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Exploring the maturation of medical educators and their beliefs about teaching and learning: the value of a personal educational mission

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‘Consciously we teach
what we know;
unconsciously we teach
who we are’

- *Don Hamachek* -





Chapter 4

How learning-centred
beliefs relate to awareness
of educational identity
and mission:
an exploratory
study among
medical educators

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ABSTRACT

Introduction

Although learning-centred education would be most effective if all medical educators held learning-centred beliefs, many educators still hold teaching-centred beliefs. A previously developed theoretical model describes a relationship between beliefs, educational identity and 'mission,' meaning that which inspires and drives educators. To increase our understanding of why educators hold certain beliefs, we explored the empirical relationship between educators' beliefs and their awareness of their educational identity and mission.

Methods

A qualitative study was conducted using in-depth interviews with medical educators. We performed a deductive thematic analysis employing two existing models to examine educators' beliefs about teaching and learning and their awareness of their educational identity and mission.

Results

Educators demonstrated both teaching-centred and learning-centred beliefs, which aligned with an awareness of their educational identity and mission. While educators who were *unaware* of both their identity and mission displayed teaching-centred beliefs, educators aware of their identity and mission displayed learning-centred beliefs. Those who were aware of their identity, but not their mission, displayed either teaching- or learning-centredness.

Conclusions

Medical educators' awareness of identity and mission are related to their beliefs about education. Further research is needed into whether beliefs can change over time by increasing identity and mission awareness.

PRACTICE POINTS

- Faculty development interventions should focus on helping educators develop teaching beliefs that align with the educational principles of learning-centred education.
- Understanding the educational identity and mission of an educator may help to influence teaching beliefs.
- Faculty development interventions should enable medical educators to reflect not only on *who* they wish to be as educators, but also on *why* they teach, that is, on what drives and inspires them.
- Having an educational mission may help strengthen and maintain learning-centred beliefs, even when the educational culture does not support learning-centredness.

INTRODUCTION

Learning-centred education has gained ground in recent decades and is commonly implemented in medical schools around the world.¹ The medical educators involved play a crucial role in the success of this education. Instead of a sole focus on the transfer of factual knowledge, educators in learning-centred curricula also aim to facilitate the students' learning processes.²⁻⁴ To be able to support and facilitate student learning in a learning-centred educational context, medical educators' beliefs about teaching and learning need to be consistent with the educational principles behind learning-centred education. Indeed, the literature shows that beliefs are one of the driving forces behind educators' teaching behaviours and the choices they make in the design and delivery of their teaching.⁵⁻⁸ 'Beliefs' refer to conceptions about teaching and learning which are formed throughout life, are deeply rooted, and can consist of both cognitive and affective aspects.^{9,10}

Although many medical schools have implemented learning-centred curricula, a substantial number of educators in these schools appear to have teaching-centred, rather than learning-centred, beliefs.^{4,11} To effectively encourage learning-centred teaching behaviours, we need to understand which factors influence educators' beliefs about teaching and learning.

Korthagen^{12,13} developed and validated a theoretical model in the teacher education context which relates beliefs not only to behaviours and competencies, but also to a teacher's educational identity and mission. Korthagen described 'identity' as how teachers define themselves and how they see their professional role. While the focus is on the 'self,' the concept is largely determined by how relationships with significant others are viewed. 'Mission' is defined as the source of inspiration, reflecting a teacher's deepest purposes and ideals. A mission gives meaning to one's professional existence by contributing to others (e.g. students or colleagues) within a larger context and therefore has a transpersonal characteristic. The question of *who* I am as a teacher is related to a teacher's identity, whereas the question of *why* I teach is related to a teacher's mission.

While the literature provides substantial evidence for the relationship between educators' beliefs and behaviours,^{3,14,15} little is known about the relationship between beliefs and identity. Only a few studies show a potential link between educators' beliefs and their educational identities.^{16,17} However, these studies did not explore aspects of teaching-centred or learning-centred beliefs, which are specifically relevant in learning-centred education.

The notion of 'educational mission' has also not received much attention in the medical education literature, and even less is known about the relationship between a medical educator's educational mission and their beliefs about teaching and learning. Although recent studies have paid attention to educators' motivation to teach, in particular within the 'professional identity' literature,¹⁸⁻²⁰ the concept of motivation is not identical to Korthagen's concept of mission. Whereas motivation can refer to temporary, short-term goals, 'educational mission' refers to what 'deeply drives and gives meaning' to an educator's professional existence. Even though Korthagen defines this concept as a core teacher quality, underlying a teacher's identity, it has been infrequently studied. Indeed, we know of only two studies in the health professions exploring educators' missions. Steinert & Macdonald²¹ focused on what teaching means for educators working in a clinical context. They described physicians' educational mission as 'being morally and socially motivated to teach, wanting to contribute to the next generation of physicians, which gave them a sense of personal fulfilment.' Ottenhoff-de Jonge et al.²² examined medical educators' perspectives about being a good teacher in a preclinical context, using Korthagen's model as a theoretical framework. They concluded that educators with the most elaborate perspective on being a good teacher were not only aware of their educational identity, but of their educational mission as well.

To summarise, educators' beliefs about teaching and learning seem to be influenced not only by the educational context in which they work, their behaviours and their competencies, but also by their awareness of their identity and mission. A better understanding of these influencing factors will help to effectively support educators in implementing learning-centred education which is beneficial for student learning.

Although Korthagen's model, developed in a teacher education context, theoretically describes the interrelationships between beliefs, identity, and mission, we need to address the empirical gap: if and how medical educators' beliefs about teaching and learning relate to the awareness of their educational identity and mission. Therefore, this study aims to answer the following question: How are medical educators' beliefs about teaching and learning related to the awareness of their educational identity and mission?

METHODS

To answer our research question, we conducted a qualitative study using in-depth semi-structured interviews with medical educators from two medical schools. We performed a deductive thematic analysis,²³ in which we used existing theories as our point of departure. These theories relate to beliefs about teaching and learning⁴ as well as to aspects of being an educator,¹² including the identity and mission of educators. We first identified participants' awareness of their educational identity and mission as well as their beliefs about teaching and learning. Then, we explored the relationship between these two areas of inquiry.

Participants and setting

To obtain a wide variety of participants, we recruited faculty members from two medical schools in the Netherlands and the USA, inviting physicians with a variety of educational roles. We purposefully selected physicians for several reasons. One reason is that the majority of educators at both medical schools have a medical background, even those who teach basic science topics. The other reason is that beliefs about teaching and learning can be influenced by an educator's medical or non-medical background, in particular beliefs related to students' professional development.⁴ We wanted to exclude potential differences due to medical or non-medical backgrounds as an influencing factor. We recruited participants from Stanford University School of Medicine, USA, and Leiden University Medical Centre, the Netherlands, both research intensive medical

schools with a long-standing learning-centred curriculum. Selection took place on the recommendation of a sub-dean or senior educator from the respective medical schools. Four educators were involved in educational administration, and were, for example, responsible for curriculum innovations or professional development programmes. The other 17 participants were selected on the basis of their active and long-standing educational involvement and exemplary teaching, as witnessed by student evaluations and teaching awards. Each of the participants had at least twenty years of teaching experience, and most of them were responsible, or had been responsible, for curriculum content. Eight of the participants taught basic science topics; the other nine taught clinical topics. We chose these selection criteria because we expected that these faculty members would be 'information-rich' and that their experiences would be enlightening (*critical case sampling*). The first author invited the participants by e-mail or telephone and emphasised that participation was voluntary and anonymous. All invited faculty members agreed to participate. This study was approved by the Netherlands Association for Medical Education (NVMO) Ethical Review Board (NERB number 834).

Procedures

We used the interview guide of Ottenhoff-de Jonge et al.,⁴ designed to explore educators' beliefs about teaching and learning, as well as their perspectives on being an educator (see Addendum 4.1: interview guide). A sample question related to beliefs about teaching and learning was: 'Does your teaching influence student learning? If so, how?.' The primary question related to educational identity and mission was: 'What makes somebody a good teacher?,' followed by the question on what might prevent them from being a good teacher. Due to our selection criterion of exemplary teaching, the participants identified with the notion of 'good teachers' and related these questions to themselves. By asking for examples from their own teaching practices, we further ensured that the participants elaborated on their own teaching experience. We asked them to consider the preclinical educational context during the interview, as in this setting, learning-centred education is most clearly designed and implemented. Because beliefs about teaching and learning may vary according to the level of teaching,^{24,25} we also wanted to avoid participants answering the questions with the clinical context in mind. Interviews took place between May and September 2018 and all were conducted by the first author. The interviews lasted on average 60 minutes and were audiotaped and transcribed.

Analysis

We performed a three-step analysis. Firstly, we identified participants' awareness of their educational identity and mission (Step 1); secondly, we identified their beliefs about teaching and learning (Step 2); thirdly, we determined the relationship between these two areas of inquiry (Step 3).

Awareness of educational identity and mission

In Step 1, to identify participants' awareness of their educational identity and mission, we used the codebook developed in a previous medical education study²² which is based on Korthagen's model.¹² This study describes four teacher profiles, hierarchically ordered to describe an educator's increasing awareness of distinct aspects of being an educator (see Table 4.1).

Table 4.1. Summary of teacher profiles (based on Ottenhoff-de Jonge et al.²²).

Teacher profile:	Teacher's main focus is on:	Teacher is aware of their:	
		Educational identity	Educational mission
Critic	Contextual aspects that constrain being a successful educator	-	-
Practitioner	The practice of education: educational behaviours and competencies	-	-
Role Model	Educational identity	+	-
Inspirer	Personal educational mission	+	+

- = not present; + = present

In the least elaborate profile, labelled as the 'Critic,' educators focus on environmental and contextual factors while in the second profile, the 'Practitioner,' educators focus on behaviours and competencies as an educator. In the 'Role model' profile, educators extend their awareness to include their educational identity, whereas in the most elaborate 'Inspirer' profile, educators reflect not only on aspects emphasised by the other profiles, but also on their educational mission. Educators in the 'Role model' and 'Inspirer' profiles are characterised by their emphasis on affective aspects of being an educator, in contrast to the other two profiles that emphasise cognitive aspects.

Based on the coded text fragments, each educator was categorised into one of four profiles to discern educators' awareness identity and mission. Educators in the 'Critic' and 'Practitioner' profiles did not have any codes related to identity and mission, educators in the 'Role model' profile had assigned codes that

related to identity but not to mission, and educators in the ‘Inspirer’ profile had assigned codes that related to both identity and mission. The categorisation of a participant to a profile was determined holistically, based on the whole transcript, including the labelled fragments. We followed the analytic process as described by Ottenhoff-de Jonge et al.²²

Beliefs about teaching and learning

In Step 2, we selected those text fragments that related to the participant’s beliefs about teaching and learning. To categorise these beliefs, we used a beliefs framework previously developed within the medical education context⁴ which is based on an earlier framework of Samuelowicz and Bain.⁸ The framework consists of a matrix and describes teaching beliefs in terms of belief orientations and belief dimensions (for convenience, we have provided the framework in Addendum 4.2). A belief orientation represents a global, composite set of beliefs about teaching and learning. In the framework, there are six different belief orientations, indicated in the columns in the matrix, ranging from teaching-centred to learning-centred. These six belief orientations are defined by nine dimensions, indicated in the rows in the matrix. Each dimension represents a different aspect of the belief orientations regarding teaching and learning. Within each dimension three or four beliefs can be distinguished. For example, the three beliefs listed within the dimension ‘Students’ existing conceptions’ are: ‘not taken into account,’ ‘used as basis for developing expertise,’ and ‘used to negotiate meaning.’ These beliefs are ordered on a continuum from teaching-centred to learning-centred. We labelled the text fragments according to the beliefs as identified in the framework, and subsequently determined a belief orientation holistically, meaning that we used the whole transcript, including all of the labelled fragments.

For Steps 1 and 2, the first and third author (MO and IvdH) independently analysed the interview transcripts to ensure *credibility*, using Atlas-ti qualitative data analysis software. Both authors had experience in the analysis procedure related to both models used. We discussed our labelling jointly and reached consensus on the categorisation of each participant’s teacher profile (‘Critic,’ ‘Practitioner,’ ‘Role model,’ or ‘Inspirer,’ respectively) and belief orientation (ranging from I to VI). In a separate interview, the first author performed a *member check* by asking all participants if they agreed with our conclusions on the assigned teacher profile and belief orientation, by providing them with a relevant selection of the labelled fragments from their previous interview.

Relationship between beliefs about teaching and learning, and awareness of an educational identity and mission

For the third step in the analysis, we looked for combinations of the belief orientations and the teacher profiles (see Table 4.2) to answer our research question about the relationship between beliefs about teaching and learning, and awareness of identity and mission. To obtain a better understanding of the meaning of this relationship and its implications for practice, we discussed the findings within the research team.

Table 4.2. The relationship between medical educators' belief orientation and teacher profile.

Teacher profile	Belief orientation					
	Teaching- centred orientations			Learning- centred orientations		
	I. Imparting information	II. Transmitting structured knowledge	III. Providing and facilitating understanding	IV. Helping student develop expertise	V. Sharing the responsibility for developing expertise	VI. Negotiating meaning
Critic	-	-	-	-	-	-
Practitioner	-	+	+	-	-	-
Role model	-	+	+	+	+	-
Inspirer	-	-	-	+	+	+

RESULTS

We will describe the results in the order of the three steps of the analysis.

Awareness of educational identity and mission

When classifying the educators' teacher profiles, none of our participants fell into the 'Critic' profile. Of the twenty-one participants, three fell into the 'Practitioner' profile, eight into the 'Role model' profile, and ten into the 'Inspirer' profile.

The educators with a 'Practitioner' profile were unaware of their educational identity and mission. They instead emphasised their competencies as educators, such as knowing how to help students understand basic concepts, and concrete behaviours that could help to achieve this goal, for example repetition of the content:

It's really a challenge to balance the topics, so that it's sophisticated enough that they will be able to use this for the rest of their life..., these concepts. (...) most people, the first time they hear a lot of these things, they will not get it... And that's why I think repetition is essential. I think anything that is worth learning should be repeated. (S06)

Awareness of an educational identity was present in the educators with a 'Role model' profile. However, they did not discuss an educational mission. They emphasised the importance of being enthusiastic, engaged with the student, and committed to teaching.

I think you have to have a certain enthusiasm, a certain love for the profession..., you have to enjoy working with younger people. And I like that. (...) I think the biggest influence [on the student's learning process] is whether the teachers in front of the student have a heart for education; heart for the teaching of their profession and therefore also for education. (L05)

We labelled this fragment as 'identity,' as throughout the interview it became clear that the focus of this participant was on their own role as educator.

Awareness of an educational mission was present in the educators who demonstrated the 'Inspirer' profile. They expressed their caring about student learning or sharing their passion for the medical profession with the student.

If I succeed in inspiring people to want to learn something more, then I would consider that as a success. (...) I think the most important thing [as a teacher] is modelling the care of patients (...) and the patient's values and beliefs and context are incredibly important. So, I think, as an individual, that is what I impart most and hope to inspire. (S08)

All participants who were aware of their educational mission also articulated an awareness of their educational identity.

Beliefs about teaching and learning

When classifying the educators' belief orientations, the most teaching-centred belief orientation, characterised as 'Imparting information,' was found to be absent from our dataset. Of the teaching-centred orientations, one participant described teaching as a 'Transmission of structured knowledge' (Orientation II), and eight participants viewed teaching as 'Providing and facilitating understanding' (Orientation III). Examples of teaching-centred beliefs are the beliefs that the purpose of learning is to understand concepts, and that the purpose of interacting with students is to hold their attention.

I think the main thing [learning goal] is we want them to learn these concepts and so what we try to do for teaching is to make it clear what the concepts are that we think are important for each of these topics. (S06)

I think [the purpose of interaction is] to keep their attention. Yes, I think that is a very important goal. (L03)

Of the learning-centred orientations, two participants believed that teaching is 'Helping students to develop expertise' (Orientation IV), two viewed teaching and learning as 'Sharing the responsibility for developing expertise' (Orientation V), and eight believed that teaching and learning was about 'Negotiating meaning' (Orientation VI). Examples of learning-centred beliefs include beliefs that the purpose of learning is to encourage a change in a student's thinking, and that the interaction between student and teacher has a reciprocal purpose to negotiate meaning.

If the students share in the excitement of learning new ways of thinking, and new things, that definitely influences them. (S01)

...in the expectation that you learn... both [teacher and student]. So it's not a unidirectional process, it's not a transfer; it is a two-directional transfer I would say. (L04)

In Addendum 4.3 we provide sample quotes of both a teaching-centred and a learning-centred belief for each dimension.

Relationship between beliefs about teaching and learning, and awareness of educational identity and mission.

Exploring the relationship between the belief orientations and the teacher profiles revealed several combinations (see Table 4.2). Every educator unaware of their educational identity or mission (in the 'Practitioner' profile) showed a teaching-centred belief orientation. In contrast, every educator aware of both their educational identity and mission (in the 'Inspirer profile') showed a learning-centred belief orientation. Of the educators with an awareness of their educational identity, but no awareness of their mission (in the 'Role model' profile), some educators showed teaching-centred belief orientations while others held learning-centred orientations.

The most learning-centred belief orientation (VI) , labelled 'Negotiating meaning,' was only present in the educators with an awareness of their educational identity and mission (in the 'Inspirer' profile). The two beliefs in which this belief orientation (VI) differs from the second most learning-centred orientation (V), labelled 'Sharing the responsibility for developing expertise,' are related to the importance of fostering students' existing conceptions and intrinsic motivations.

Interviewer: *What do students bring to the learning process?*

Participant: *They bring different points of view, ... I think that is very engaging for other people including their professors; how they think about problems helps other people learn; they bring new ideas in that you haven't even thought about. (...) I use them or I learn from them. (S10)*

I really work hard to get to know these students at a personal level. (...) to know a little better about their own interests and experiences and draw on these as part of the teaching and learning that we do, to make it seem so relevant to them. (S13)

DISCUSSION AND CONCLUSION

Based on the results of our study on the relationship between educators' beliefs about teaching and learning, and their awareness of their educational identity and mission, we conclude that these two areas of inquiry are aligned. Educators who are not aware of their educational identity or mission have teaching-centred

beliefs, while educators with an awareness of their identity and mission have learning-centred beliefs. Since learning-centred beliefs will enable educators to successfully implement learning-centred education, the present study sheds light on the importance of educational identity and mission for educators working in learning-centred curricula.

The relationship between a lack of identity and mission awareness (in the Practitioner profile) and teaching-centredness can be explained, as the primary focus of educators with teaching-centred beliefs is on transmitting the content of the subject matter, in other words on *what* should be taught, rather than on *how* content can best be learned by the students. This focus is consistent with the Practitioner profile's emphasis on an educator's competencies and behaviours to deliver this content. The finding that educators who are not aware of their educational identity do not hold learning-centred beliefs confirms the importance of identity awareness for learning-centred education. We can conclude that educators whose beliefs about teaching and learning align with the learning-centred educational context in which they work, are aware of their educational identity, or, in other words, are aware of *who* they are as teachers. The study of Dory et al.,¹⁶ even though not focusing on beliefs relevant for learning-centred education, confirmed that teaching beliefs aligned with the educational context are related to awareness of an educational identity. It is conceivable that educators who are aware of their educational identity are more motivated to reflect on whether their teaching role aligns with their teaching beliefs and with the learning-centred educational context, than educators for whom their educational identity is less evident.

The finding that some educators with an awareness of their educational identity (in the Role model profile) show teaching-centred belief orientations may be explained by the fact that, although the formal educational context embraces learning-centred education, the implicit educational culture of the organisation may still favour teaching-centred beliefs. Several studies have indeed shown that the educational culture in organisations can sometimes have a constraining influence on the beliefs about teaching and learning of educators.²⁶⁻²⁸

Our finding that the educators who are aware of their educational mission (in the Inspirer profile) all show learning-centred belief orientations underlines the relevance of an educator's educational mission awareness in learning-centred education. Awareness of an educational mission is apparently an effective 'antidote' to the constraining influences of the implicit educational culture, and

may help educators strengthen and maintain their learning-centred beliefs. Our findings demonstrate an alignment between educators' personal mission and motivation to contribute to the student's development, and their belief that learning activities should be aimed at facilitating the student's learning process. This relates to another finding that only educators with an awareness of their educational mission show the most developed learning-centred belief orientation. This belief orientation is characterised by an awareness of the importance of fostering what a student brings to the learning session: their existing conceptions and their intrinsic motivations. We conclude that educators who believe that they should foster the student's input are not only aware of their educational role but also of their educational mission. Thus the educators' beliefs about the relevance of student input and the relevance of utilising this input align with the educators' mission to focus on student learning. An explanation for these findings may be that educators who articulate an educational mission, in other words, *why* they teach, demonstrate that they have reflected on their deeper motivations as educators, and that this reflectiveness may help them consider whether their teaching beliefs align with this 'mission' and with their teaching role. Akin to the belief in our beliefs framework that student-learning is most enhanced if the intrinsic motivation of the individual student is fostered (see Addendum 4.2), we believe that the educator's learning about teaching is most enhanced if they are encouraged to reflect on their personal motivation to teach. Two studies describe results consistent with our findings. Steinert and MacDonald²¹ reported that teachers who articulate their educational mission, also say that teaching enables them to learn from their students which is a learning-centred belief (see Addendum 4.2 and 4.3); Åkerlind²⁹ concluded that teachers with learning-centred beliefs describe a focus on the student. Both findings are consistent with our conclusion that educators with learning-centred beliefs focus their educational mission on the student.

Two other findings, related to the two areas of inquiry, deserve attention. The first concerns the hierarchical structure of the teacher profile model, which is confirmed by our findings: educators who were aware of their mission were also aware of their identity. In the discourse on the identity formation of an educator, the relevance of explicating one's educational mission often remains implicit. Our finding reinforces the recommendation to pay explicit attention not only to *who* one wants to be as an educator but also to *why* one wants to be an educator, to what deeply drives and motivates.²² The second is the fact that a substantial proportion of the interviewed educators held teaching-centred beliefs. We expected teaching-centredness to be the exception due to the selection of the two

medical schools, both with learning-centred curricula implemented more than 15 years earlier, and the selection of highly engaged, exemplary educators with longstanding experience. However, our unexpected finding is in line with previous studies reporting that in medical schools with learning-centred curricula some of the educators maintain teaching-centred beliefs.^{4,11} This finding underscores the sharp boundary between teaching-centredness and learning-centredness, which cannot be easily crossed. The transition to a learning-centred belief orientation means a profound shift in which multiple, often deeply-rooted beliefs would be required to change.⁴ This observation further emphasises the need for future studies to explore how we can encourage the development of learning-centredness through faculty development initiatives for medical educators.

Implications for practice

Thus our study has implications for faculty development in promoting learning-centred education. In addition to the growing attention on educational identity formation in faculty development,^{19,30,31} we recommend that faculty development interventions also pay attention to the underlying educational mission. That is, our findings support the recommendation of Steinert and Mc Donald²¹ that faculty development should not only focus on the *what* and *how* of teaching, but also on what it means to educators to teach, in order to enhance the effectiveness of medical educators. In addition, we suggest that, to promote learning-centred education, it is important not only to help medical educators reflect on *who* they wish to be as educators, but also on *why* they teach, that is, what drives and inspires them. If educators have a clear mission to foster student learning, this may strengthen their awareness of their educational identity and their role as facilitator of student learning, consistent with their learning-centred beliefs, even if the informal educational culture does not support learning-centredness.

We consider that recommendations for developing and supporting an educational identity also apply to helping educators develop an educational mission. We highlight those recommendations that we believe are specifically relevant in relation to our findings, which concern reflection, meaningful relationships with others, and context. In faculty development studies, reflection on the 'self' as well as on the teaching and learning process has been shown to strengthen the development of an educational identity,^{19,31,32} and has also been suggested for the development of learning-centred beliefs.^{11,26,33} We believe that reflection can also be valuable to help educators develop an individual educational mission. Since affective aspects predominate in the articulation of an educational identity and mission, we believe that meaningful relationships with others can serve as an

important trigger for self-reflection regarding professional development as an educator. In addition to personal contact with students, contacts with peers and mentors with an articulated awareness of their educational identity and drive for teaching may contribute to an educator's development of their educational identity and mission. One way to embed these relationships is through personal networks or communities of practice in the workplace,³⁴ or through more formal longitudinal programmes,³¹ which can create a sense of belonging and connectedness with like-minded colleagues. Since the context in which educators work can be both supportive and challenging to the professional development of educators,^{27,31} it is important to take the context into account and to address the informal educational culture. A supportive leadership at all levels of the organisation, rewarding teaching in career paths, encouraging teacher networks and communities, and minimising conflicts created by competing tasks, are examples of how the context of the workplace can be beneficial to the development of an educator's mission.

Limitations and future research suggestions

We purposefully selected participants known for their exemplary teaching. This may have resulted in less variation in the two areas of inquiry, and may explain why the most teaching-centred belief orientation and the least elaborate teacher profile were not present in our dataset. As well, since we purposefully focused on preclinical curricula, we need to be cautious when extending conclusions from our findings to other contexts. Nevertheless, we expect that the alignment between educators' personal motivation to contribute to student learning and their learning-centred beliefs, both deeply rooted, will not be limited to one particular educational context. A future study carried out in other contexts can provide further insights. It would also be interesting to study the perspectives of younger educators regarding their educational mission, identity and teaching orientation, since they are often educated in learning-centred curricula with more emphasis on self-reflection. According to Korthagen,¹² teachers' beliefs, identity and mission can be developed and can influence each other in both directions. Further research is needed into whether beliefs about teaching and learning can change from teaching-centredness to learning-centredness, and to confirm if increasing awareness of identity and mission will influence beliefs, and vice versa. This could be explored by means of a longitudinal study with repeated interviews over time.

In conclusion, our findings display an alignment between educators' learning-centred beliefs and their awareness of their educational identity and mission in learning-centred education, thus confirming Korthagen's model.^{12,13} Until now, the educational identity and mission of educators, that is, their deepest inspiration

and motivation, have received limited attention in the literature. Therefore, we propose that, in addition to a focus on educational identity, both research and faculty development place greater emphasis on the educational mission of educators.

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ADDENDA

Addendum 4.1. Interview guide: see Chapter 2, Addendum 2.2.

Addendum 4.2. Beliefs framework: see Chapter 2, Table 2.1.

Addendum 4.3. Sample quotes of both a teaching-centred and a learning-centred belief for each dimension.

The respective teaching-centred orientations (orientations II and III) and learning-centred orientations (orientations IV, V and VI) have been merged, as we here aim to illustrate global differences between teaching-centred and learning-centred beliefs as identified in this study.

Belief orientations		
Belief dimension	Teaching-centred (Orientation II or III)	Learning-centred (Orientation IV, V or VI)
Desired learning outcome	Students' understanding of concepts <i>'Well, that small group is about a certain subject and the intention is that they understand what is...[discussed] in that small group. And that they can answer questions about that later.'</i> (L09)	Change in students' thinking <i>'if the students share in the excitement of learning new ways of thinking, and new things, that definitely influences them.'</i> (S01)
Expected use of knowledge	Within subject for future use <i>'Learning? Learning is making synaptic changes in your own mind so that certain knowledge or connections stick in your head, things you really understand, that you can recap at any time.'</i> (L12)	To enable interpretation of the professional reality of patient care or health care <i>'...so I hope that my teaching is helping people think, (...) and how to apply tools and skills and knowledge in the domain we're used to doing.'</i> (S10)
Responsibility for transforming knowledge	Teacher <i>'Students' main responsibilities? Preparing. Participating. That's really what it is. (...) They should bring the knowledge base that we explicitly ask them to judge.'</i> (S03)	Students & teacher <i>'The student (...) is responsible for his/her development, and I am the coach. So you [the teacher] have to make sure that you help them as best you can to achieve those goals. Whether they are achieved is of course the student's responsibility.'</i> (L13)

Addendum 4.3. Continued.

Belief orientations		
Belief dimension	Teaching-centred (Orientation II or III)	Learning-centred (Orientation IV, V or VI)
Nature of knowledge	Externally constructed. Focus on 'factual' knowledge <i>'Knowledge is, of course, partly factual knowledge. I think it is important that the students in the first years in particular acquire sufficient knowledge of anatomy and physiology. That they know how processes in the body work.'</i> (L08)	Personalised and dynamic. Focus on learning from reality <i>'Professional knowledge obviously comes from books, lectures, other learning opportunities, and it's coupled with experiential knowledge, ideally with reflection about the experience....'</i> (S12)
Students' existing conceptions	Not taken into account	Used as basis for developing expertise or to negotiate meaning <i>'They [students] bring their backgrounds, their ingenuity, their dreams, their hopes, their interests. The whole concept of self-directed learning begins with saying everybody has this drive inside of them to learn and master things.'</i> (S05)
Teacher-student interaction	Reciprocal to maintain students' attention/ to clarify meaning <i>'I think [the purpose of interaction is] to keep their attention. Yes, I think that is a very important goal.'</i> (L03)	Reciprocal to negotiate meaning <i>'..in the expectation that you learn... both. So it's not a unidirectional process, it's not a transfer; it is a two-directional transfer I would say.'</i> (L04)
Creation of conducive learning environment	Not stressed/ stressed to make students feel at ease <i>'So you ... want them to feel that it is okay to be somewhat overwhelmed with the material. You know, the beginning is hard and I tell them. You acknowledge that and it helps; it gives them some encouragement.'</i> (S06)	Stressed to help individual student/ to allow student to learn <i>'...I'd like to avoid embarrassment. Why? It's demoralising, they're not in a position to learn if they're demoralised; I want the atmosphere to be one of having fun and discussing important ideas together (...). Learning is more effective if it's fun.'</i> (S01)

Addendum 4.3. Continued.

Belief orientations		
Belief dimension	Teaching-centred (Orientation II or III)	Learning-centred (Orientation IV, V or VI)
Students' professional development	<p>Not stressed/ a limited number of competencies (communication/ collaboration) stressed</p> <p><i>'The aim of the small group is often the transfer of knowledge, and a bit of course also the collaboration that they should have with each other in such a small group. Although I don't really do much about that.'</i> (L05)</p>	<p>Stressed; teacher helps/ fosters student in their professional development</p> <p><i>'I want to make sure that I prepare the students for the outcomes which include taking care of patients, as well as assessments and life-applications; whether it's in the clinic or it's in academics or if it's in team-based work with other professionals.'</i> (S04)</p>
Students' motivation	<p>Teacher tries to transmit own motivation to students/ is aware of students' intrinsic motivation</p> <p><i>'...the enthusing role of the teacher. (...) With nice small group teaching, which appeals to them, I think you give them tools to be even more interested.'</i> (L03)</p>	<p>Teacher is aware of individual student's motivation/ fosters individual student's motivation to enhance the learning</p> <p><i>'I really work hard to get to know these students at a personal level. (...) to know a little better about their own interests and experiences and draw on these as part of the teaching and learning that we do, to make it seem so relevant to them.'</i> (S13)</p>