

## University of Groningen

### The clinical learning environment

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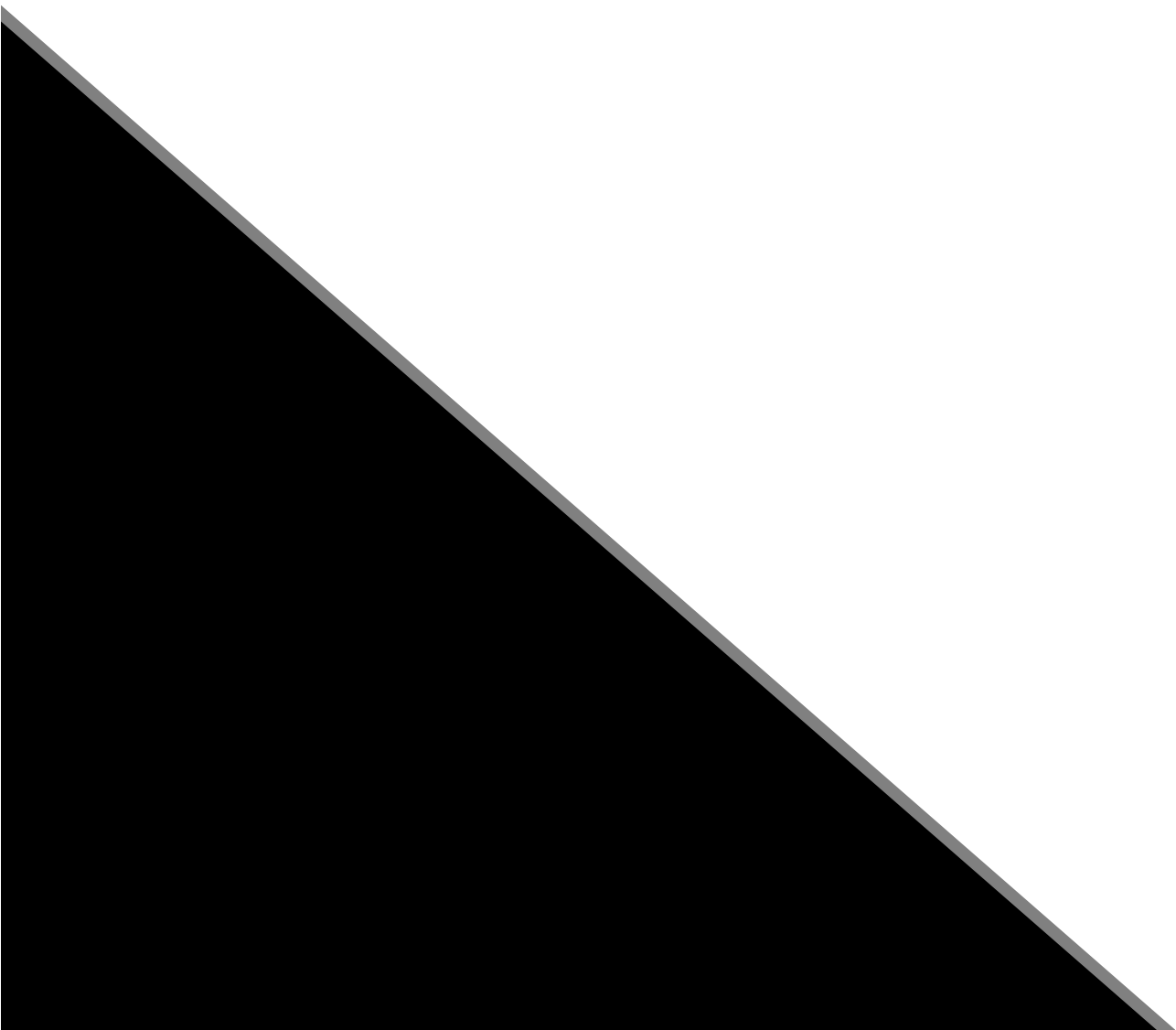
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# Chapter 1

## Introduction





An undergraduate medical student starts medical training by following three to four years of pre-clinical training at the university. After these years of structured education, the student has to apply and further develop his or her competences when he/she rotates through clinical clerkships. Learning in a clinical environment is not self-evident. Previous studies have revealed that undergraduate students experience particular difficulties with their learning environment during the transition from pre-clinical to clinical training.<sup>1-5</sup> Other studies have shown that the quality of the clinical learning environment can be improved by supporting students' active participation in a wide range of clerkship activities and providing them with adequate feedback.<sup>6</sup> This dissertation will focus on these three important aspects of the clinical learning environment: the transition from pre-clinical to clinical training, student time allocation on clerkship activities and adequate feedback to students and faculty.

## **LEARNING ENVIRONMENT**

Outside the field of medical education, studies of learning environments have been conducted in primary, secondary and tertiary education.<sup>7-9</sup> Relationships have been found between teaching characteristics and orientations towards learning and positive attitudes towards studying.<sup>10</sup> In addition, relationships have been found between student perceptions of school and teachers, their levels of motivation and their approaches to learning.<sup>11</sup> Fraser reported relationships between student perceptions of the psychosocial characteristics of their classrooms and their affective and cognitive learning outcomes.<sup>12,13</sup> At university level, it was found that student perceptions of their learning environments were stronger predictors of learning outcomes than prior achievement at school.<sup>14</sup> The learning environment has also been studied within medical education and its importance has been shown frequently.<sup>15</sup> Genn emphasized the importance of the learning environment when reporting that students' perceptions of their learning environment not only related to their educational satisfaction, but also to their achievements and success.<sup>16,17</sup>

Therefore, it is not surprising that organizations such as the Association for Medical Education in Europe, the American Association of Medical Colleges and the World Federation for Medical Education underline the relevance of the quality of the learning environment.<sup>17-19</sup>

### **Clinical learning environment**

Roff *et al.* developed questionnaires in order to analyse pre-clinical and clinical learning environments, which have frequently been used and adapted.<sup>20-23</sup> Important components of the pre-clinical learning environment are student perceptions of teaching, teachers, atmosphere, academic self-perceptions and social self-perceptions.<sup>20</sup> The components distinguished in the clinical learning environment concerned student perceptions of role autonomy, teaching and social support.<sup>21</sup> Only a few studies have been conducted in medical education on the influence of the learning environment on affective and cognitive learning outcomes. Students who were less satisfied with their supervision or feedback had an increased risk of burnout.<sup>24</sup> Relationships between students' perceptions of their learning environment and their approaches to learning were also identified.<sup>22</sup> Furthermore, comprehensive changes to the learning environment were related to the students' performance scores<sup>25</sup> and students who were more positive about their learning environment achieved better learning outcomes.<sup>22,26</sup> Undergraduate students indicated that they particularly experienced difficulties with their clinical learning environment at the start of their clerkship training period.<sup>1-5</sup> They reported difficulties in their new roles, in interacting with patients, in professional socialisation, in the high pressure of work and in dealing with feelings of inadequacy. How the difficulty of the transition from learning at university to learning in a working environment is related to the students' learning outcomes is unknown.

Differences in clinical learning environments can be explained through the characteristics of both departments and students.<sup>6</sup> The first important factor for a positive clinical learning environment is a department which supports students to actively participate in clerkship activities. At the same time,

students themselves need to be proactive, take the initiative to enhance their own learning and be responsible for their own performance. It is as yet unknown how the students' time allocation to different clerkship activities is related to the quality of the clinical learning environment. If the students' active participation is related to a more positive perception of the clinical learning environment, student time allocations during clerkships can be used to improve the quality of the learning environment. The second and third department-related factors that stimulate positive learning environments are a good clerkship organization and a focus on student development. In this respect, several studies have emphasized the role of adequate supervision and feedback.<sup>27-31</sup> Despite many suggestions having been made for the improvement of the instructiveness of feedback, empirical evidence to determine how instructive feedback can be provided is lacking.

## **OUTLINE OF THE DISSERTATION**

The clinical learning environment is a multifaceted concept. In the present dissertation the focus will be on three main themes: the transition from a pre-clinical to a clinical learning environment, the time students spent on clerkship activities and adequate feedback.

### **Transition from pre-clinical to clinical training**

The studies presented in chapters 2 and 3 will focus on the difficulties students experience during the transition from pre-clinical to clinical training. During pre-clinical training, the emphasis is on student learning in a structured learning environment, whereas patient care becomes most important in clinical training. This change of learning environment can cause feelings of stress and even uselessness. *Chapter 2* describes a study of the influence of the perceived transition difficulties on student clinical learning outcomes and the degree to which these difficulties are influenced by students' pre-clinical knowledge and skills. In *Chapter 3* a dual learning programme intended to ease the transition from pre-clinical to clinical

training is presented. During this dual learning programme, just-in-time skills training and clerkships alternate, so students experience several mini-transitions when they switch from a skills-training period to a clerkship period. This chapter will include a study of students' satisfaction with their workload and skills levels and stress as they progress through the dual learning year. To determine whether dual learning improved the students' transition, these results will be compared to those described in the previous chapter.

### **Time spent on clerkship activities**

As students rotate through clerkships their learning can be best characterized as 'learning by doing'. Students participate in and perform all kinds of activities in daily practice in the hospital. To date, the relationship between the time students spent on clerkship activities and their perceptions of their clinical learning environment is unknown. In *Chapter 4* a study of the relationships between the time students spent on eight different clerkship activities and their perceptions of their clinical learning environment will be described. This chapter will also include suggestions for the improvement of the clinical learning environment in undergraduate medical education.

### **Instructive feedback**

Optimal learning in a clinical environment requires proper guidance. Supervision and feedback seem to be key factors in the effectiveness of clerkship rotations. It seems important that feedback is provided by a medical specialist, that the student's behaviours and skills are directly observed by the supervisor, and that students actively participate in the learning situation. In *Chapter 5* a study of the relationship between these three aspects – supervisor, observation and student initiative – and the instructiveness of feedback will be presented. This chapter will also include data on the influence of the students' gender and experience levels on the instructiveness of feedback. Students' clinical skills performance is usually assessed using checklists on which the examiners provide a performance-related evaluation and written feedback to the students. These checklist

data would be perfect for providing students and faculty with feedback. Students could use the data to improve their performance and the faculty could use them for quality assurance purposes. *Chapter 6* describes experiences with the use of a digital pen, a device that transmits an examiner's handwritten notes to a database and to an electronic file which is immediately available to the student. This chapter will also include research on user satisfaction with the digital pen and the utility of the checklist data generated for quality assurance purposes.

A general discussion will be presented in *Chapter 7*. The results of the studies described in the previous chapters will be discussed and methodological considerations, implications and recommendations for further research will be set out. A summary of this dissertation will be provided in English in *Chapter 8* and in Dutch in *Chapter 9*.

## References

- 1 Alexander DA, Haldane JD. Medical education: a student perspective. *Med Educ* 1979;**13**:336–41.
- 2 Firth J. Levels and sources of stress in medical students. *BMJ* 1986;**292**:1177–80.
- 3 Radcliffe C, Lester H. Perceived stress during undergraduate medical training: a qualitative study. *Med Educ* 2003;**37**:32–8.
- 4 Seabrook MA. Clinical students' initial reports of the educational climate in a single medical school. *Med Educ* 2004;**38**:659–69.
- 5 Prince KJAH, Boshuizen HPA, van der Vleuten CPM, Scherpbier AJJA. Students' opinions about their preparation for clinical practice. *Med Educ* 2005;**39**:704–12.
- 6 Boor K, Scheele F, van der Vleuten CPM, Teunissen PW, den Breejen EME, Scherpbier AJJA. How undergraduate clinical learning climates differ: a multi-method case study. *Med Educ* 2008;**42**:1029–36.
- 7 Fraser BJ. Development of short forms of several classroom environment scales. *J Educ Meas* 1982;**19**:221–7.



- 8 Fraser BJ, Treagust DF. Validity and use of an instrument for assessing classroom psychosocial environment in higher education. *High Educ* 1982;**15**:37–57.
- 9 Pace CR, Stern GG. An approach to the measurement of psychological characteristics of college environments. *J Educ Psychol* 1958;**49**:269–77.
- 10 Ramsden P, Entwistle NJ. Effects of academic departments on students' approaches to studying. *Br J Educ Psychol* 1981;**51**:368–83.
- 11 Entwistle N, Kozeki B, Tait H. Pupils' perceptions of school and teachers. II – relationships with motivation and approaches to learning. *Br J Educ Psychol* 1989;**59**:340–50.
- 12 Fraser BJ. Science learning environments: assessment, effects and determinants. In: Fraser BJ, Tobin KG, eds. *International Handbook of Science Education*. Dordrecht: Kluwer Academic Publishers 1998;527–64.
- 13 Fraser BJ. Research on classroom and school climate. In: Gabel D, eds. *Handbook of Research on Science Teaching and Learning*. New York Macmillan: 1994;493–541.
- 14 Lizzio A, Wilson K, Simons R. University students' perceptions of the learning environment and academic outcomes: implications for theory and practice. *Stud High Educ* 2002;**27**:27–52.
- 15 Roff S. Educational environment: a bibliography. *Med Teach* 2005;**27**:353–7.
- 16 Genn JM. Curriculum, environment, climate, quality and change in medical education – a unifying perspective (Part 1). *Med Teach* 2001;**23**:337–44.
- 17 Genn JM. Curriculum, environment, climate, quality and change in medical education – a unifying perspective (Part 2). *Med Teach* 2001;**23**:445–54.
- 18 Learning objectives for medical students education – guidelines for medical schools: report 1 of the Medical Schools Objectives Project. *Acad Med* 1999;**74**:13–8.
- 19 World Federation for Medical Education. The Edinburgh declaration. *Med Educ* 1988;**22**:481–2.
- 20 Roff S, McAleer S, Harden RM, Al-Qahtani M, Ahmed AU, Deza H, Groenen G, Primparyon P. Development and validation of the Dundee Ready Education Environment Measure (DREEM). *Med Teach* 1997;**19**:295–9.

- 21 Roff S, McAleer S, Skinner A. Development and validation of an instrument to measure the postgraduate clinical learning and teaching educational environment for hospital-based junior doctors in the UK. *Med Teach* 2005;**27**:326–31.
- 22 Pimparyon P, Roff S, McAleer S, Poonchai B, Pemba S. Educational environment, student approaches to learning and academic achievement in a Thai nursing school. *Med Teach* 2000;**22**:359–64.
- 23 Nagraj S, Wall D, Jones E. Can STEEM be used to measure the educational environment within the operating theatre for undergraduate medical students? *Med Teach* 2006;**28**:642–7.
- 24 Dyrbye LN, Thomas MR, Harper W, Massie FS Jr, Power DV, Eacker A, Szydlo DW, Novotny PJ, Sloan JA, Shanafelt TD. The learning environment and medical student burnout: a multicentre study. *Med Educ* 2009;**43**:274–82.
- 25 Lieberman SA, Frye AW, Thomas L, Rabek JP, Anderson GD. Comprehensive changes in the learning environment: subsequent step 1 scores of academically at-risk students. *Acad Med* 2008;**83**(10suppl):S49–S52.
- 26 Mayya SS, Roff S. Students' perceptions of educational environment: a comparison of academic achievers and under-achievers at Kasturba Medical College, India. *Educ Health* 2004;**17**:280–91.
- 27 Kilminster SM, Jolly BC. Effective supervision in clinical practice settings: a literature review. *Med Educ* 2000;**34**:827–40.
- 28 Ende J. Feedback in clinical medical education. *JAMA* 1983;**250**:777–81.
- 29 Dolmans DHJM, Wolfhagen IHAP, Essed GGM, Scherpbier AJJA, van der Vleuten CPM. The impacts of supervision, patient mix, and numbers of students on the effectiveness of clinical rotations. *Acad Med* 2000;**77**:332–5.
- 30 Daelmans HEM, Hoogenboom RJI, Donker AJM, Scherpbier AJJA, Stehouwer CDA, van der Vleuten CPM. Effectiveness of clinical rotations as a learning environment for achieving competences. *Med Teach* 2004;**26**:305–12.
- 31 Stern DT, Williams BC, Gill A, Gruppen LD, Woolliscroft JO, Grum CM. Is there a relationship between attending physicians' and residents' teaching skills and students' examination scores? *Acad Med* 2000;**75**:1144–6.

