachers' approaches to teaching. This questionnaire contained sixteen items measuring teachers' intentions and strategies. Kyraikides, Creemers, and Antoniou (2009) showed a relation between teaching approaches and student outcomes, and Prosser and Trigwell (1999) found an empirical relationship between teachers' approaches to teaching and students' approaches to learning. They showed that university teachers who focus on their students and students' learning tend to have students who focus on meaning and understanding in their studies (deep approach to learning) (Baeten, Kyndt, Struyven, & Dochy, 2010), whereas university teachers who focus on themselves and what they are doing have students who focus on reproduction (surface approach to learning). According to Kember and Kwam (2000), fundamental changes in the quality of teaching and learning are unlikely to occur without changes in teachers' conceptions of teaching.

Instructional development programs can be designed in such as way as to change teachers' conceptions and their approaches to teaching. There are some studies in which it was found that instructional development programs did change teachers' approaches to teaching and students' approaches to learning

(Gibbs & Coffey, 2004; Ho, Watkins, & Kelly, 2001; Postareff, Lindblom-Ylanne, & Nevgi, 2007; Stes, 2008; Stes, Coertjens, & Van Petegem, 2010).

1.3.2 Conceptions of teacher learning

Cochran-Smith and Lytle (1999) identified various concepts of teacher learning. The two most relevant to our research were "knowledge-for-practice" and "knowledge-in-practice". Each conception has its own specific assumptions and implications. The knowledge-for–practice concept refers to formal knowledge generated by researchers, which can be used to build theory for teachers to use in order to improve teaching practice. Teachers are consumers, not generators of this type of knowledge. Many reforms implicitly use this conception of knowledge, directing efforts at teachers' learning of new content, strategies, or skills, often through direct instruction (Finley, 2000).

The second concept is knowledge-in-practice or "practical knowledge". Practical knowledge develops through experience. Teachers are regarded as generators of knowledge: They develop new ideas, construct meaning, and take action based on the newly developed knowledge. Reforms using this conception hinge on teacher reflection on practice, and use strategies such as mentoring, coaching, study groups, and self-study (Finley, 2000). Professionals have developed this practical knowledge (knowledge-in-practice) as a result of their experience as trainers and their reflections on this experience (Fenstermacher, 1994). Meijer, Verloop, and Beijaard (1999) defined this type of knowledge as the knowledge and beliefs (about teachers' teaching practice) that underlie teachers' actions. According to them, this knowledge is personal, related to context and content, often tacit, and based on reflection on experience; it can include knowledge about subject matter, about the learners, and about how those learners learn and understand (Meijer et al., 1999).

Integration of knowledge from the literature (knowledge-for-practice) with teachers' knowledge (knowledge-in-practice) could lead to a more profound knowledge base of teaching (Verloop, Van Driel, & Meijer, 2001). In their roles as trainers teacher educators have practical knowledge. In our research we have focused on the concepts of knowledge-for-practice and knowledge-in-practice in order to design an effective instructional development program.

1.3.3 Using knowledge-for-practice to identify characteristics of effective instructional development

Relevant knowledge-for-practice on how to make the design of instructional development more effective is available (e.g., Fishman, Marx, Best, & Tal, 2003; Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 2000; Hawley & Valli, 1999; Loucks-Horsley, Stiles, Hewson, Love, & Mundry, 2003; Timberley, Wilson,

Barrar, & Fung, 2007). Garet et al. (2001) indicated that in order to improve instructional development programs the focus should be on a relatively long duration, as they found length to be more important than the format of the course. They also indicated that the content of the course, the possibility of active learning, and integration into teachers' daily practice were important. Hawley and Valli (1999) described their consensus model by means of eight characteristics essential to effective professional development. These characteristics were derived from the five factors (knowledge base, strategic processing, motivation/ affect, development, and content) identified by Alexander and Murphy (1998). Hawley and Valli (1999), for example, indicated that teachers should be involved, that instructional development should be ongoing, and that there should be opportunities to develop a theoretical understanding of new knowledge and skills.

In the medical educational literature Steinert et al. (2006) identified nine characteristics for effective instructional development programs. For five of these they found strong evidence that they contributed to the effectiveness of instructional development programs; the remaining four showed only indications of effectiveness. The five key characteristics were (a) the use of experiential learning, (b) providing feedback, (c) effective peer and colleague relationships, (d) interventions closely following the principles of teaching, and (e) the use of multiple instructional methods for teacher learning. The other four characteristics related to (f) the function of context, (g) the nature of participation, (h) the value of longer programs, and (i) the use of alternative practices. Steinert et al. (2006) indicated that many of their findings were similar to what had been found in reviews of research on the training of university teachers in general. They advised researchers investigating instructional development in medical education to learn from the literature about instructional development outside medical education, incorporate the findings and methodologies from this literature into new research on the context of medical education, and to collaborate with the researchers in the field of higher education in general.

Guskey's work (2003) provides a good source of information, because he reviewed studies of the characteristics of effective instructional development in the more general field of educational research (e.g., primary and secondary education). He identified 21 characteristics of effective instructional development programs. Examples of these characteristics include follow-up, promoting reflection, and being based on the teachers' needs identified.

1.3.4 Using practical knowledge about the medical context

Knowledge-for-practice is primarily known to and developed by researchers (Fenstermacher, 1994), which means that it is often developed without taking context or specific conditions into account. Integrating the knowledge and experience of stakeholders (such as teacher educators and teachers attending an instructional development program) with this knowledge-for-practice may be important for optimizing instructional development. This central role of teacher educators and their knowledge (and beliefs) has been recognized only relatively recently (Calderhead, 1996). Teacher educators have to be involved in the dialogue taking place within the teaching context about the insights developed there, and how these insights relate to other sources of information such as the literature (Verloop et al., 2001).

As mentioned in Section 1.1 above, teachers in medical education have a high degree of autonomy, are very busy with patient care and research, and although they are experts in what they teach they are no experts in how to teach. Designing instructional development programs specifically for this context is important in order to provide medical teachers with programs that are both appealing and effective in the medical context. Taking teachers' preferences and expectations into consideration when designing instructional development programs has been found to increase teachers' satisfaction (Nir & Bogler, 2008). The practical knowledge of teacher educators can help to construct those programs, because of their expertise about medical teachers' learning and how to facilitate it.

1.4 UNDERSTANDING TEACHERS' LEARNING

Evaluating instructional development programs is mostly done by studying the effects of those programs (e.g., Guskey, 2000; Kirkpatrick, 1994). However, Clarke and Hollingsworth (2002) state that if one wants to promote teachers' instructional development it is also necessary to understand the underlying learning processes and the conditions that support teachers' learning. Knowing what teachers learn and what learning processes take place in a specific program makes it possible to target for further improvement specifically those areas where learning is sub-optimal. Models that visualize teachers' learning can identify such areas and are therefore considered by the authors to be helpful in research.

Various models are available for the study of teacher learning. Some focus solely on learning outcomes, whereas others also take the learning processes into account. A model that specifically focuses on the learning outcomes is Kirkpatrick's (1994). His wording was slightly adapted by Steinert et al. (2006) to fit the medical context. The model consists of four levels that

can be used to describe the effectiveness of a program: (a) Reaction, which can be described as participants' appreciation and evaluations of the learning experience, (b) Learning, which consists of changes in participants' attitudes, knowledge, or skills, (c) Behavior, which describes changes in the participants' behavior, and (d) Results, which is concerned with changes in the participants' students, system, or organisation. It is assumed that attaining positive effects on all these levels is a proof of the effectiveness of a given course. In Kirkpatrick's model the Learning level does not include behavioral changes. In this thesis we define learning as a change in cognition (e.g., knowledge and beliefs) as well as a change in behavior (Zwart, Wubbels, Bergen, & Bolhuis, 2007), which makes it broader than the Learning level as defined by Kirkpatrick (1994).

In the literature several models can be found that take into account learning outcomes as well as the learning process. Clarke and Hollingsworth (2002) note that the implicit model underlying many instructional development programs focuses on improved outcomes for students. This implicit linear model (containing four domains) showing teachers' development can be displayed as follows (Figure 1-1):

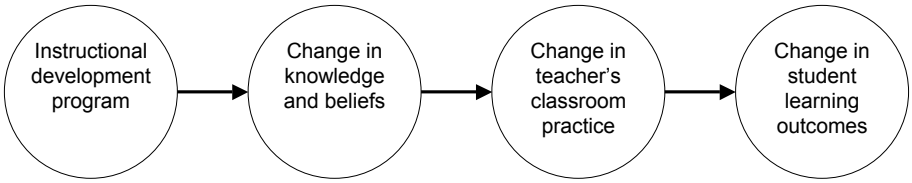

Figure 1-1. Implicit linear model of instructional development programs (Clarke & Hollingsworth, 2002)

Desimone (2009) used this model as a basis and added five core features for instructional development programs: content focus, active learning, coherence, duration, and collective participation. This extended model also included context, such as teacher and student characteristics, curriculum, school leadership, and policy environment. Guskey (1985) developed another model (Figure 1-2), in which changes in beliefs and attitudes take place only after changes in students' learning outcomes have become evident to the teachers.

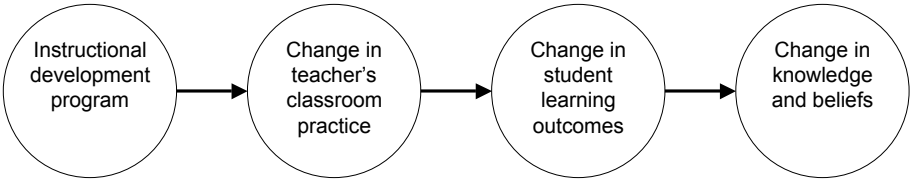

Figure 1-2. Linear instructional development model as proposed by Guskey (1985)

Clarke and Hollingsworth (2002) assume that neither the model in Figure 1-1 nor that in Figure 1-2 depict the reality of teachers' instructional development, because the cyclic character of the teacher learning process was not taken into account; teachers' learning does not have to start from an instructional development program, but can also start from other parts in the model. For example, a teacher might notice that students become very motivated if they are encouraged to discuss case studies among themselves. The teacher might then start practicing with ways to facilitate this discussion by means of a group session. If this new format leads to more motivated students, the teacher might decide to add this format to the curriculum. In this case teacher's learning started with a change in students' learning outcomes. The Clarke and Hollingsworth model describes domains similar, but not identical, to Guskey's (1986), but manages better to incorporate the complexity of teachers' professional growth. The model is non-linear, and could be used as both an analytical and a predictive tool. It could also provide a theoretical background, for example by using the various domains in the design of instructional development (see Chapter 5 for more information). This model is used by a number of authors as an analytical tool to study teachers' learning in secondary schools (Justi & Van Driel, 2006; Wongsopawiro, Zwart & Van Driel, 2009; Zwart et al., 2007).

1.5 OVERVIEW OF THE THESIS

In this thesis we present a study of instructional development programs in medical education. In the last section of this chapter we will describe how medical education in the Netherlands is organized; here, we present our research question:

> *What characteristics of effective instructional development are appealing to medical teachers and relevant for the design of instructional development programs for medical teachers, and what do these teachers learn from a specific program that takes into account those characteristics?*

To answer this question we carried out a research project that consisted of two parts, shown schematically in Figure 1-3. In the first study, characteristics of effective instructional development programs in the medical context were identified. The results of this first study are reported in Chapters 2 and 3. In the second study a successful instructional development program was analyzed and adapted, and an analysis was made of teachers' learning in this adapted program. The results of this second study are presented in Chapters 4 and 5. In Sections 1.5.1 and 1.5.2 the various parts of the study are described in more detail.

1.5.1 First study

Chapters 2 and 3 are about the first study. As a starting point we used 35 effectiveness characteristics derived from the reviews by Steinert et al. (2006) and Guskey (2003) (knowledge-for-practice). We identified which of those 35 effectiveness characteristics were most important in the medical context, by identifying the characteristics that were most appealing to teachers and the most relevant according to teacher educators.

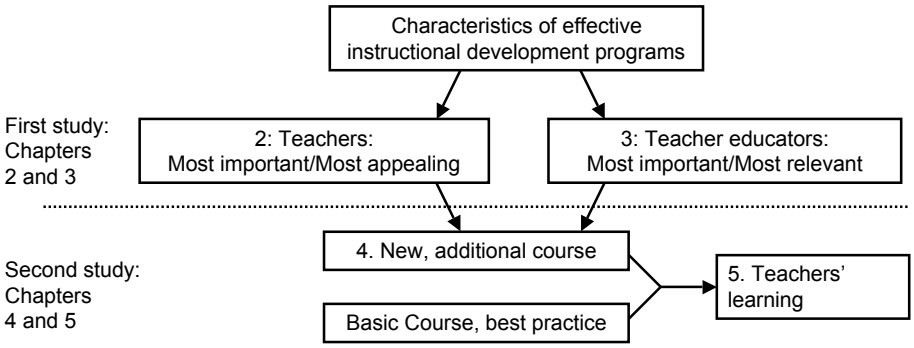

Figure 1-3. Overview of the thesis

The first research question guiding this study (discussed in Chapter 2) was:

> *Which characteristics of effective instructional development are most appealing to medical teachers when they consider participating in instructional development, and what are the factors underlying these preferences?*[1]

1 Articles on the studies described in these chapters have been submitted to international scientific journals; there may be some textual overlap between chapters.

We used an on-line questionnaire that we administered to medical teachers in one Dutch medical school, in order to gather data about their teachers' preferences when considering participation in instructional development programs (knowledge about the target group). The data were analyzed using descriptive statistics, factor analysis, and analyses of variance.

In the second part of the first study (described in Chapter 3) the following research question was explored:

> *Which characteristics of effective instructional development do teacher educators consider most relevant when designing actual instructional development programs in medical schools?*

To answer this question we conducted interviews with teacher educators from all eight medical schools in the Netherlands. These teacher educators were experts in designing instructional development programs for medical teachers. Their practical knowledge about such programs, and their experience with best practices in medical education were useful to identify which of the 35 effectiveness characteristics they considered most relevant for teachers' learning in the medical context.

1.5.2 Second study

In Chapters 4 and 5 we discuss the second study, in which the sixteen characteristics derived from the first study were used to analyze an already successful course. We subsequently redesigned a successful course.

In Chapter 4 we answer the following two research questions:

> *Can characteristics of effective instructional development be used as a framework by which to understand why a specific short course is successful? What do participants report to have learned from an additional course that included all characteristics selected?*

The sixteen characteristics identified in Chapters 2 and 3 were used as a framework to analyse "Train the Trainers", an existing instructional development course that has already proven successful in medical education. In this thesis this course is referred to as the "Basic Course". The framework of the sixteen characteristics was subsequently used to design a new, additional course, referred to as the "Plus Course". The effect of this Plus Course was studied by asking participants about what they learned in terms of Kirkpatrick's four levels (1994).

The research questions discussed in Chapter 5 are:

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 report on the in-depth interviews we conducted with four of the participants in the adapted course. They were asked about their learning in both the Basic Course and the Plus Course, so that it was possible to study teachers' learning in the various parts of the program. Their learning was visualized using the interconnected model of teachers' professional growth (IMTG model, see Section 5.1.4) developed by Clarke and Hollingsworth (2002). Diagrams were drawn for teachers' learning in the different parts of the program.

Earlier versions of the reports presented in Chapters 2 and 3 were written for medical educational journals. Earlier versions of Chapters 4 and 5 were written as papers for journals on higher education. Because of differences between these fields those chapters differ slightly as to format and style of writing.

In Chapter 6 the main findings and conclusions of the previous chapters are combined and summarized in order to answer the overall research question of this thesis. In this final chapter we also discuss the limitations of the study. The thesis concludes with a discussion of the implications of the findings, suggestions for future research, and implications for teachers, teacher educators, and researchers concerning (the design of) instructional development programs.

1.6 CONTEXT

In this thesis we focus on instructional development for medical teachers in the Netherlands. The data used to answer the research questions were gathered in the medical school of the Leiden University Medical Center (LUMC). The study described in Chapter 3 also included data gathered in the other medical schools. In this section we will first present an overview of medical education in the Netherlands, and then describe the medical school at the Leiden University Medical Center.

1.6.1 Medical education in the Netherlands

The Netherlands has a rich history in medical education, and nowadays its educational practice can be called "modern" by international standards (Ten Cate, 2007). Figure 1-4 gives an overview of the organization of the medical education programs in the Netherlands. Medical students attend six years of undergraduate medical education in one of the eight medical schools in the Netherlands (VUMC, Amsterdam; AMC-Uva, Amsterdam; LUMC, Leiden; Erasmus MC, Rotterdam;

UMCU, Utrecht; AZM, Maastricht; UMCG, Groningen; and UMC St Radboud, Nijmegen). After graduation the students can work as "residents-not-in-training". To become a "resident-in-training" in one of the 27 disciplines they have to apply for a place in postgraduate medical education. Postgraduate medical education takes between three and six years, depending on the specialism, after which the students obtain their license as a specialist. A resident-in-training works under the supervision of an established specialist. Recently, postgraduate medical education was redesigned, introducing a nationwide competency-based training and mandatory in-training assessments, and portfolios as tools for assessment and learning for residents (Ten Cate, 2007).

The competences the students are supposed to acquire are based on the CanMEDS model (CanMEDS, 2000). The CanMEDS framework is organized around seven roles: (a) medical expert (central role), (b) communicator, (c) collaborator, (d) health advocate, (e) manager, (f) scholar, and (g) professional. These roles indicate the essential competences required of a physician. The model has been designed to improve patient care, and defines the competences needed for medical education and practice.

With the newly introduced competency-based curriculum, portfolios have been introduced as a new way to assist medical students in their learning. Portfolios are tools to be used in three ways: (a) for assessment, (b) to stimulate learning from experience, and (c) to plan learning (Van Tartwijk & Driessen, 2009).

1.6.2 The Leiden University Medical Center (LUMC) in the Netherlands

In this thesis we study different groups within medical staff: in Chapter 2 we study the preferences of medical teachers in the Leiden University Medical Center (LUMC), in Chapter 3 we interview medical experts from all eight medical schools in the Netherlands, and in Chapters 4 and 5 we focus on specialists in the LUMC and affiliated hospitals. As most chapters in this thesis concentrate on faculty at the LUMC, we will in this section describe the LUMC in more detail.

The LUMC is a medical school with more than 7,000 staff members. According to its mission statement (LUMC, 2010) it offers both quality and quantity in the full range of clinical medicine: patient care, student education, and the training of medical specialists. It also has an international top position in research. Concerning education the LUMC wants to train patient-oriented physicians and researchers who have a critical, scientific attitude and professional curiosity. Physicians must also have a thorough understanding of their profession and take pleasure in learning. They should be trained to develop good interpersonal skills, which will enable them to communicate with patients professionally and conscientiously. LUMC trains specialists in 27 disciplines.

LUMC wants its specialists to have a critical attitude towards everything that is not "evidence based". Above all, they are expected to be critical of their own actions and to have acquired good communication skills. Specialists trained at LUMC should have considerable experience in carrying out scientific research and publishing the results, so that they can identify and contribute to promising developments in the field of medicine (LUMC, 2010). Various reports are available on the quality of medical education in the LUMC (LUMC, 2003a, 2003b; QANU, 2004, 2008). In 1997 the accreditation review committee published a critical report on the quality of the curriculum, which was described as "traditional in design and content". According to this report the curriculum might not lead to sufficient stimulation of self-regulated learning and "problem-oriented" thinking in students. It also stated that instruction focused too much on lectures, and that assessment procedures were not transparent enough.

The recommendations of the visitation committee led to extensive innovations in the curriculum (LUMC, 2003b). Within this improved curriculum the medical school wanted to make greater use of casuistry (i.e., the analysis of specific cases and precedents) as the basis for student learning, teach in smaller groups (e.g., clinical presentation), make more frequent use of teaching strategies that stimulate more autonomous student learning, and adopt assessment procedures that clearly fit these new teaching activities. In 2007-2008 the LUMC also switched to a Bachelor/Master degree system (QANU, 2008).

For the faculty of the LUMC medical school the implementation of these innovations was not an easy task. For most of the staff these tasks were new, requiring new knowledge and skills. As the number of students also increased (it doubled between 1997 and 2003), it became even more challenging for teachers to find sufficient time for teaching. As a means to support faculty in their roles as teachers, a new policy on the instructional development of teachers was implemented (LUMC, 2007). In this policy new staff members were expected to obtain a teaching qualification, and current staff were asked to fill in a self-evaluation form in order to assess the quality of their teaching skills. If necessary, staff members formulated a personal plan together with their manager to improve teaching skills. In this plan four levels of teaching competency were formulated:

1. Teaching small working groups.
2. Teaching both small working groups and larger groups in a lecture, and evaluating the training/instruction.
3. Teaching small and large groups (1 and 2), and developing, organizing and coordinating training. In this role the teachers should also be able to interpret the results from the evaluation of training and research training themselves.

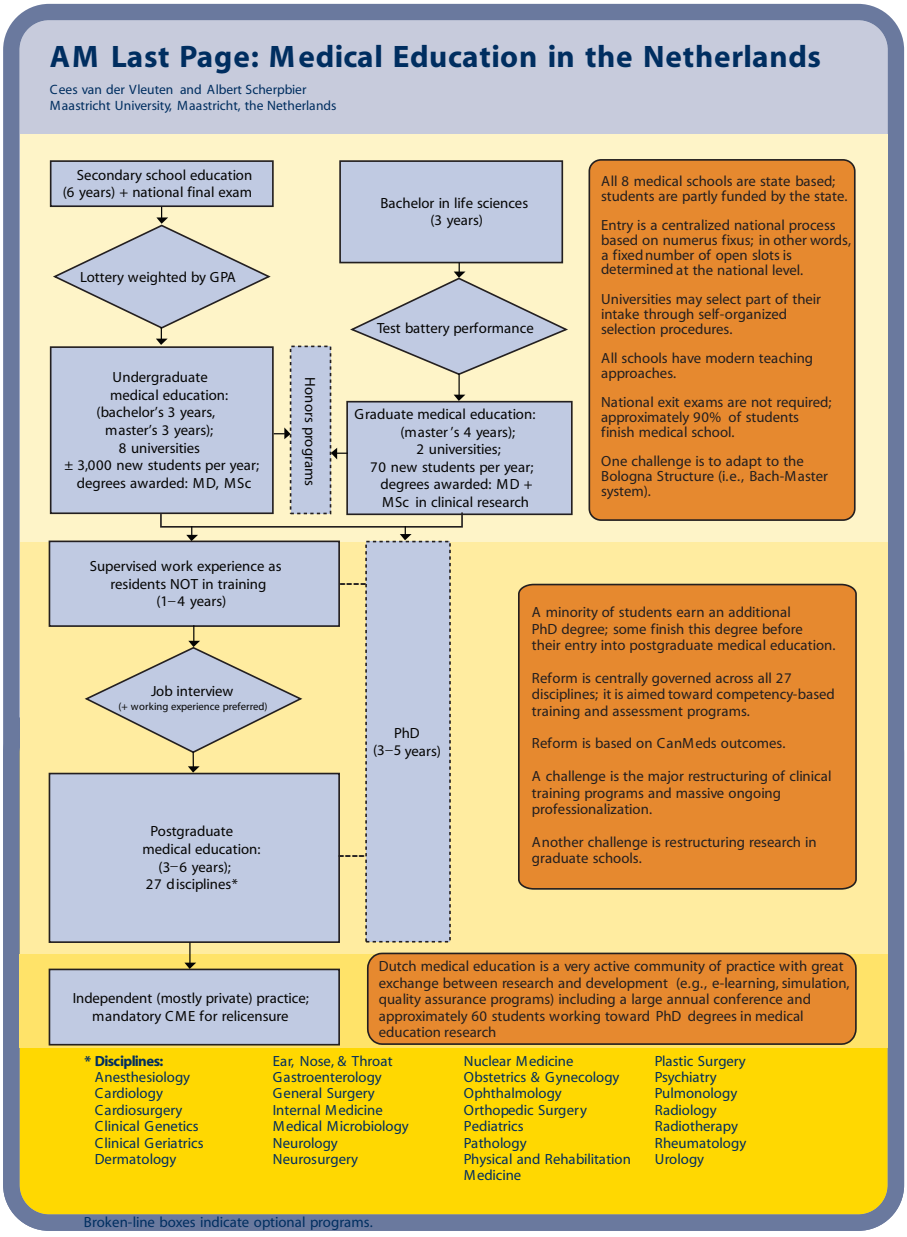

Figure 1-4. Overview of the medical education program in the Netherlands (Van der Vleuten & Scherpbier, 2009); printed by permission of Wolters Kluwer Health

4. The same as 3, but teachers will also be responsible for managing the training, curriculum development, and research on training.

For the various roles different qualification requirements were formulated, and arrangements were made to facilitate medical faculty in their roles and careers as teachers (LUMC, 2006).