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

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Chapter 2

Characteristics of effective instructional development:
teachers' preferences

2. Characteristics of effective instructional development: teachers' preferences²

Literature reviews are available in which characteristics of effective instructional development are identified. Little is known about how important these characteristics are for medical teachers when they consider participating in instructional development. The aim of this research project was to identify the importance for medical teachers of those characteristics. An on-line questionnaire was developed in order to gather data about medical teachers' preferences, based on 35 characteristics of effective instructional development that had been identified in the literature. The data were analyzed using descriptive statistics, factor analysis, and analyses of variance. Although almost all characteristics were to some extent appealing to medical teachers when they considered participating in instructional development, there were marked differences. Characteristics that were relatively more important were, for instance, a focus on the improvement of teaching competencies and attention to the context in which the teachers work. Three factors were identified underlying the teachers' preferences: (a) facilitated collaboration in educational improvement, (b) individual development as a teacher, and (c) evidence-based education.

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2.1 INTRODUCTION

Mere content expertise no longer suffices in medical teaching (Steinert et al., 2009). New knowledge and skills in teaching and learning are necessary to prepare students for the more complex and stressful situations in healthcare (Steinert et al., 2006) and to prepare them for their various roles as teachers (Harden & Crosby, 2000). Also, for medical teachers their teaching duties have expanded beyond the classroom and include teaching small groups, providing instructional materials beyond the syllabus (Ramani, 2006), using case-based, active learning methods, and implementing new forms of assessment (Irby & Wilkerson, 2003). Therefore, instructional development is needed to make it possible for teachers to acquire new knowledge, skills, and attitudes (Skeff et al., 2007), and to encourage them to have a flexible and learner-centered approach to teaching (Ramani, 2006). In medical education, instructional development has become increasingly important (Skeff et al., 2007) and seems to be evolving into a discipline in its own right (McLean, Cilliers, & Van Wyk, 2008).

Along with the growing recognition of the importance of instructional development there is also a growing awareness of its current shortcomings (Guskey & Huberman, 1995), as these programs do not always have the desired impact (Fullan, 2001). Reasons for this are, for example, a lack of attention for teachers' preferences or work contexts (Clarke & Hollingsworth, 2002; Day, 1999; Loucks-Horsley et al., 2003), a separation of practice and theory (e.g., the training does not take cases from actual practice into account) (Curry, Wergin, & Associates, 1993), and format: programs are often designed as a series of short workshops without follow-up (Clark et al., 2004; Garet et al., 2001). The emphasis is mainly on a deficit approach instead of focusing on teachers' preferences with regard to instructional development, or on opportunities for active learning on the part of the teachers themselves (Clarke & Hollingsworth, 2002).

2.1.1 Characteristics of instructional development aimed at improving effectiveness

Research is available on the question of how to improve the effectiveness of instructional development. Steinert et al. (2006) carried out a systematic review of the medical educational literature, focusing on evidence of effectiveness for characteristics of instructional development. To describe the effectiveness of instructional development programs they used the model developed by Kirkpatrick (1994) for evaluating educational outcomes. In this model four levels of effectiveness are used to describe outcomes: (a) reaction, (b) learning, (c) behavior, and (d) results. The first level (Reaction) describes the participants' evaluations of their learning experiences, for example their satisfaction. The

Learning level describes the changes in participants' attitudes, knowledge or skills, e.g., gaining more knowledge about teaching methods. The Behavior level concerns changes in behavior, for instance, taking more time for individual feedback to students. Finally, the Results level describes changes in the participants' students, the system, or the organization, for example improved results on students' examinations. On the basis of their extensive review of 53 studies Steinert et al. (2006) identified a total of nine characteristics for effective instructional development programs. Five of these were viewed as "key characteristics", because there was strong evidence for their contributing to effectiveness. These key characteristics were: (a) using experiential learning, (b) providing feedback, (c) enabling effective peer relationships, (d) interventions largely following the principles of teaching and learning, and (e) using multiple instructional methods. Four characteristics were considered "worthy of further exploration", because although the literature provided no concluding evidence, (sometimes strong) indications were found for their contributing to the effectiveness of instructional development. The characteristics *worthy of further exploration* were: (a) the role of context, (b) the nature of participation, (c) the value of longer programs, and (d) the use of alternative practices.

According to Steinert et al. (2006), many of their conclusions were similar to those found in reviews of research on instructional development of university teachers in general. They recommended that researchers investigating instructional development in medical education should learn from the literature about instructional development in general in order to incorporate its findings and methodologies into new research in the context of medical education, and collaborate with the researchers in the field of higher education. In educational research outside medical education, many studies that focus on instructional development have identified characteristics of effective instructional development (Garet et al., 2001; Guskey, 2000; Hawley & Valli, 1999; Knapp, 2003; Loucks-Horsley et al., 2003). Hawley and Valli (1999) formulate the following eight characteristics of effective instructional development, which in their view sum up all available research and reflect the desire for programs to: (a) be driven by the analyses of the differences between goals and standards for student learning and student performance, (b) involve learners (such as teachers) in the identification of learning needs, (c) be primarily school-based and integral to school operation, (d) provide learning opportunities that address individual needs but for the most part are organized around collaborative problem solving, (e) be continuous and ongoing, involving follow-up and support for further learning, (f) incorporate the evaluation of multiple sources of information on outcomes for students and the processes involved in implementing the lessons learned through instructional development, (g) provide opportunities to develop theoretical understanding of

the knowledge and skills learned, and (h) be integrated with a comprehensive change process. Loucks-Horsley et al (2003) mention seven characteristics: (a) finding time for instructional development, (b) ensuring equity, (c) building a professional culture, (d) developing leadership, (e) building capacity for sustainability, (f) scaling up, and (g) garnering public support.

Thus, different reviews mention a number of characteristics that are important for effective instructional development. Guskey (2003) has carried out a “meta”-review of the lists of such characteristics available in educational research outside medical education, also including the characteristics presented by Hawli and Valli (1999) and Loucks-Horsley et al. (2003), mentioned above. From studies on instructional development he reviewed thirteen lists of characteristics that had been found to be effective and were created by various educational groups. Guskey (2003) summarized these lists into an overall list of characteristics of effective instructional development. He states that these characteristics had best be described as: “yes, but”, because in the “real-world context” the complexities of those varied contexts determine whether or not a particular characteristic or practice will produce the desired results. He notes that it is possible that programs that appear to be quite similar may for subtle and unanticipated reasons produce different results, as nuances of the context are difficult to recognize and even more difficult to take into account. Finally, he identifies 21 characteristics that are important for the effectiveness of instructional development. Examples are: providing sufficient time and resources, promoting collegiality and collaboration, including procedures of evaluation, and being in line with other reform initiatives. An overview of all characteristics distinguished by Guskey can be found in Appendix A. Guskey’s meta-review (2003) can be used as a representative example of characteristics of effective instructional development in general educational research.

2.1.2 Taking medical teachers into account

The characteristics mentioned above can be used to create a good learning environment for teachers, but for this environment to take effect it is also important to take the learners (here: medical teachers) into account. From the literature it is known that learners are not just consumers of instructional development, but that they play an active role (Lowyck, Elen, & Clarebout, 2004). Research (e.g., Elen & Lowyck, 1998) has shown that learners do not always experience the learning environment in the way it was intended by the designers. Rather than the learning environment itself, it is the learners’ perceptions of this learning environment that influence learning behavior and the quality of the learning outcomes (Entwistle, 1991; Konings, Brand-Gruwel, & Van Merriënboer, 2005). So, medical teachers’ perceptions as learners in instructional development

programs are important. The way learners perceive a learning environment is influenced by their conceptions about learning, tasks, and environments (Elen & Lowyck, 1999). Conceptions can be defined as “specific meanings attached to phenomena, which mediate our response to situations involving those phenomena” (Pratt, 1992, p.204). According to Pratt (1992) we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world, so those conceptions (or beliefs) act as a filter that affect the learner’s use of both the program and the support in the learning environment (Lowyck et al., 2004). The meaning of the term ‘beliefs’ seems to be largely synonymous with the definitions of ‘conceptions’ (Kember, 1997). Attention to learners’ beliefs should be a focus of educational research and can inform educational practice in a way that prevailing research agendas do not and cannot (Pajares, 1992). Entwistle and Peterson (2004) state in their review that the consistency of those conceptions/beliefs of learners can be seen in the consistent way in which learners described what they believed to be “good teaching” and also in their preferences for specific types of courses and teaching. Taking teachers’ preferences for instructional development into account will help to identify programs that are in line with learners’ perceptions and underlying conceptions about learning.

2.1.3 Medical teachers’ preferences

Although information is available about the characteristics that contribute to the effectiveness of instructional development (Guskey, 2003; Steinert et al., 2006), no information is available yet about how these characteristics relate to what medical teachers themselves perceive to be important in instructional development. Taking teachers’ preferences and expectations into consideration in the design of instructional development proved to increase their satisfaction (Nir & Bogler, 2008). Increased satisfaction, as an example of the first level (Reaction) in Kirkpatrick’s model of effectiveness (Kirkpatrick, 1994), might be a prerequisite for attaining the other levels in Kirkpatrick’s model.

Van Herpen (2007) distinguishes three types of teachers’ preferences: (a) preferences about *conditions* for instructional development, (b) preferences related to the *content* of the instructional development program, and (c) preferences related to the *format* of the instructional development program. The conditions for the first type of preference, can be related to the characteristics of effective instructional development mentioned in Section 2.1.1. As regards the second type of preferences, i.e., related to the content of instructional development programs, research findings are available about medical teachers’ preferences on career development (Baldwin, Levine, & McCormick, 1995; McLeod, Steinert, Conochie, & Nasmith, 1997; Miedzinski, Davis, Al-Shurafa, &

Morrison, 2001). Miedzinski et al. (2001) conducted a self-administered career development preferences survey among 185 full-time medical academic faculty members. The faculty members were asked to rank 35 career development skills. Only one topic in the top ten of the resulting career development preferences could be related to a medical-educational preference, the others were related to broader development preferences such as effective writing skills for grants and publications, and time management. McLeod et al. (1997), using an 18-item survey among 450 staff members, found seven areas of skills that were seen as promoting career development. Those were (in order of preference, starting with the most popular one): (a) improving lecture skills, (b) using computers for medical informatics and the preparation of audiovisual aids, (c) clinical teaching, (d) non-teaching activities (including research and administration), (e) small group teaching, (f) evaluation of students and residents, and (g) giving effective feedback. So, in this study the faculty members indicated more medical educational-related preferences than in the study by Miedzinski et al. (2001). Data are also available on topics medical teachers prefer to see in instructional development programs (Foley & Gelula, 1997; McLeod et al., 1997). Foley and Gelula (1997), for example, identified 27 subject areas on the basis of their survey instrument administered to 323 medical teachers. Interestingly, topic preferences were quite similar to the results found in 1975 by Page, Foley & Pochly. Six topics were ranked in the top twelve in both surveys: (a) improving communication skills, (b) improving verbal questioning techniques, (c) improving lecturing skills, (d) improving group discussion skills, (e) acquiring skills in the self-evaluation of teaching, and (f) improving skills in evaluating student performance. The third type of preferences is about the preferred format of a program. It is often reported that medical staff prefer short, condensed sessions of one to three hours on a specific topic (Foley & Gelula, 1997), or a half-day workshop (McLeod et al., 1997). Chauvin, Anderson and Bowdish (2001) distinguish between the types of knowledge and skills as related to preferred format. They administered a questionnaire in four states in the US among 883 respondents working in public health. It was found that workshops were mainly popular as a way to enhance basic knowledge and skills (26% wanted a workshop away from the worksite, and 18% preferred a workshop at the worksite, i.e., 44% in all), but for the refinement of high-level knowledge and skills printed materials (31%) and listening to a knowledgeable speaker (26%) were favored. Teachers preferred individual coaching if they had to acquire completely new knowledge and skills (41%), although workshops away from the worksite were also popular (26%). Various authors also mention the potential use of needs assessments in institutions in order to better cater for teachers' educational preferences and

improve the quality of medical education (Aherne, Lamble, & Davis, 2001; Grand, 2002; Norman, Shannon, & Marrin, 2004).

2.1.4 Research question

In this chapter we intend to add to the available body of knowledge by discussing our investigation of medical teachers' preferences for the conditions of instructional development (first type of preference). To this end we will start from the characteristics that were found to be related to the effectiveness of instructional development. We also looked for underlying structures in these characteristics and tried to find patterns. The findings described in this chapter can be important for the design of instructional development that is both motivating and effective for medical teachers.

The research question that guided the research described in this chapter is:

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?

2.2 METHOD

2.2.1 Instruments

In order to gather data about those characteristics of instructional development that are important to medical teachers when they consider participating in instructional development programs, we developed an on-line questionnaire. We used two sources from the literature to develop the questionnaire items: Steinert et al. (2006) and Guskey (2003). As we were focusing on the preferences of medical teachers, we took as our starting point the nine characteristics identified in the review of medical education literature by Steinert et al. (2006) as important for effectiveness or worthy of further exploration. Steinert et al. (2006) suggested using research findings about characteristics of effective instructional development outside medical education as an additional source in future research on these characteristics. This prompted us to use the meta-review by Guskey (2003) as an additional source, because his research combined the results of various other reviews on characteristics of effective instructional development. Appendix A lists the two different sources, and the items that were finally included in the questionnaire. In our translations we stayed as close as possible to the original wording of the characteristics in the reviews. Any

differences in content between the original descriptions of the characteristics and the corresponding items in our questionnaire concern the personalization and concretization of the characteristics. Descriptions of characteristics that contained the word “and” were, when possible, separated into two items (this was done four times). Three characteristics identified by Guskey (2003) overlapped with characteristics identified by Steinert et al. (2006). For these three characteristics the wording by Steinert et al. (2006) was used. This resulted in a questionnaire containing a list of 35 items, asking teachers to indicate how important each characteristic of instructional development was for them if they were deciding whether or not to participate in instructional development activities. In the questionnaire the items were introduced by the sentence: “If you consider participating in instructional development activities, which characteristics are important for you? In instructional development I think it’s important that:.....”. Respondents answered on a five-point Likert scale, ranging from ‘strongly disagree’ to ‘strongly agree’.

The questionnaire was piloted by asking six medical teachers in the LUMC to do a trial run. This resulted in fine-tuning the translation of a number of items. Besides the 35 items about the preferences for characteristics of effective instructional development, the questionnaire also contained questions about teachers’ backgrounds, such as teaching experience, experience with instructional development, teaching tasks, and specialisms (see Appendix B, in Dutch).

2.2.2 Participants

A link to the online questionnaire was emailed to 878 respondents registered as scientific staff (e.g., researchers and physicians) at the Leiden University Medical Center (LUMC). Scientific staff in this medical school is expected to perform educational tasks besides patient care and/or research work, but these teaching tasks can be small. After two weeks a reminder was sent by email. Only those respondents who completed the entire questionnaire were included in the analyses.

2.2.3 Analysis

The mean and standard deviations of the items were calculated in order to identify the importance of the characteristics to the teachers, and identify items about which opinions differed. To identify underlying factors an exploratory factor analysis, using Varimax rotation and pairwise deletion of missing values, was conducted on the 35 items. Internal consistency of combinations of items that loaded highest on each factor was calculated using Cronbach’s Alpha, to establish whether these combinations of items could be used as a scale to

identify differences between various groups of medical teachers. The differences were analyzed using Analysis of Variance (ANOVA).

2.3 RESULTS

2.3.1 Respondents' backgrounds

A total number of 360 staff members responded to the online questionnaire (response rate 41%). The respondents and non-respondents were distributed evenly among the various divisions in the medical school and among groups with different main tasks. Seventy-seven respondents indicated that they were unable to answer *all* our questions. We had expected this, because many of the staff members are known to have only a very small teaching task, or none at all. Only those respondents who completed the entire questionnaire were included in the analyses (n=283).

Data were gathered about the respondents' main tasks, their experience in education, time allocated to their teaching, and previous participation in instructional development activities. On average, respondents' main tasks were: *Patient care* (50%), *research* (33%), *education* (9%), and *other* (8%). The results for the years of experience in education were divided into *No experience* (1%), *1-5 years* (22%), *5-10 years* (22%), *10-15 years* (20%), and *more than 15 years* (35%). The percentage of time for teaching was divided into *0-10%* (53%), *11-50%* (40%) and *more than 50%* (7%). Prior participation in instructional development activities was divided into *no experience* (53%) and *experience* (47%). About half of the faculty (48%) answered "yes" to the question whether they were willing to participate in instructional development in the future. 40% answered this question with "maybe", and 12% answered "no".

2.3.2 Teachers' preferences

The first two columns of Table 2-1 show the means and standard deviations of the 35 items corresponding to the characteristics of effective instructional development. Means ranged from 2.9 to 4.2. The respondents agreed that most characteristics were important: the majority of the items (23) had a mean score above 3.5, and standard deviations were generally low (average: 0.78, maximum: 1.1). Twenty-six items had a mean score between 3 and 4, and only one item had a mean score below 3. Seven items had a mean score of 4 or higher. These items we took to be the most appealing, as they had the highest scores.

Table 2-1. Medical Teachers' Ratings of the Importance of Characteristics of Instructional Development Activities

Items	Factor loadings				
	M	SD	1	2	3
Factor 1. Facilitated collaboration in educational improvement					
1. It takes the context in which I work into account (S)	4.1	.79	.34	.06	.09
2. Sufficient time is provided	4.0	.70	.43	.20	-.00
3. Facilities and materials (resources) are well taken care of	4.0	.61	.39	.13	.13
4. Collaboration with colleagues is adequate (S)	3.9	.71	.43	.19	.11
5. It includes personal support	3.6	.76	.44	.35	-.04
6. It promotes collegiality	3.5	.88	.59	.22	.13
7. It is scheduled over an extended period (S)	3.5	.98	.44	-.20	.11
8. It takes a variety of forms	3.5	.77	.49	-.13	.46
9. It enhances my leadership capacities in education	3.5	.67	.35	.19	.04
10. It promotes my scientific, inquisitive attitude	3.4	.82	.47	.28	.15
11. It promotes the equality of participants	3.4	.85	.41	.08	.29
12. It accommodates diversity of experience and expertise	3.4	.88	.32	.02	.26
13. it is site-based	3.4	1.1	.25	-.12	.04
14. It is driven by the analysis of data about students' learning	3.3	.84	.42	.26	.06
15. It enhances my content knowledge of the subject of teaching	3.1	1.1	.39	.09	-.10
16. It uses alternative practices other than traditional methods, such as workshops and seminars (S)	3.0	.82	.25	-.04	.10

CHARACTERISTICS OF EFFECTIVE INSTRUCTIONAL DEVELOPMENT: TEACHERS' PREFERENCES

Items	Factor loadings				
	M	SD	1	2	3
Factor 2. Individual development as a teacher					
17. It improves my competences as a teacher	4.2	.54	-.09	.47	.06
18. Systematic and constructive feedback is provided (S)	4.2	.59	.06	.43	.11
19. It enhances my pedagogical knowledge	4.1	.67	.10	.42	.19
20. It promotes reflection about my teaching	4.0	.58	.00	.55	.13
21. It is based on my own and my colleagues' needs	3.9	.65	.12	.31	-.09
22. It includes an evaluation of the effects of the course	3.9	.74	.21	.33	.07
23. It is aimed at the improvement of my organization	3.8	.70	.08	.31	.15
24. I gain insight into the backgrounds and interests of my students	3.8	.65	.20	.41	.17
25. It models high-quality instruction, which will benefit my own practice	3.8	.65	.16	.25	.14
26. It includes follow-up after completion	3.7	.69	.28	.52	.08
27. Practicing what I have learned has a prominent position (S)	3.6	.79	.27	.28	.12
28. It is ongoing, hence a structural part of my work as a teacher	3.5	.82	.30	.57	.20
29. Participation is compulsory (S)	2.9	1.1	-.15	.37	-.04
Factor 3. Evidence-based education					
30. It accounts for current educational demands of the teacher	3.9	.65	.01	.42	.51
31. It is well designed, following the principles of teaching and learning (S)	3.8	.81	.02	.24	.64
32. Multiple methods are used to achieve the objectives (S)	3.7	.73	.24	.05	.49

Items	Factor loadings				
	M	SD	1	2	3
33. It provides opportunities for theoretical understanding of the activities	3.6	.83	.08	.18	.63
34. It is in line with with reform initiatives on the part of the organization	3.6	.82	.12	.08	.43
35. It is based on the best available research evidence in educational research	3.4	.90	.09	.11	.65

(S) after an item refers to characteristics of effective instructional development identified in the review by Steinert et al. (2006).

Factor loadings > .40 are displayed in bold. If Items load > 0.40 on two factors, the highest loading is underlined.

The seven items scored as most appealing (rated 4.0 or higher) were: (17) *improves my competences as a teacher*, (18) *systematic and constructive feedback is provided*, (19) *enhances my pedagogical knowledge*, (1) *takes the context in which I work into account*, (2) *sufficient time is provided*, (3) *facilities and materials (resources) are well taken care of*, and (20) *promotes reflection about my teaching*. One item rated less than 3.0: (29) *participation is compulsory*. Three items had a relatively high standard deviation (>1.0): (15) *enhances my content knowledge of the subject of teaching*, (29) *participation is compulsory*, and (13) *is site-based*, indicating that there was relatively more disagreement about their importance.

2.3.3 Identifying underlying dimensions

Factor analyses on the 35 items resulted in ten factors with an eigenvalue higher than 1.0, which together explained 58% of the variance. Using the scree criterion, three factors were identified that explain 31% of the total variance. Columns 3, 4, and 5 show the three factors and the loadings of the items. Most loaded 0.3 or more on at least one factor, with the exception of four items. The factor loadings were used to group the items into three factors. The various items per factor have been ordered from the highest to the lowest mean. Sixteen items loaded highest on Factor 1; thirteen items loaded highest on Factor 2; and six items loaded highest on Factor 3. Four items loaded high (≥ 0.3) on two factors. Factors 2 and 3 contained more items with high mean scores (overall mean: 3.8) than Factor 1 (3.5).

The first factor was somewhat heterogeneous in character compared to the second and third, which were easier to label on the basis of the items that loaded high on these factors. We labeled the three factors as follows: (a) *facilitated collaboration in educational improvement*, (b) *individual development as a teacher*, (c) *evidence-based education*. Cronbach's Alpha was calculated for the sixteen items that loaded highest on factor 1, the thirteen items that loaded highest on factor 2, and the six items that loaded highest on factor 3. Cronbach's alphas for the factors were 0.76, 0.73, and 0.76, respectively.

2.3.4 Facilitated collaboration in educational improvement (Factor 1)

Factor 1 is somewhat heterogeneous, and combines items that focus on the design of the instructional development activities with items related to the interaction between colleagues. Examples are a number of items on collaboration and interaction with colleagues, such as the highest-loading item: (6) *it promotes collegiality*; items that relate to the form instructional development takes, such as (8) *it takes a variety of forms*; and items (2 and 3) that refer to resources such as materials and time. However, some items within this factor describe characteristics that are not obviously related to the design of instructional development, such as (9) *it enhances my leadership capacities in education*, and (10) *it promotes my scientific, inquisitive attitude*.

Highly rated items that are combined in this factor (mean ≥ 4.0) are items 1, 2, and 3. They indicate that sufficient resources should be available (2 and 3). The high mean of item 1 indicates that these medical teachers consider it important that in the design of instructional development attention is paid to the context in which they teach.

2.3.5 Support for individual development as a teacher (Factor 2)

Factor 2 contains items that, in general, refer to characteristics of instructional development that promote individual development as a teacher. Learning from one's own teaching experiences by means of reflection and feedback is important. This learning takes place continuously. Items that load high are: (17) *improves my competences as a teacher*, (20) *promotes reflection about my teaching*, (28) *is ongoing, hence a structural part of my work as a teacher*, and (26) *includes follow-up after completion*.

Mean scores of the items are relatively close together. Only one item on this factor had a low mean score (mean ≤ 3.0): (29) *Participation is compulsory*.

2.3.6 Evidence-based education (Factor 3)

Most items that load high on this factor relate to using the available evidence as a foundation for instructional development. High loadings were: (35) *based on the best available research evidence in educational research*, (31) *well-designed, following the principles of teaching and learning*, and (33) *provides opportunities for theoretical understanding of the activities*. Mean item ratings on this factor were comparable.

2.3.7 Differences between groups of teachers

The teachers were divided into groups on the basis of main task, teaching experience, percentage of time allocated to teaching, and earlier participation in instructional development. Individual teachers were given scores based on their mean score on every factor. Analyses of variance were carried out to identify differences between the groups of teachers in scoring the items. No significant differences were found between the groups.

2.4 CONCLUSIONS AND DISCUSSION

2.4.1 Appealing characteristics of effective instructional development

The aim of the study described in this chapter was to identify which characteristics of effective instructional development were most appealing to medical teachers, and to see whether underlying factors could be found. The three factors identified were: (a) facilitated collaboration in educational improvement, (b) individual development as a teacher, and (c) evidence-based education (Table 2-1).

In our study characteristics of effective instructional development derived from the review of medical education literature by Steinert et al. (2006) were combined with characteristics identified by Guskey (2003) in his review of the literature on instructional development outside the medical education context. The results described in this chapter show that the medical teachers perceived items from both reviews as important. Combining the two reviews resulted in a broader and more extensive list of characteristics that were appealing to medical teachers who were considering participation in instructional development than if we had selected just one of them. This shows that, as advised by Steinert et al. (2006), combining research findings from medical education with findings from research outside medical education was indeed helpful and may enhance the quality of medical educational research, because additional information will become available that can be used in the design of instructional development.

There was high agreement between the respondents on the importance of the characteristics of effective instructional development. Most items were rated high. Seven characteristics were found to be relatively more important than the others. Many of the items that were perceived as relatively important were related to the improvement of teaching knowledge and skills, and to practical design issues such as taking the context in which teachers work into account or providing sufficient time and resources. Our findings are in line with those of McLeod et al. (1997), who also found that improving (lecturing) skills was the most popular topic for instructional development. Other items that were rated as important were related to interaction (providing systematic feedback, collaboration, and promoting reflection). Such interactions may lead to new ideas on teaching, and to changes in teaching practice (Taylor, Tisdell, & Gusic, 2007).

Three items had a relatively high standard deviation (>1.0), implying that opinions regarding these items were widely divergent. These items, which also scored low, were: (13) *is site-based*, (29) *participation is compulsory*, and (15) *it enhances my content knowledge of the subject of teaching*. The heterogeneity of scores can be explained by personal preferences (first item), tension between learning and busy everyday practice (second), and possible unfamiliarity with the idea that content knowledge could include knowledge on how to teach specific content to students (third). The third item may need further clarification to the respondents, explaining that it relates to *pedagogical* content knowledge (PCK) of the subject taught. This pedagogical content knowledge, as mentioned by Shulman (1986), includes (a) teachers' knowledge of specific conceptions and learning difficulties, and (b) teachers' knowledge about relevant teaching strategies. Thus, it covers both a specific subject area (e.g., medicine) and the way the central concepts (e.g., circulation system) should be taught. This clarification is in line with Skeff et al. (2007), who expect that including PCK in medical instructional development programs will enhance the contribution those programs can bring to the educational process.

2.4.2 Differences between groups

The analyses of variance did not reveal (significant) differences in preferences regarding the three factors depending on the various background variables such as medical teachers' main tasks, time allocated to teaching, or amount of experience. This means that although there are differences in time spent on and experience in teaching, and differences in main tasks (e.g., education, research, patient care), these do not lead to significantly different preferences. This implies that it may be assumed that the differences in perceived importance between teachers do not depend on these kinds of characteristics, but originate from more personal and individual differences. This is also in line with Stenfors-Hayes,

Weurlander, Dahlgren and Hult (2010), who found that different medical teachers perceived different factors in instructional development as either a barrier or an opportunity. Instructional development that caters for individual teachers is therefore preferable to one-size-fits-all concepts (Loucks-Horsley et al., 2003), for example a program taking into account teachers' individual learning styles (c.f., Berings, Poell, & Simon, 2005). Including the recommendations above may be important for the design of instructional development that is both motivating and effective.

2.4.3 Limitations

The response rate of 41% in this study is slightly better than the mean response rate of 39.6% found in a meta-review of web- or internet-based surveys (Cook, Heath, & Thompson, 2000), and also higher than what Kaplowitz, Hadlock and Levine (2004) and Sheenan (2006) report in their studies; they found response rates of 21 % and 24%, respectively. Sheenan (2006) found that response rates had decreased significantly since 1986, from 62% to 24% in 2000. As we carried out this research in only one medical school, and the response rate of 41% is relatively low, we have to be careful with our conclusions, but we expect that our results could be comparable for other medical schools because of similarities in curriculum and organization of the various schools.

2.4.4 Implications and suggestions for further research

In the study described in this chapter we investigated the perceived importance of 35 characteristics of effective instructional development. As most items were rated moderately to highly important, we recommend taking all 35 items (Table 2-1) into account in instructional development programs, with the emphasis on the items rated as relatively most important. Using the results found by Guskey (2003) for the more general context seems to be a useful addition to medical research.

In this chapter discussed the perceived importance of evidence-based characteristics for medical teachers. We expect that the more instructional development is designed according to the teachers' preferences, the more there is a chance for it to have an impact and to have more teachers willing to participate. In future research it would be interesting to study instructional development programs (new or current) that take the results described in this chapter into account during the designing process.