

Students' learning environment perception and the transition to clinical training in dentistry

Carlos M. Serrano^{1,2}  | Maxim D. Lagerweij³  | Ilse R. de Boer²  |
Dirk R. Bakker^{1,2}  | Pepijn Koopman² | Paul R. Wesselink⁴ | Johanna M. Vervoorn²

¹Evidence Based Clinic, Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands

²Educational Research & Development Department, Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands

³Section of Cariology, Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands

⁴University of Amsterdam (UvA), Amsterdam, The Netherlands

Correspondence

Carlos M. Serrano, Academic Centre for Dentistry Amsterdam (ACTA), Gustav Mahlerlaan 3004 1081 LA Amsterdam, The Netherlands.
Email: c.serranopetrillo@acta.nl

Abstract

Introduction: The learning environment (LE) influences students' behaviour, and predicts academic achievement, satisfaction and success. Measuring students' perception of the LE provides relevant information for curricular quality assurance. In this study, a LE assessment was used to observe variations in students' LE perception throughout the curriculum, to illustrate the possible influence that preclinical training (Pt) and clinical training (Ct) have on students' learning experience.

Materials and Methods: All students in the six-year undergraduate dental programme (n = 849) at the Academic Centre for Dentistry Amsterdam (ACTA) were approached and divided into Pt and Ct groups according to their training phase in the curriculum. The LE was assessed using the Dundee Ready Educational Environment Measure (DREEM), and the results were evaluated using the Statistical Package for the Social Sciences (SPSS) software for distribution (Kolmogorov-Smirnov normality test), internal reliability (Cronbach's alpha) and comparative analysis (one-way ANOVA).

Results: The questionnaire was completed by 216 (response rate=65%) Pt students and by 379 (response rate=75%) Ct students. With a general DREEM score of 124.3, significantly higher scores were found during Pt (DREEM=133.4) in comparison with the Ct phase of the curriculum (DREEM=119.2). DREEM scores steadily decreased throughout the 6-year curriculum, with the highest drops in LE perception observed in the second and third years of the programme. Significant differences in all DREEM domains were observed, with lower scores for Ct.

Conclusion: Students' LE perception deteriorates throughout the curriculum, especially within the Pt-Ct transition, during the second and third years of the programme. An inferior LE perception was observed in every domain of the LE questionnaire within this transition showing a learning experience, which requires an educational intervention. Further research is required to better understand the educational needs of the Pt-Ct transition at this school.

KEYWORDS

clinical training, clinical transition, learning environment, preclinical training

1 | INTRODUCTION

In dental schools, a humanistic and professional learning approach is highly desirable.¹ Dental schools and educators in dentistry are therefore responsible for ensuring a learning experience in which respect and freedom to explore and learn within a safe learning environment (LE) are fundamental components.^{1,2} Providing students with the opportunity to influence their learning through their feedback, as target stakeholders of the educational process, and using the "student voice" as a fundamental evaluation and quality assurance instrument, contributes to the production of engaged and reflective individuals who will later become motivated, respectful and ethical dental graduates.^{3,4}

LE is defined as "*the student's broadest experience of an academic institution— including the curriculum, the facilities, and interactions with peers, faculty, and staff—as well as the student's sense of the learning climate, or institutional ethos.*"⁵ It is a determinant factor in the students' learning progress, being closely associated with motivation, satisfaction and effective learning.⁶ In addition to influencing students' behaviour, the LE can be a predictor of their academic achievement, satisfaction and success.^{2,7-9} Students' perspective about their LE is an essential input to monitor and assure educational quality. It provides insights into their learning experience and satisfaction with the learning and teaching process, facilities and other aspects of student life, as a source for curricular awareness and improvement.^{2,9-11}

Several studies in healthcare education have used measurements of students' LE perception to assess different educational aspects such as curricular innovations, relationship between learning experience and other measures, and comparing students' learning experience throughout the curriculum.^{5,8,11-14} Although a worsening in LE perception has been frequently described as students progress into the programme and begin clinical training,^{11,14,15} the use of LE assessments as a diagnostic tool to describe specifically the effects of the transition to clinical training on students' learning experience is rare to find.¹⁶

In dental education, the transition from preclinical education (theoretical and practical) to clinical training has been described as a challenging phase for students, teachers and dental schools.^{3,10,11} Being a pivotal point in dental education, this transition implies higher stress levels for students, caused mainly by the need to integrate knowledge and skills into a new clinical setting whilst providing care for real patients.¹⁶ In the report of the Association for Dental Education in Europe (ADEE)'s Special Interest Group about the transition to clinical training in dentistry, a framework was presented to address the issue of the differences between preclinical (Pt) and clinical training (Ct) in dentistry and the transition between them.¹⁷ This Pt-Ct transition was defined as the stage where students move "*from being taught and not being in charge, to being responsible of patient care in addition to their regular academic obligations,*" describing three domains that influence this transition: the *teaching factor*, including the educational variables of the teaching and learning process, such as content and skills integration, and further development of clinical

competencies; the *student factor*, with the students' cognitive and affective experience during this transition; and the *LE*, connecting the first two domains.

It has been observed that the Pt-Ct transition is a sensitive step in the curriculum. Available assessments of this transition in dentistry have mainly focused on describing experienced stress and stress factors using questionnaires or focus group interviews.^{16,18} High levels of stress have been found during the first weeks of clinical training,¹⁶ mostly related to skills/knowledge transfer and clinical confidence, as well as to "external" curricular/teaching factors.¹⁸ However, a broader description of students' perception of the interactions of the *student* and *teaching factors* within the *LE* can offer a more thorough overview of a programme's strengths and challenges regarding this transition.¹² Students' perception of the LE is expected to vary not only across different educational organisations and curricular structures, but also over the years in a dental curriculum.¹⁰ Therefore, measurements of these different LE perceptions within an institution can contribute to a better understanding of the differences between Pt and Ct, as well as the transition towards Ct.

In this study, a LE assessment was used to observe possible differences in students' LE perception during the course of the dental curriculum, to provide insight about the influence that Pt and Ct and the transition between this training phases might have on students' LE perception. The LE was assessed using Dundee Ready Educational Environment Measure (DREEM) because of its established content validity, reliability and consistency.^{8,13,18} The DREEM has been widely used within healthcare professions to assess the LE from the students' perspective, providing a broad guide for curricular improvement. Its extended use in dentistry facilitates internal longitudinal studies and interschool comparisons.^{2,10,11,15,20}

2 | MATERIALS AND METHODS

2.1 | Participants and setting

This study was approved by the Institutional Review Board (Ref. 201942). Students in this dental programme come from a high school equivalent or higher level and are selected based on a combined assessment of a personal portfolio (including high school performance, work experience and motivation statement) and an admission biomedical sciences test. The curriculum starts with an integrated theoretical-preclinical programme in the first year, adding prevention and clinical assistance in the second year, which completes the Pt phase whilst already getting familiar with the clinical environment. During Pt, students experience lectures and problem-based learning, as well as phantom head and virtual reality training. Throughout the period between the third and sixth years, the Ct phase, lectures, and patient-based learning through an increasing number of hours dedicated to direct patient care and virtual reality training complete the curriculum. Parallel to the

Pt and Ct phases, scientific and research training take permanent place throughout the six years of the curriculum.

All students enrolled in the six-year undergraduate dental programme ($n = 849$) were approached for voluntary participation in this study. First- and second-year students, as part of Pt ($n = 332$), and third- to sixth-year students ($n = 505$) as Ct, followed the structure of the curriculum. Before completing the questionnaire and considering the potential sensitivity of the questions, participants were given a short introduction by a previously instructed student member of the research team to be assured about the safety and anonymity of their collaboration. Consent for participation was signed by all participants.

2.2 | Learning environment assessment

The 50-item DREEM questionnaire scored according to a 5-point Likert scale (4 = strongly agree to 0 = strongly disagree) and the respective demographic questions of age, gender and programme year were completed. Items 4, 8, 9, 17, 25, 35, 39, 48 and 50 are negative statements and are scored inversely. The DREEM maximum general score is 200, and the mean overall scores can be interpreted according to the interpretation guide as "very poor" (score=0–50), "plenty of problems" (score=51–100), "more positive than negative" (score=101–150) and "excellent" (score=151–200). This questionnaire can also be analysed by domain in relation to their maximum scores: Learning (L) (max. score=48), Teaching (T) (max. score=44), Academic self-perception (ASP) (max. score=32), Atmosphere (A) (max. score=48) and Social self-perception (SSP) (max. score=28).^{13,19}

2.3 | Statistical analysis

The results were analysed using the Statistical Package for the Social Sciences (SPSS) software (IBM, US, Version 25.0.0.1). The Kolmogorov-Smirnov normality test was used to assess data distribution. Internal reliability of the questionnaire was measured with Cronbach's alpha, and the comparative analysis was conducted with the one-way analysis of variance (ANOVA) and Tukey's Honest Significant Difference post hoc test ($p < .05$).

3 | RESULTS

The DREEM questionnaire was completed by 216 students (response rate=65%) in the Pt phase of the programme, including the first and second years, and 379 students (response rate=75%) in the Ct phase, including students from the third to the sixth year of the dental programme. Regarding gender, 72.8% of the participants were women and 27.2% were men. The mean age of the participants was 22.8 years ($SD=3.6$) (Table 1). The internal reliability of the general questionnaire was $\alpha=0.9$, and for the different domains within the questionnaire, alpha ranged from $\alpha=0.6$ (SSP) to $\alpha = 0.8$ (T).

With a general mean DREEM score of 124.3 ($SD=17.9$), there was a statistically significant difference between the Pt ($M = 133.4$, $SD=14.2$) and Ct ($M = 119.2$, $SD=17.8$) phases of the curriculum as determined by one-way ANOVA ($F = 100.9$, $p < 0.01$). Tukey's post hoc analysis within the Pt phase revealed a significantly lower DREEM score of the second year compared with the first year ($p < .05$) whilst significantly different scores ($p < .05$) were also observed within the Ct phase, showing a steady score decline throughout Ct (Figure 1). No statistically significant differences in the students' perception of the LE were found regarding gender ($p > .05$).

Regarding the questionnaire's domains, the scores between the Pt and Ct phases showed statistically significant differences ($p \leq .01$) in all domains, with significantly lower scores for the Ct phase (Table 2). The items within each domain with the biggest significant differences ($p \leq 0.01$) between Pt and Ct, scoring significantly lower in the Ct phase, included the following: L "The teaching helps to develop my confidence"; T "Teachers ridicule the students" and "Teachers get angry in class"; ASP "My problem-solving skills are being well developed here" and "Much of what I have to learn seems relevant to a career in healthcare"; LE "The atmosphere is relaxed during the (pre) clinic teaching"; S "There is a good support system for students who get stressed." Detailed DREEM scores by item are presented as support information in Table 3.

4 | DISCUSSION

The aim of this study was to observe possible variations in students' LE perception during the course of the dental curriculum, this way

TABLE 1 Participants' descriptive data

Training phase	Year	Age		Women		Men		Total	
		M	S.D.	N	%	N	%	N	%
Preclinical	1	19.4	1.8	89	90.8	9	9.2	98	100
	2	20.7	2.6	89	75.4	29	24.6	118	100
Clinical	3	22.8	3.2	91	69.5	40	30.5	131	100
	4	24.8	3.5	57	72.2	22	27.8	79	100
	5	24.7	2.6	58	67.4	28	32.6	86	100
	6	26.1	2.7	49	59.1	34	40.9	83	100
Total		22.8	3.6	433	72.8	162	27.2	595	100

Total Dreem score per Year

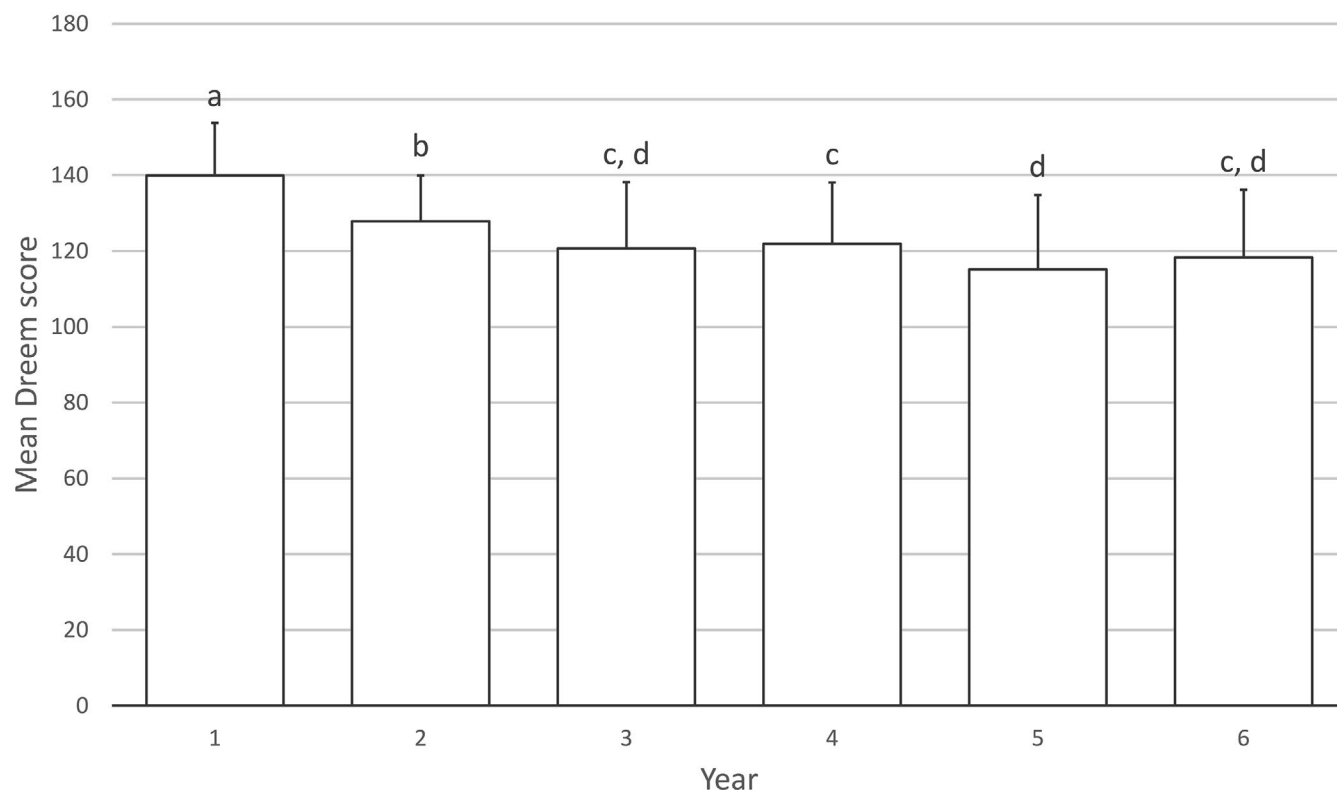


FIGURE 1 Main total DREEM scores by year in the programme

TABLE 2 Average DREEM scores by year and domain

Training phase	Year (n)	DREEM domains [†] (M±SD)				
		L	T	ASP	A	SSP
Preclinical	1 (98)	32.95 ± 4.1 ^a	31.1 ± 4.2 ^a	21.14 ± 2.5 ^a	34.9 ± 4 ^a	19.8 ± 2.9 ^a
	2 (118)	30.2 ± 3.6 ^b	27.8 ± 3.9 ^b	19.9 ± 3.2 ^{a,b}	31.7 ± 3.9 ^b	18.4 ± 2.6 ^b
Clinical	3 (131)	28.4 ± 4.9 ^c	26 ± 4.9 ^{b,c}	19.4 ± 3.5 ^b	29.3 ± 4.9 ^{c,d}	17.7 ± 3.3 ^b
	4 (79)	27.7 ± 5 ^c	26.8 ± 4.7 ^b	20 ± 3.6 ^{a,b}	29.8 ± 4.5 ^c	17.5 ± 2.8 ^{b,c}
	5 (86)	27 ± 4.3 ^c	24.7 ± 5 ^c	18.9 ± 3.9 ^b	27.1 ± 6.6 ^e	17.4 ± 3.2 ^{b,c}
	6 (83)	27.4 ± 4.7 ^c	26.6 ± 5.5 ^b	19.9 ± 3.7 ^{a,b}	28 ± 4.5 ^{d,e}	16.5 ± 3.2 ^c
Total preclinical (216)		31.4 ± 4.1 [*]	29.3 ± 4.3 [*]	20.5 ± 3 [*]	33.1 ± 4.2 [*]	19 ± 2.8 [*]
Total clinical (379)		27.7 ± 4.7 [*]	26 ± 5.1 [*]	19.5 ± 3.7 [*]	28.6 ± 5.3 [*]	17.3 ± 3.2 [*]
General	Total 1–6 (595)	29.1 ± 4.8	27.2 ± 5.1	19.9 ± 3.5	30.3 ± 5.4	17.9 ± 3.2

Note: ^{a,b,c} Statistically significant subsets with respect to study year within DREEM domains for $\alpha=0.05$.

[†]DREEM Domains: Learning (L), Teaching (T), Academic self-perception (ASP), Atmosphere (A) and Social self-perception (SSP).

* $p < 0.001$.

illustrating the possible influence that the Pt and Ct phases, as well as the transition between them, might have on students' LE perception.

According to the DREEM interpretation guidelines,^{9,12,13,19} participants in this research experience a "more positive than negative" LE throughout the undergraduate curriculum in general, which is comparable to similar studies conducted in different dental schools.^{10,11,21} Observing the differences between the years in the

curriculum, significant variations were found in students' LE perception, starting with the most positive learning experience in the first year followed by a steady decline until year 6. Comparable results have been found in previous studies, showing a tendency for students' perception of the LE to decline throughout dental curricula^{10,15} and a more negative learning experience during the clinical years of the programme.¹¹ Local programme-broad LE assessments

TABLE 3 DREEM questionnaire main scores by question and differences between training phases

Domain	Nr. Question	Preclinical (Pt) mean (SD)	Clinical (Ct) mean (SD)	Variation Pt-Ct
Learning (L)	1. I am encouraged to participate in class	2.97 (±0.65)	2.70 (±0.64)	0.28 (±0.65) [*]
	7. The teaching is often stimulating	2.70 (±0.71)	2.34 (±0.85)	0.37 (±0.78) [*]
	13. The teaching is student-centred	2.69 (±0.74)	2.24 (±0.89)	0.45 (±0.81) [*]
	16. The teaching helps to develop my competence	2.97 (±0.61)	2.72 (±0.67)	0.25 (±0.64) [*]
	20. The teaching is well focused	2.74 (±0.63)	2.39 (±0.75)	0.34 (±0.69) [*]
	21. The teaching helps to develop my confidence	2.65 (±0.71)	2.10 (±0.94)	0.55 (±0.83) [*]
	24. The teaching time is put to good use	2.48 (±0.81)	2.05 (±0.88)	0.42 (±0.84) [*]
	25. <i>The teaching over-emphasises factual learning</i>	1.97 (±0.77)	1.73 (±0.79)	0.24 (±0.78) [*]
	38. I am clear about the learning objectives of the course	2.63 (±0.77)	2.43 (±0.8)	0.21 (±0.79) [*]
	44. The teaching encourages me to be an active learner	2.69 (±0.69)	2.26 (±0.9)	0.43 (±0.79) [*]
	47. Long-term learning is emphasised over short-term learning	2.49 (±0.81)	2.23 (±0.76)	0.26 (±0.79) [*]
48. <i>The teaching is too teacher-centred</i>	2.47 (±0.79)	2.54 (±0.89)	-0.07 (±0.84)	
Teaching (T)	2. The teachers are knowledgeable	3.01 (±0.59)	2.87 (±0.56)	0.14 (±0.57) ^{**}
	6. The teachers are patient with students	2.88 (±0.67)	2.63 (±0.76)	0.26 (±0.71) [*]
	8. <i>The teachers ridicule the students</i>	2.63 (±0.93)	2.10 (±0.65)	0.53 (±0.92) [*]
	9. <i>The teachers are authoritarian</i>	1.86 (±0.9)	1.61 (±0.81)	0.25 (±0.85) [*]
	18. The teachers have good communication skills with students	2.63 (±0.66)	2.95 (±0.75)	-0.01 (±0.70)
	29. The teachers are good at providing feedback to students	2.60 (±0.87)	2.26 (±0.92)	0.34 (±0.90) [*]
	32. The teachers provide constructive criticism	2.65 (±0.74)	2.20 (±0.88)	0.45 (±0.81) [*]
	37. The teachers give clear examples	2.63 (±0.7)	2.40 (±0.82)	0.24 (±0.76) [*]
	39. <i>The teachers get angry in class</i>	2.98 (±0.86)	2.48 (±0.93)	0.50 (±0.89) [*]
	40. The teachers are well prepared for their classes	2.75 (±0.71)	2.34 (±0.83)	0.41 (±0.77) [*]
49. <i>The students irritate the teachers</i>	2.67 (±0.96)	2.48 (±0.96)	0.19 (±0.96) ^{**}	
Academic Self-Perception (ASP)	5. Learning strategies which worked for me before continue to work for me now	2.51 (±0.81)	2.51 (±0.87)	0.01 (±0.84)
	10. I am confident about passing this year	2.66 (±0.78)	2.65 (±0.89)	0.00 (±0.83)
	22. I feel I am being well prepared for my profession	2.49 (±0.86)	2.27 (±0.88)	0.22 (±0.87) ^{**}
	26. Last year's work has been a good preparation for this year's work	2.13 (±0.82)	2.20 (±0.93)	-0.07 (±0.87)
	27. I am able to memorise all I need	2.38 (±0.88)	2.22 (±0.93)	0.16 (±0.90) ^{**}
	31. I have learned a lot about empathy in my profession	2.56 (±0.74)	2.54 (±0.77)	0.02 (±0.76)
Atmosphere (A)	41. My problem-solving skills are being well developed here	2.72 (±0.65)	2.51 (±0.76)	0.32 (±0.72) [*]
	45. Much of what I have to learn seems relevant to a career in healthcare	3.00 (±0.60)	2.74 (±0.70)	0.27 (±0.65) [*]
	11. The atmosphere is relaxed during the (pre) clinic teaching	3.00 (±0.65)	2.35 (±0.95)	0.65 (±0.80) [*]
	12. This school is well timetabled	2.36 (±1.00)	1.96 (±1.03)	0.41 (±1.02) [*]
	17. <i>Cheating is a problem in this school</i>	2.69 (±1.07)	2.31 (±1.11)	0.38 (±1.09) [*]
	23. The atmosphere is relaxed during lectures	2.98 (±0.56)	2.67 (±0.74)	0.31 (±0.65) [*]
	30. There are opportunities for me to develop interpersonal skills	2.58 (±0.74)	2.39 (±0.81)	0.19 (±0.78) [*]
	33. I feel comfortable in class socially	2.96 (±0.61)	2.67 (±0.71)	0.29 (±0.66) [*]
	34. The atmosphere is relaxed during seminars/tutorials	2.93 (±0.54)	2.70 (±0.67)	0.23 (±0.60) [*]
	35. <i>I find the experience disappointing</i>	2.94 (±0.69)	2.33 (±0.95)	0.61 (±0.82) [*]
	36. I am able to concentrate well	2.71 (±0.66)	2.54 (±0.82)	0.17 (±0.74) ^{**}
	42. The enjoyment outweighs the stress of studying dentistry	2.50 (±0.80)	2.05 (±0.94)	0.45 (±0.87) [*]
	43. The atmosphere motivates me as a learner	2.71 (±0.70)	2.13 (±0.93)	0.58 (±0.82) [*]
50. I feel able to ask the questions I want	2.77 (±0.89)	2.54 (±0.91)	0.24 (±0.90) ^{**}	

(Continues)

TABLE 3 (Continued)

Domain	Nr. Question	Preclinical (Pt) mean (SD)	Clinical (Ct) mean (SD)	Variation Pt-Ct
Social Self-perception (SSP)	3. There is a good support system for students who get stressed	1.96 (±0.67)	1.49 (±0.83)	0.47 (±0.75) [*]
	4. <i>I am too tired to enjoy this course</i>	2.52 (±0.93)	2.16 (±1.03)	0.36 (±0.98) [*]
	14. I am rarely bored on this course	2.28 (±1.07)	1.97 (±1.02)	0.31 (±1.05) ^{**}
	15. I have good friends in this school	3.14 (±0.82)	3.07 (±0.77)	0.07 (±0.79)
	19. My social life is good	3.23 (±0.66)	3.04 (±0.82)	0.19 (±0.74) ^{**}
	28. I seldom feel lonely	2.86 (±0.86)	2.65 (±0.95)	0.21 (±0.90) ^{**}
	46. My accommodation is pleasant	3.04 (±0.55)	2.94 (±0.77)	0.10 (±0.66)

Note: Items scored in a reverse order (4, 8, 9, 17, 25, 35, 39, 48 and 50).

Italic items scored inversely according to the DREEM's design.

* $p \leq .001$.

** $p \leq .05$.

such as this study provide information that allows a precise appraisal of the educational effect of the curricular moment where the Pt-Ct transition takes place, as a diagnostic tool for tailor-made educational interventions and further related research. It may also provide a baseline to compare the curricular location of Pt-Ct and its effect on students' learning experiences between different schools or programmes.

High internal reliability was found for the questionnaire in general; however, the ASP and SSP domains showed only satisfactory levels according to the customary interpretation parameters for internal reliability.²² Without any outliers, this can be explained by the fact that the participants were not native English speakers and therefore may have misinterpreted some of the items, although high proficiency in English is required to enter the dentistry programme. Nevertheless, similar studies using the DREEM questionnaire with native English speakers found comparable internal reliability for these domains,^{11,14,20} which may suggest a more structural property of the questionnaire, showing an internal reliability that can be expected in educational research, measuring subjective perceptions or affective constructs.²²

The cross-sectional character of this study might appear as a limited approach to assess the relationship of a longitudinal variable as the Pt-Ct transition with the LE. However, the variation of students' LE perception throughout the curriculum presented in this study exhibits the presence of an educational issue regarding students' learning experience between Pt and Ct, whilst providing a baseline for future research on LE and the transition to clinical training.

In this study, the first big significant drop in students' LE perception happens in the second year of the programme, where the first educational shift from Pt to Ct takes place in the present curriculum. Students in the second year of the programme get their first clinical experiences with prevention and clinical assistance, as they must achieve their licences of clinical competence to move into Ct as providers of dental care in their third year. The pressure of these first clinical contacts and the competence licencing may be one of the causes of this drop in their LE perception.

The next clear drop, observed in the third year of the programme, coincides with the official Pt-Ct transition moment of this curriculum. During the third year, students receive a combination of Pt and Ct, having to conduct simple invasive procedures on real patients for the first time. The worsening of students' LE perception at the beginning of Ct has been repeatedly described in healthcare education, as students' first exposure to clinical work and the responsibility of patient care imply an important academic and stress burden for students.^{8,10,16-18} During Ct, dental students are frequently exposed to clinical situations, which can be perceived as "unsafe" and stressful due to irreversible procedures being performed on real patients and receiving feedback in different possibly pressing scenarios, such as performing a new restorative procedure or conducting clinical patient-related tests.¹⁰

The score differences observed between Pt and Ct at item level shed some light on the possible causes of the deterioration of students' learning experience whilst advancing towards Ct. The highest differences were mainly found on items regarding the *teacher factor* and the *student factor*. Different teaching styles and focus between Pt and Ct, as well as unclear stress support systems, are aspects of the *teacher factor* that show a clear decline, whereas within the *student factor*, differences were mainly based on students' self-perception of competence and its development. DREEM items where no significant Ct-Pt differences were found were mainly concentrated in domains ASP and SSP, addressing student's academic confidence and social relationships. According to the results of this study, the non-statistically significant score decrease in domains ASP and SSP shows that these domains are less influenced by the Pt-Ct transition. However, further research about this relation is required.

Considering the relation between LE perception, well-being and learning outcomes, the observed drop in students' LE perception, as they transition to the clinical years in dental curricula, must be flagged as a potential risk for students' well-being and an opportunity to improve through educational interventions.¹⁰ At this point in dental training, both *teacher* and *student factors* must be addressed and reviewed in order to optimise the Pt-Ct transition. Systematic and

structured organisational support for students and teachers in this phase, including interventions based on a detailed assessment of its challenging aspects, might be the "missing link" between Pt and Ct.

Structural factors, such as teachers' liability for clinical care and clinical testing on patients, are important factors that can also contribute to an "unsafe" clinical experience. Awareness regarding the actual competence level of students must be assured amongst clinical teachers in this phase, to provide a safer LE for teachers to supportively supervise the clinical journey of students. Furthermore, every clinical situation in an educational setting is unique and therefore an experiment in itself for teachers and students.²³ It is likely that, by relocating the unique patient-specific situation to a safer learning environment prior to the actual clinical procedure, the Pt-Ct transition could be improved for all stakeholders.²⁴ However, further research on these opportunities is necessary. Systematic LE assessments provide extensive management and quality assurance data over the years, to create awareness and allow reflection on whether a school meets its aims or should act to improve through interventions based on pertinent evidence.

5 | CONCLUSION

Students' LE perception in this study deteriorates significantly throughout the curriculum, especially during the second and third year of the programme, where the Pt-Ct transition takes place at this school. The results of this study illustrate the challenges of a gradual Pt-Ct transition and corroborate the presence of an educational issue at this point. Further research is required to identify students' and teachers' specific requirements during the Pt-Ct transition, with special attention for educational improvements and possible patient-specific training in a safer learning environment to optimise the transition to clinical training in dentistry.

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CONFLICT OF INTEREST

There are no conflicts of interest associated with this study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Carlos M. Serrano  <https://orcid.org/0000-0002-5742-4205>

Maxim D. Lagerweij  <https://orcid.org/0000-0003-4212-9606>

Ilse R. de Boer  <https://orcid.org/0000-0002-9077-9569>

Dirk R. Bakker  <https://orcid.org/0000-0002-1720-0215>

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