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## Conceptions of learning and teaching in teachers

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# CHAPTER 1

**General introduction**



*Academic vitality is dependent upon faculty members' interest and expertise; faculty development has a critical role to play in promoting academic excellence and innovation*  
(Wilkerson & Irby, 1998)<sup>1</sup>

Being a good teacher is not, as is often assumed, an innate characteristic, but a craft that has to be learned. This thesis focuses on faculty development and aims at a deeper understanding of teachers' conceptions of learning and teaching with respect to this craft of teaching, in student-centred medical curricula. First, definitions will be provided for faculty, faculty development and conceptions of learning and teaching.

*'Faculty' refers to 'all individuals who are involved in the teaching and education of learners at all levels of the medical education continuum (e.g. undergraduate, graduate, postgraduate, and continuing professional development), leadership and management in the university, the hospital, and the community, and research and scholarship, across the health professions' (p.5).<sup>2</sup>*

*'Faculty development' has been defined as: 'the broad range of activities that institutions use to renew or assist faculty members in their multiple roles. Faculty development activities include programmes to enhance teaching and education, research and scholarly activity, academic leadership and management, and faculty affairs, including faculty recruitment, advancement, retention, and vitality. The intent of these activities is to assist faculty members in their roles as teachers, educators, leaders, administrators and researchers.'<sup>3</sup>*

Teachers' conceptions of learning and teaching refer to *the thoughts or ideas teachers have about learning and teaching*. Pratt<sup>4</sup> and Kagan<sup>5</sup> defined conceptions as: *'specific meanings attached to phenomena which can act as a filter through which new information passes as it is processed'*. An important feature is that conceptions are partly unconscious and that they influence teachers' intentions for teaching.

Since teachers' conceptions of learning and teaching are studied from the perspective of faculty development, activities in this area will be discussed, followed by current insights into transfer of faculty development to the practice of teaching. This is followed by an outline of conceptions of learning and teaching and related terms, as well as an overview of instruments in use. Next, the characteristics of these curricula are presented and compared

with more traditional, lecture-based curricula, since the research studies are conducted in the context of student-centred curricula in Medicine. Subsequently, these insights from the literature are reviewed in a perspective on faculty development, followed by the central research questions and an overview of the research projects.

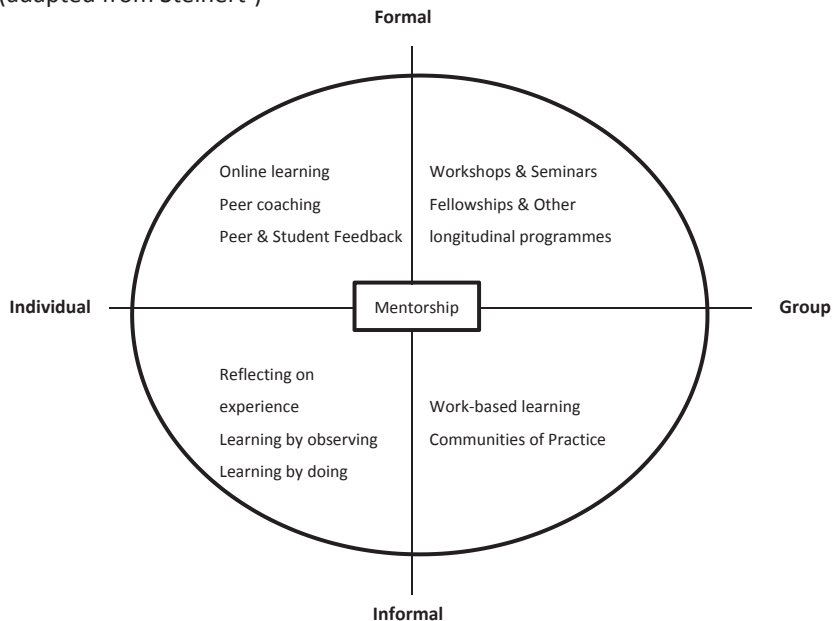
### Faculty development

In essence, faculty development comprises many activities, which can be divided into individual and group initiatives, as well as into formal and informal activities. This results in four areas of faculty development activities and, at the core, a fifth individualized and particularly promising activity, mentorship.<sup>6</sup> Figure 1 provides an overview, including examples.

In the Netherlands the most dominant faculty development activities still are workshops and seminars, which are mainly focused on training teaching skills with limited attention to what lies behind the teaching behaviour. Other faculty development activities which are gaining ground are long-term trajectories dedicated to leadership development and to university teaching qualifications. These activities have a broader scope and often pay attention to knowledge, skills and teachers’ conceptions of learning and teaching.

**Figure 1: Overview of Faculty Development**

(adapted from Steinert<sup>6</sup>)



### ***Transfer of faculty development activities***

The way in which skills, knowledge, and beliefs are applied in daily practice as a result of a faculty development initiatives is described as ‘transfer’. De Rijdt and co-workers reviewed the transfer literature and combined insights from the domains of management, HRD and organizational psychology with the educational domain.<sup>7</sup> They identified three groups of variables influencing the transfer of learning: (1) the design of the intervention, (2) learner characteristics and (3) work environment.

Important learner characteristics for transfer are the conceptions of learning and teaching that teachers have, i.e. how teachers think about learning and teaching. Several authors have argued that teachers’ conceptions influence their teaching approaches.<sup>8-11</sup> This might have implications for faculty development activities. Later on, teachers’ conceptions of learning and teaching will be discussed in greater depth.

### ***An outline of conceptions of learning and teaching and related terms***

The phrase ‘conceptions of learning and teaching’ is frequently used in the domains of psychology and general higher education.<sup>e.g. 12-14</sup> Although Kember and Kwan<sup>13</sup> viewed conceptions as relatively stable entities, others argued that teachers’ conceptions of learning are dynamic and can be changed<sup>14-16</sup>. Therefore, it might seem reasonable to attempt to influence these teachers’ conceptions if the ultimate goal is a change in teaching behaviour. This might possibly imply that faculty development activities need to be reconsidered.

Besides ‘conceptions’, some related terms are used as well, for example ‘beliefs’ and ‘intentions’ (see Figure 2 and Table 1). In psychology, ‘belief’ is a well-known and broadly used term.<sup>17</sup> An important difference between beliefs and conceptions is that beliefs are more deeply rooted; they are formed early in life and are less amenable to change than conceptions. Intentions describe what teachers *intend to do* in their teaching practice. Teachers’ conceptions of learning and teaching affect their intentions and ultimately their teaching behaviour.<sup>13</sup> For example, a teacher may have the conception that students learn best by constructing knowledge themselves. A corresponding intention might be that the teacher aims to demonstrate a conceptual change / student focused teaching approach in his teaching behaviour. Norton and co-workers<sup>18</sup> developed a questionnaire measuring beliefs as well as intentions, building on previous research of Gow and Kember<sup>19</sup>.

**Table 1: Description of conceptions and related terms**

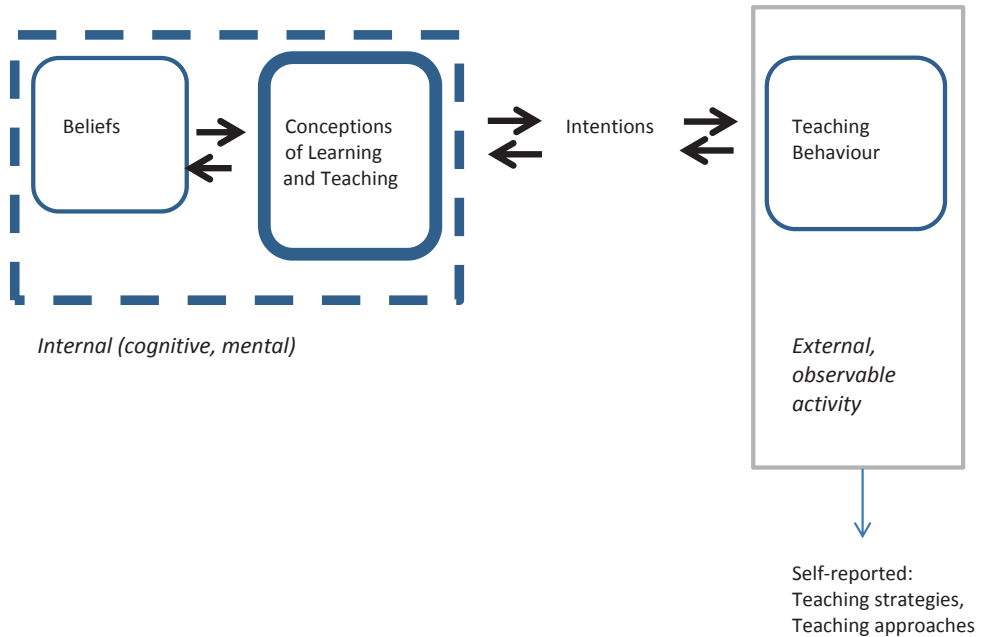
Term	Description
Conceptions of learning and teaching	partly unconscious thoughts or ideas teachers have about learning and teaching. Can act as a filter through which new information passes as it is processed. Influence teachers' intentions for teaching
Beliefs	deeply rooted, formed early and less amenable to change than conceptions of learning and teaching
Intentions	what teachers <i>intend to do</i> in their teaching practice
Teaching approaches and strategies	what teachers <i>think that they do</i> in teaching practice, e.g. engaging students in active learning formats
Perspectives	combination of beliefs, intentions and perceived actions
Teaching behaviour	observable behaviour in daily practice; how does the teacher teach?

Other descriptions related to conceptions of learning and teaching are 'approaches to teaching', 'teaching strategies' and 'perspectives'. Firstly, the descriptions 'approaches to teaching' and 'teaching strategies' refer to *what teachers think that they do* in teaching practice.<sup>e.g.20</sup> Several studies have used the Approaches to Teaching Inventory (ATI), developed by Prosser and Trigwell.<sup>20,21</sup> The ATI focuses on intentions and teaching approaches rather than on teachers' conceptions of teaching.<sup>10,22</sup> 'Perspectives' are a combination of beliefs, intentions and perceived actions and are used, for example, by Pratt and co-workers in their online teaching perspectives inventory (TPI).<sup>23,24</sup> Table 2 presents an overview of the available instruments.

Key outcomes are changes in teaching behaviour as well as means to support such changes through faculty development. Previous studies have demonstrated the relation between teaching approaches and student learning results.<sup>25,26</sup> However, few studies address teaching behaviour in relation to teachers' conceptions.<sup>e.g.14</sup>

After some consideration, 'teachers' conceptions of learning and teaching' were chosen as the central focus in our studies. This choice was based on the dynamic nature of conceptions compared to beliefs, the impact of faculty development on conceptions, and the relation between teachers' conceptions and teaching behaviour.

**Figure 2: Schematic overview of terms related to conceptions of learning and teaching**



### ***Student-centred curricula***

As student-centred curricula have been gaining ground worldwide since their introduction in the 1970s<sup>27</sup>, the studies on teachers' conceptions of learning and teaching in this thesis focus on these curricula. Until now, this has not been investigated. In a student-centred curriculum such as problem-based learning (PBL) the central aim is to change students' manner of learning from passive content memorization into active, context-based learning.<sup>28</sup> Teachers play a pivotal role in the success of these curricula. Instead of transmitting their knowledge to students, as is seen in more traditional curricula, teachers in student-centred curricula guide students in small group sessions and scaffold their students' learning.<sup>29</sup> Teachers are generally prepared for this demanding task by means of faculty development activities, such as workshops, seminars or 'communities of practice'. These activities are mainly focused on teaching skills. It is worthwhile to study to which extent these activities influence teachers' conceptions of learning and teaching.



**Table 2: Overview of existing instruments**

<b>Name of questionnaire</b>	<b>Authors</b>	<b>Measuring</b>	<b>Additional information</b>
ATI: Approaches to Teaching	Trigwell et al. <sup>10</sup>  Revised in 2005, Trigwell et al. <sup>21</sup>	Approaches to teaching: Intentions and strategies	Each teacher receives scores on two components: (1) conceptual change/ student-focused [CCSF] approach and (2) information transmission / teacher focused [ITTF] approach.  Initially 16 items, revised: 22 items
TPI: Teaching Perspectives Inventory	Pratt et al. <sup>22</sup>	Perspectives on learning, teaching and knowledge: a combination of actions, intentions and beliefs	Each teacher is categorised in one of 5 teaching perspectives: (1) transmission, (2) apprenticeship, (3) nurturing, (4) developmental or (5) social reform  45 items
No name	Norton et al. <sup>18</sup>	Beliefs and intentions	Modification of Gow and Kember's inventory <sup>19</sup>  34 items

As teachers' conceptions affect their teaching behaviour, it might be sensible to assume that teachers' conceptions should be aligned with the philosophy of student-centred education to result in effective small group learning. A major curriculum shift from a traditional teacher-centred and lecture-based curriculum to a student-centred curriculum, with the same teaching staff, would imply a serious demand on teachers and faculty development activities. Presumably, the success of such a curriculum change would be facilitated by evidence-based guidelines on how to influence teachers' conceptions and guidelines for effective faculty development activities.

### ***Implications for faculty development activities***

It has been demonstrated that teachers' conceptions of learning and teaching can be influenced and changed by faculty development activities.<sup>14,30</sup> Furthermore, it has been argued that conceptions have to be changed to achieve enduring changes in teaching practice.<sup>13</sup> Postareff et al. even recommended that faculty development activities should pay more attention to teachers' conceptions than to teaching techniques.<sup>11</sup>

It is unclear however, how conceptions can be optimally influenced or changed. Some long-term interventions were reported to have changed the conceptions of teachers, for example interventions that took one year.<sup>30,31-33</sup> An important feature of these interventions is reflecting on one's conceptions of learning and teaching. By contrast, some reports describe short interventions which changed teachers' conceptions, for example a two-hour workshop<sup>34</sup> or four three-hour sessions<sup>14</sup>.

In order to optimize teachers' behaviour in daily practice, and hence indirectly the learning results of our students, the following central research questions are formulated for this thesis.

### **Central research questions and overview**

Based on the presented overview of the literature on teachers' conceptions of learning and teaching and their relation with faculty development and student-centred curricula, it might be useful for faculty development to pay more attention to teachers' conceptions of learning and teaching.

Hence, the central research question of this thesis is "How do teachers' conceptions of learning and teaching explain teaching behaviour, in a student-centred curriculum?"

This question can be specified into three research questions:

1. Can teachers' conceptions of learning and teaching be measured?
2. Which patterns of conceptions can be determined?
3. What factors influence conceptions of learning and teaching, and what are the mechanisms?

The present thesis answers these research questions using a mixed methods approach that combines qualitative and quantitative approaches. The qualitative methods include individual interviews, an expert meeting, and a Delphi procedure. These were combined with the following quantitative methods: confirmatory factor analysis, multiple regression analysis, and cluster analysis.

The first specific question, "**Can teachers' conceptions of learning and teaching be measured?**" is addressed in chapter 2, which describes the construction of the Conceptions of Learning and Teaching questionnaire, the COLT, and assesses the validity and reliability of this instrument.

Two studies were performed to address the second specific research question, **“Which patterns of conceptions can be determined?”**. Chapter 3 presents a multiple regression analysis, and chapter 4 reports the results of a cluster analysis. The multiple regression analysis identified the variables that predict teachers’ conceptions of learning and teaching. According to the literature<sup>35-40</sup>, the following independent variables might have a predictive effect: teaching context, discipline, gender, teaching experience and age. The dependent variables used were the three scales of the COLT questionnaire: teacher-centredness, ‘appreciation of active learning’ and ‘orientation to professional practice’. Instead of focusing on variables, the cluster analysis in chapter 4 approached the second specific research question with a focus on the individuals, the teachers.

The research project presented in chapter 5 comprises a qualitative study based on individual interviews. The aim was to investigate how institutional, departmental and personal characteristics affect teachers’ conceptions of learning and teaching. This investigation addresses **the third research question, “What factors influence conceptions of learning and teaching, and what are the mechanisms?”**.

Finally, the General Discussion addresses the main findings and overall conclusions of the research projects, as well as reflections on the studies, including their strengths and limitations, followed by implications for further research and practice.

As this thesis consists of articles published in peer-reviewed journals, some repetitiveness across various chapters was inevitable.

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