What qualities in teachers are valued by medical students?

Nikolaos Sapoutzis, Melanie Kalee, Anne E. Oosterbaan, Marjo Wijnen-Meijer

In order to develop their didactic expertise, teachers need to know which aspects of their teaching are positively evaluated by the students. This is especially important for teachers in medical education because education is not their main task. This means that there are often limited opportunities for developing their teaching skills. The aim of this study is therefore to discover which qualities in teachers are most valued by medical students. Based on the comments of students on 30 courses in the first, second and third year of the medical school in Utrecht, we identified the following top 10 qualities: good explanation; clarity; good pace; good preparation; enthusiasm; good structure; enjoyable (including humour); stimulating/motivating; knowledgeable; instructive/informative. In this article, the results are supported by comments from students and a comparison is made with existing research from other domains. Recommendations for further research and (medical) educational practice are given.

1 Introduction

A prerequisite for good medical education is good teachers. Previous research shows that teaching skills correlate with academic achievement and the acquisition of medical expertise by students (Hwang et al., 2017). In medicine, most teachers are also physicians, for whom teaching is a minor part of their responsibilities (van den Berg et al, 2013; van Bruggen et al., 2020). Since they are primarily occupied with patient care and in many cases research as well, there is often little time for teaching. That means that there are limited opportunities for developing didactic expertise. Several authors have written about the development of teaching skills in general and for medical education in particular. In his "model of teacher change", Guskey (2002) describes the process that teachers go through in their development from inexperienced to experienced teachers. As with all new skills, both time and effort are needed to refine and optimise the role of teachers. In addition, teachers require regular feedback on their teaching. Clarke and Hollingsworth (2002) indicate that it is important that teachers receive information about their performance and that they are able to reflect on it. Many formal faculty development programmes tie in with this. Through learning by doing, in which teachers apply the theory they have learned in practice, they improve their performance through feedback and reflection (Steinert et al., 2016). In addition to faculty development and feedback, it is important for teachers to work

in an environment that stimulates development and gives them the opportunity to do so (Clarke & Hollingsworth, 2002). Van Bruggen et al. (2020) emphasise that this context is especially relevant in medical education – physicians must be given time and support by their organisation in their role as teachers.

Besides the importance of professional development, it is important that teachers are motivated for and feel committed to this role, especially if this is a task that is additional to other essential duties. Van den Berg et al. (2013) have examined the factors that contribute to work engagement and motivation for teaching at medical schools. Their study showed that the most important factor in underpinning teachers' engagement is feedback on their teaching performance, which is also crucial in motivating their teaching.

As described above, it is essential that medical teachers receive feedback on their teaching. That is why most medical schools and other institutions of higher education have a system allowing students to evaluate their various courses (Benton & Cashin, 2011; Knol et al., 2016; Marsh, 2007). In practice, this means that at the end of a course, students assess the course on a range of aspects, such as organisation, content, teacher interaction and exams. The most common method used involves students awarding a quantitative score for different components, and often also for the course as a whole, along with opportunity to explain their scores in a short written text (Benton & Cashin, 2011; Knol et al., 2016). Although this information provides relevant feedback in the context of the university's quality assurance, it is often of limited benefit as feedback in helping individual teachers to advance their pedagogical expertise (Beran & Rokosh, 2009). Teachers feel that these evaluations do not reveal the complexity of the profession, or the underlying choices and attendant constraints (Burden, 2008). This also fits in with the finding that courses which students find difficult or uninteresting are rated less positively, independent of the teacher's expertise (Benton & Cashin, 2011).

Another problem, particularly prevalent in medicine, is that multiple teachers are often involved in the delivery of a single course. Research conducted by Uijtdehaage and O'Neal (2015) shows that it makes little sense to have students evaluate all individual teachers at the end of a course. Many students cannot remember whether they have seen a certain teacher, let alone give them specific feedback. A study by Hoban and Hastings (2006) shows that teachers benefit most from student feedback if it is given during personal interviews. The disadvantage of this method is that it is very time-consuming, both for teachers and students. In addition, students may find it difficult to give feedback to teachers in a direct dialogue.

To address the problems described above, at the medical school in Utrecht (The Netherlands), a question is added to the regular questionnaires, allowing students to indicate which teachers they particularly value and to substantiate their choices. In addition to the fact that these results are important and motivating for the teachers concerned, it also provides general information about which teaching qualities medical students value and find useful for the learning process. This information can be used in faculty development programmes and to give useful input to (other) medical teachers. Overviews of the qualities of good teachers have been drawn up previously (Kreber, 2002; Marsh, 2007). Two commonly used research-based overviews are "Feldman's Categories of Effective Teaching" and the factors of the "Students' Evaluations of Educational Quality (SEEQ)" (Marsh & Hocevar, 1991). Feldman's categories, the first version of which was developed in 1976, are based on research into the opinions of teachers and students. The SEEQ factors were developed on the basis of a literature review, after which teachers and students were asked to rate the various items to determine the aspects they consider important for effective teaching (Marsh & Hocevar, 1991; Marsh, 2007). However, neither of these overviews is tailored to medical education and medical students.

There are several reasons to assume that medical students are divergent in the expectations they have of their teachers in comparison with students from other university programmes.

Medical students often know at an early age that they want to become physicians. Gaining admission to medical school is difficult everywhere in the world (Patterson et al., 2019). Students often have to obtain high grades in secondary education in order to be admitted at all, and often have to support their studies with part-time jobs in health care to finance them. This means, on the one hand, that medical students are used to studying hard and are very motivated to do so, but also that they may be critical and possibly expect high quality teaching. Previous research has shown that there is a relationship between motivation and evaluation scores. This may also apply to judgements about individual teachers (Benton & Cashin, 2011). Medical school programmes also differ from other university programmes in certain respects. Students have to acquire a great deal of knowledge in a short period of time, and this is continually tested. In many countries, in addition to their internal examinations, students also have to take state examinations or progress tests (Melnick et al, 2002; Nikendei et al., 2012; Schuwirth & van der Vleuten, 2012). In addition, the road to becoming a physician is a long one, often involving selection procedures before progressing to the next phase (Patterson et al, 2019; Wijnen-Meijer et al., 2013). It is therefore clear that medical students must be able to acquire knowledge quickly and efficiently. Teachers obviously play a major role in facilitating this.

Finally, most medical schools worldwide have become vertically integrated over the last 20 years (Brauer & Ferguson, 2015), which means that clinical practice and patient cases are a feature of their studies from the outset. This is also how the curriculum in Utrecht is designed, where the research project reported here was conducted. This means that the courses are clinically oriented from the start and that all courses are taught mainly by physicians. This in turn means that the education provided is not easily comparable to the theoretically oriented education on other university programmes.

For these reasons, the analysis of the opinions of medical students on what constitutes good teachers offers a valuable addition to the existing literature.

The study aimed to gain insight into the qualities of teachers who are valued by preclinical medical students. In addition, we compared our results with existing overviews of good teaching qualities in the literature. Our primary aim was to contribute to the literature on teachers in medical education, but there are also practical applications. The results can be used as input for the development of faculty development and evaluation systems, as well as to provide feedback to teachers based on observations.

2 Methods

2.1 Data collection

The data were collected in the period 2015–2018 on 30 courses in the first, second and third year studies at the medical school in Utrecht. All these courses relate to a particular medical topic (e.g. circulation or cancer) and include all types of education (e.g. lectures, practical trainings, seminars, anatomy education, and discussion of patient cases). For these courses, the following question was added to the standard course evaluation: *Which teachers in this course did you particularly appreciate? You can mention a maximum of 3 names. This may include any form of teaching (lecture, practical training, seminar, etc.). Please also give an explanation with each name: Why did you like this teacher?*

The results relate to course evaluations on a specific medical topic (e.g. circulation), which include all types of education, such as: lectures, practical trainings, seminars, anatomy education, and discussion of patient cases.

We chose to ask this open, qualitative question because we wanted to obtain individual, non-directive opinions formulated in the students' own words.

2.2 Data analysis

For the purpose of this research, all comments made by students, independent of the course or the teacher, have been analysed thematically, by means of open coding to identify themes (Boeije, 2005; Braun & Clarke, 2006). In order not to confine or prejudice the survey, we chose to take the students' comments as a starting point and assign codes to them, rather than coding them on the basis of themes described in the literature. A preliminary coding scheme was constructed by one of the researchers. If a comment contained multiple themes, this comment was split into two or more parts. Based on the resulting coding scheme, two of the researchers coded part of the data set and inter-rater reliability was highly reliable (Landis & Koch, 1977). The Kappa Measure of Agreement value was .80, with a significance of $p < .0005$. Subsequently, two of the researchers each coded half of the dataset independently. Themes were further refined during coding and additional codes were added. New codes and ambiguous comments were discussed by the two coders until consensus was reached. As a result, each comment was linked to one or more themes. In order to determine which teaching qualities were most valued by the students, we enumerated the frequency of occurrence of each theme.

2.3 Comparison with the literature

We compared the themes we found with existing lists of teaching qualities in the literature, specifically: "Feldman's Categories of Effective Teaching", the factors of "Students' Evaluations of Educational Quality (SEEQ)" (Marsh, 2007) and the results of a review of the qualities of good clinical teachers (Sutkin et al., 2008).

2.4 Ethical Approval

Ethical approval was obtained in 2016 from the NVMO Ethical Review Board.

3 Results

3.1 Response

On average, around a third of students on each course (n = 96) answered the question with respect to one or more teachers. While many students used a few keywords ("*well-structured and stimulating*"), others wrote down more elaborate answers ("*Mainly because his delivery is not too fast, clear, well-structured and pitched to our level, using a touch of humour now and then to keep us engaged*"). On average, students mentioned two qualities per teacher (M = 1.9; SD = 1.0). In total, 4,328 comments were labelled with a theme.

3.2 Qualities of good medical teachers

The overview of all themes and the number of times each theme occurs can be found in Table 1. In total, 40 themes were identified. Two-thirds (66%) of the comments cover one of the top 10 themes. We found the following top 10 reasons why a teacher is mentioned by students: good explanation; clarity; good pace; good preparation; enthusiasm; good structure; enjoyable (including humour); stimulating/motivating; knowledgeable; instructive/informative. In Table 2, each theme from this top 10 is further explained and illustrated with quotes.

3.3 Comparison with existing overviews

In order to determine to what extent there is similarity with the themes we found, we compared in Table 3 these themes with "Feldman's categories of effective teaching", "Students' Evaluations of Educational Quality Factors (SEEQ)" (Feldman, 1976; Marsh & Hocevar, 1991; Marsh, 2007), and the qualities of good clinical teachers as described in the literature review by Sutkin et al. (2008).

Most of the listed themes can also be found in "Feldman's categories of effective teaching" (Marsh, 2007). These include: "clarity and understandableness", "elocutionary skills", "enthusiasm", "preparation and organisation", "stimulation of interest/intellectual challenge" and "subject knowledge/intellectual expansiveness". In total, Feldman describes 20 categories. Our theme "enjoyable/humour" does not appear in Feldman's list. Categories of Feldman's top 10 that appear lower down on our list are "sensitivity to class progress", "clarity of objectives" and "value of course materials". "Clarity and understandableness", which clearly transcend all other themes on our list (themes 1 and 2), is ranked 6th in Feldman's list.

The themes in our top 10 can be matched with 5 of the 9 SEEQ Factors (Marsh, 2007). These are "instructor enthusiasm", "breadth of coverage", "organisation/clarity", "learning/value" and "workload/difficulty". The factors "group interaction" and "individual rapport" could also be matched with themes from our list, but were ranked below the top 10. The factors "examinations/grading" and "assignments/readings" do not appear among our themes.

4 of 5 categories of good clinical teachers, as described in the literature review by Sutkin et al. (2008), are also part of our top 10. These are: "medical/clinical knowledge", "clinical and technical skills/competence", "communication skills" and "enthusiasm". Their 5th category, "positive relationships with students and supportive learning environment", matches themes that are lower in our ranking, namely "engaged/interested in students" (place 23) and "pleasant atmosphere" (place 31).

4 Discussion

The aim of the study described in this article was to gain insight into the qualities of teachers who are valued by medical students. Students seem able to formulate eloquently why they value a specific teacher. What is striking is that the students in our study find "good explanation" and "clarity" especially important. This may have to do with the specific participants. In the preclinical phase of medical school, most exams are based on understanding theory. That is why it is important for students that it is explained well and clearly.

Most of the themes mentioned by the medical students can also be found in "Feldman's categories of effective teaching", "Students' Evaluations of Educational Quality Factors (SEEQ)", and the literature review into qualities of good clinical teachers (Sutkin et al., 2008). It is interesting that enjoyable/humour was high on our list, but is completely absent from Feldman's categories. As the students indicated that this helped to hold their attention and remember the subject matter better, it can be assumed to be an important aspect. That humour can have a positive effect on the learning process has also been confirmed by other studies (Ulloth, 2002; Ziv, 2014). Furthermore, Ziv (2014) found that making use of humour can even lead to better examination results. In addition, it contributes to establishing a good relationship with the students (Ulloth, 2002). It would therefore be beneficial if faculty development programmes took account of the use of humour in education.

It also turns out that students find it important that a teacher has substantive knowledge about the subject in question. This information is relevant to the recurring discussion in medical education as to whether instructors who are non-experts can fulfil the role of facilitator (Davis et al., 1992; Neville, 1999). A related question is: what constitutes an expert teacher? Resources preclude the provision of all clinical education by specialists, but the question is whether, for example, a first-year resident is already a sufficiently qualified expert in a certain field. Beyond this, research by van den Berg et al. (2013) shows that teaching in their own specialism is a motivating factor for medical teachers. This is also in line with a survey among medical teachers into the qualities of an effective teacher. Of the top 3 qualities, "knowledge of subject" comes first, followed by enthusiasm and communication skills (Singh et al., 2013).

As a quality assurance method, our chosen approach, in which the students themselves evaluate which teachers they consider to be good and why, has a number of advantages. It does not lead to evaluation fatigue, unlike methods in which all teachers have to be assessed. The approach is relatively easy to implement and can be tailored to different educational programmes. The teachers receive personal feedback, which is formulated in the students' own words. For the teachers, it is motivating and

stimulating. A medical school can, for instance, engage these teachers for the further development of their education programmes. They can, for example, obtain a role in mentoring or faculty development programmes or be rewarded with access to teaching scholar programmes (Irby et al., 2004). However, the method also has a number of disadvantages. Because the students themselves arrive at their own formulations, it is not always clear what exactly they mean (for example: "he is a good teacher"). We have noticed that the students did not always know the names of the teachers, which also fits in with research by Uijtdehaage & O'Neal (2015). Students used descriptions such as "that bald man" or "that pregnant woman". It was not in all cases clear which teacher they were describing. In our experience, this occurred most often if the evaluations had to be completed on paper immediately after an exam. For evaluations that students could complete online at a later time, this was much less of a problem. Apparently, the students then made the effort to look up the name of the teacher. An important disadvantage of this method is that only some of the teachers receive feedback. One option is to ask the students which teachers they do not value. This would force us to think carefully about who would receive this information and how the teachers would be guided in dealing with negative feedback (Lutovac et al., 2017). Any demotivating effect this might have should be avoided, e.g. by means of meetings of course coordinators with teachers or by paying attention to dealing with student feedback in faculty development courses.

The principal strengths of this research are that it is based on the students' own formulations and the number of comments analysed. In describing the categories, we followed the students' formulations as precisely as possible and therefore distinguished, for example, between "clarity" and "good structure", although a certain degree of interpretation cannot be ruled out completely. By comparing the results to existing frameworks, we have demonstrated that student feedback is a valid source of information about teaching quality. A limitation is that it concerns the opinions of students at a single medical school. Because the preclinical phase is arranged in a similar way in many medical schools (Brauer & Ferguson, 2015), the results are likely to be useful for other medical schools as well. Another possible limitation is a possible bias among the students who participated in this evaluation, for example based on interest in the subject (Benton & Cashin, 2011). However, as the study covers 30 courses on several topics over three years of medical school and an average of almost 100 students per course answered the question, the effects of this possible bias on the overall results are likely to be limited. Furthermore, this bias will most likely occur if students are given a list of teachers to evaluate, which we did not do in this study. We asked the students which teachers stood out in a positive way. It seems that students make judgements about form rather than content, taking content as given. It is also notable that students often mention lecturers who can explain a complicated subject well, for instance: "*it was a difficult topic but still she managed to keep the*

whole audience fascinated for two lectures about a not very accessible subject, which is also beyond the scope of most students". Because the students' comments relate to all types of education, the results give a good picture of the total breadth of medical education (e.g. lectures, seminars, practical training). A possible disadvantage of this approach is that we do not know if and which qualities are particularly relevant for a certain type of education. That would be an interesting question for possible follow-up research.

This research into valued teaching qualities in the preclinical phase of medical school training is a valuable addition to research into teacher qualities in general (Feldman, 1976; Marsh, 2007) and in clinical teaching in particular (Burgess et al., 2016; Gibson et al., 2019). Our results can be used to optimise the limited time available to medical teachers for developing pedagogical expertise; for example, to determine the content of faculty development or teaching scholars programmes or to provide targeted feedback after observations (Irby et al., 2004; Kreber, 2002). Several of the more technical themes from the top 10, such as good explanation, good structure and clarity, generally receive attention in faculty development programmes (Steinert et al., 2016). Other topics, such as enthusiasm and the use of humour, may deserve more attention.

Despite the special context in medical training, the results of this research project are also relevant to other higher education programmes. As indicated in the introduction, medical students are generally motivated for and critical towards their education. It is therefore that their opinions and experiences can also be of interest to teachers and administrators from other higher education programmes. This information could also be applied in other fields of education, for example, to the development of teacher training courses and evaluation forms. In addition, medical training has a number of qualities that have been increasingly applied in other university programmes in recent years. An important feature of medical training is the direct link between training and professional practice. Factors in this are the large number of clerkships in clinical practice and also the fact that the teachers are mainly physicians. Nowadays, also in other study programmes, many longer and shorter traineeships are scheduled. In addition, more teaching is provided by (guest) teachers who also work in professional practice (Beaton & Gilbert, 2013). For these teachers, too, teaching is not their main task and they have limited time to professionalise in this area. This development is partly due to the so-called "Dublin Descriptors", a framework for Qualifications of the European Higher Education Area (European Consortium for Accreditation, 2020). An important aspect of this framework concerns the direct relationship with professional practice, which enables students to apply their acquired knowledge in practice. In addition to the students' assessments, the medical school can of course also decide that other factors are important. For example, students did not seem to consider interaction important, but for educational reasons, it may nevertheless be decided that

education should be more interactive, and in that case this should also be addressed in the faculty development programmes.

We can conclude that analysing evaluation data can provide valuable research information. Possible follow-up research projects could investigate whether students at different stages of the curriculum mention different aspects and which qualities of supervisors in the practical phase of the medical training are particularly valued. In this clinical phase, in addition to teaching knowledge and skills, the teachers are also role models for the students. A literature review (Jochemsen-van der Leeuw et al., 2013) shows that relevant qualities of clinical teachers as role models can be divided into three categories: patient care qualities, teaching qualities and personal qualities. It would be interesting to examine students' opinions in this area and why they consider certain teachers to be positive role models. This information would also be relevant for the supervisors of traineeships in other disciplines.

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Appendix

Table 1: Qualities of good teachers mentioned by the students

		amount	%
1	Good explanation	746	17.2
2	Clarity (in general)	573	13.2
3	Good pace	313	7.2
4	Good preparation	232	5.4
5	Enthusiasm (teacher)	223	5.2
6	Good structure	213	4.9
7	Enjoyable (of which 50 humour)	164	3.8
8	Stimulating/motivating (effect on students)	151	3.5
9	Knowledgeable	140	3.2
10	Instructive/informative	121	2.8
	Total Top 10	**2,876**	**66%**
11	Interesting/captivating	110	
12	Good teacher	96	
13	Good materials (powerpoints, pictures/figures, videos)	93	
14	Good examples (of which 47 practice examples)	83	
15	Possibility to ask questions	76	
16	Interactive lesson	74	
17	Gives proper answers to questions	67	
18	Easy to follow	65	
19	Tells you what you need to know/what is important	60	
20	Good use of voice	59	
21	Provides depth/challenge	58	
22	Manages group dynamics	57	
23	Engaged (interested in students)	51	
24	Ensures all students understand	51	
25	Stimulates students' thinking activites	49	
26	Kind/friendly	48	
27	Good course coordinator	39	
28	Good repetition/uses summaries	34	
29	Helpful	33	
30	To the point (no elaborating on unimportant topics)	31	
31	Pleasant atmosphere	30	
32	Gives extra (background) information	29	
33	Poses good/in-depth questions	26	
34	Reachable	26	
35	Well-told story	25	
36	Patient	23	
37	Comprehensive	18	
38	Useful/relevant	15	
39	Visualises information (for example using gestures)	14	
40	Approachable	12	
	Total	**4,328**	

Table 2: Qualities of good medical teachers – Top 10 explained

	Theme	Explanation	Quotes
1	Good explanation	The responses showed it was very important that a teacher explains the subject well – especially if the topic is complex.	*"He was also able to explain the complex physiology of the lungs well."* *"During the lectures, the complex topic was explained in a way that was understandable to the students."*
2	Clarity	The second theme, clarity, ties in with the first. Remarks were labelled with this theme, where "clarity" was not linked explicitly to explanation.	*"He is simply clear."* *"During the seminar he was very clear."* *"Teaching in a very nice and especially clear way"*
3	Good pace	Although some comments were about speeding up the pace, typical reactions were about steadiness of pace. In order to be able to follow a lecture well, it is important for students that the pace is not too fast.	*"Lectures at the right pace."* *"She did not rush."* *"Steady pace and easy to follow."*
4	Good preparation	The students express their appreciation of good preparation by the teacher.	*"This man deserves an award; he is always very well prepared."* *"She was well prepared and because of this I learned a lot."*
5	Enthusiasm	A substantial number of students indicate that enthusiasm in turn has a stimulating effect on students.	*"You can see that she is enjoying her work."* *"Her enthusiasm and passion is very compelling!"*
6	Good structure	Good structure helped students to understand the lesson.	*"His lectures were very well structured."* *"He starts at the beginning and then builds up step by step."*
7	Enjoyable (including humour)	In the seventh place was the theme "Enjoyable". Some students explicitly mention the use of humour.	*"The subject was explained with a lot of humour, which kept you very interested."* *"Really very enjoyable!"* *"I found her way of lecturing very enjoyable."*
8	Stimulating/ motivating	In eighth place students mentioned the fact that they felt stimulated/ motivated by the teacher.	*"A motivating way of lecturing."* *"[his enthusiasm] was contagious."* *"Really stimulated me."*
9	Knowledgeable	In 140 comments, the teacher's level of knowledge was mentioned.	*"She is very well informed about the subject."* *"He knew a lot about the seminar topics."*
10	Instructive/ informative	In 121 cases, a teacher was mentioned because students found the lesson instructive.	*"Lectures were very instructive."* *"The lecture gave me a lot of insight into the physiology of bone healing."* *"She taught me a lot."*

Table 3: Comparison top 10 themes with Feldman's categories, SEEQ Factors and results of the review of Sutkin et al.

	Themes	Feldman's categories	SEEQ Factors	Literature review Sutkin et al.
1	Good explanation	Clarity and understandableness (6)	Organisation/Clarity	Communication skills
2	Clarity (in general)	Clarity and understandableness (6)	Organisation/Clarity	Communication skills
3	Good pace	Elocutionary skills (7)	Workload/Difficulty	
4	Good preparation	Preparation and organisation (5)	Organisation/Clarity	
5	Enthusiasm (teacher)	Enthusiasm (2)	Instructor Enthusiasm	Enthusiasm
6	Good structure	Preparation and organisation (5)	Organisation/Clarity	
7	Enjoyable/humour		Instructor Enthusiasm	
8	Stimulating/motivating	Stimulation of interest (1)/Intellectual challenge (17)	Learning/Value	
9	Knowledgeable	Subject knowledge (3)/Intellectual expansiveness (4)	Breadth of coverage	Medical/clinical knowledge Clinical and technical skills/competence
10	Instructive/informative	Perceived outcome/impact (12)	Learning/Value	

Information about the authors:

Nikolaos Sapoutzis, LLM, MD
Technical University of Munich
School of Medicine
TUM Medical Education Center
Ismaninger Strasse 22
81675 Munich
Germany
Gesundheitsamt Hochtaunuskreis
Ludwig-Erhard-Anlage 1-5
61352 Bad Homburg vor der Höhe
Germany
Email: nikolaos.sapoutzis@tum.de

Melanie Kalee, MSc
Anne Oosterbaan, MSc
University Medical Center Utrecht
Center for Research and Development of Education
Heidelberglaan 100
3584 CX Utrecht
The Netherlands
Email: m.kalee@umcutrecht.nl
A.E.Oosterbaan-3@umcutrecht.nl

Prof. M. Wijnen-Meijer, PhD
Technical University of Munich
School of Medicine
TUM Medical Education Center
Ismaninger Strasse 22
81675 Munich
Germany
Email: marjo.wijnen-meijer@tum.de

Nikolaos Sapoutzis,LLM, MD, is a member of the scientific staff at the Medical Education Center, Technical University of Munich and deputy head of the Department for Public Health, Veterinary and office for consumer protection, Hochtaunuskreis in Bad Homburg vor der Höhe, Germany.

Melanie Kalee, MSc, worked until recently as Quality Assurance Advisor within the Center for Research and Development of Education, and now as Educational Assistant at the UMC Utrecht Academy, University Medical Center Utrecht, the Netherlands.

Anne Oosterbaan, MSc, works as Quality Assurance Advisor within the Center for Research and Development of Education at the University Medical Center Utrecht.

Marjo Wijnen-Meijer, PhD, is professor of medical education and team leader for curriculum development at the Medical Education Center, Technical University of Munich, Germany. Her responsibilities include development of medical curricula, design of faculty development programmes and (international) research projects.