Associations between learning environment factors and student satisfaction among occupational therapy students

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Abstract

Purpose – Student satisfaction is an important indicator of educational quality in higher education institutions. Learning environment factors are assumed to play a role in determining student satisfaction. The purpose of this study is to examine the intrinsic relationships between five learning environment scales embedded within one measure; and examine the associations between each of these scales and an overall measure of education program satisfaction.

Design/methodology/approach – In this cross-sectional study, 175 first-year occupational therapy students in Norway completed sociodemographic information and the Course Experience Questionnaire. The data were analyzed with Pearson's correlation coefficient r and with linear regression.

Findings – All intrinsic associations between the learning environment scales were positive. In the adjusted analysis, higher education program satisfaction was significantly associated with higher scores on "clear goals and standards," "emphasis on independence" and "good teaching." The final model accounted for 45.0% of the outcome variance, of which the scores on the learning environment scales contributed 41.8%.

Originality/value – The learning environment is vital for student satisfaction. More specifically, efforts to improve student satisfaction may include strengthening student-focused teaching, strengthening the autonomy of the students, and ensuring that the goals and standards of courses are clear and easy to understand.

Keywords Good teaching, Higher education, Learning environment, Student autonomy, Student satisfaction

Paper type Research paper

Introduction

Higher education institutions (HEIs) are increasingly concerned with students' satisfaction with the education program (Campos *et al.*, 2017; Gibson, 2010; Mastekaasa and Terum, 2004; Navarro *et al.*, 2005). For the purpose of this paper, and in line with the definition by Navarro and co-workers (Navarro *et al.*, 2005), student satisfaction is understood as a short-term attitude that results from the evaluation of their experience with the education service received. The student experience is important due to a number of factors. There is increased competition between HEIs to attract students and avoid dropout, as high student throughput is an important economic incentive for HEIs (Høst *et al.*, 2019). The students' satisfaction contribute to form impressions of educational courses and educational institutions, and are, therefore, important for marketing and recruitment purposes.

Student satisfaction is also important as a quality indicator of the educational program. Because of this, measuring students' satisfaction in formal evaluations have become an important tool for quality assurance of HEIs internationally (Mattah *et al.*, 2018; Padró, 2011). As a part of the strategy of the Norwegian Agency for Quality Assurance in Education (NOKUT), a national student survey targeting more than 60,000 undergraduate students in higher education is carried out annually. The 2018 survey showed that Norwegian students, in general, had a high degree of satisfaction with their educational program (mean score 4.1 on a scale from 1 [low degree of satisfaction] to 5 [high degree of satisfaction]), which corresponded with the results for the occupational therapy students (Bakken *et al.*, 2018). Considering all students together, they were most satisfied with the education programs' ability to inspire, and least satisfied with feedback, supervision and opportunities for participation in relation to the content and scheme of the education program.

There is a growing body of research addressing student satisfaction in HEIs. According to Mastekaasa and Terum (2004), this research can be divided into two main categories, namely, studies related to mainly individual factors and studies directed at institutional

aspects. While the individualist-oriented studies address how student satisfaction is influenced by factors such as personal motivation and academic performance, the institutional approach is concerned with aspects that relate to the students' learning environment. "Learning environment" is a complex term, but can be broadly defined as "factors in which students' learning processes are embedded" (Elken and Wollscheid, 2019, p. 25), and the current study builds on this conceptualization. The quality of teaching, one of the most frequently addressed aspects of the learning environment, is generally described as essential for student satisfaction (Campos *et al.*, 2017; Gibson, 2010; Larkin and Richardson, 2013; Mastekaasa and Terum, 2004; Navarro *et al.*, 2005). It is a broad category, which encompasses variables such as the perceived quality and effectiveness of instruction, the teacher's expertize and interest in the subject (Campos *et al.*, 2017; Gibson, 2010) and the quality of assessment procedures and feedback (Gibson, 2010; Navarro *et al.*, 2005).

Larkin and Richardson (2013) investigated student satisfaction among undergraduate occupational therapy students. They pointed to new educational challenges and the pressure that the "massification and internationalization of higher education" place on HEIs, as students who attend today's universities are no longer only the ones who are most academically inclined (Larkin and Richardson, 2013). HEIs need to provide learning environments that maintain high standards, while they also need to facilitate the learning of an increasingly diverse group of learners (Larkin and Richardson, 2013). They argued that high challenge/high support academic environments are preferable, and that such environments require that goals and standards are clearly defined and aligned with the used teaching and assessment forms. Moreover, they found a strong correlation between higher student satisfaction and having clear goals and standards in education programs. This is in line with Mastekaasa and Terum's (2004, p. 13) findings, that "the degree of education program satisfaction reflects how the teaching is planned." Thus, the learning environment is multi-dimensional, with a range of inherent factors potentially influencing students' learning and their satisfaction with the learning experience.

Other studies have emphasized that student satisfaction is positively correlated with individual factors, such as academic achievement (Martin *et al.*, 2017). Bonsaksen's (2016) study examined possible predictors of student satisfaction and academic achievement. The study found that the students' prior experience from higher education and their attitudes and efforts, such as time spent on self-studying, were related to their academic performance and overall satisfaction with the education program. However, the article concluded that more research is called for, in gaining knowledge of how learning environment factors relate to academic performance and education program satisfaction. Moreover, we have been unable to identify studies examining how different aspects of the learning environment relate to one another. As intrinsic relationships between the learning environment factors potentially modifies their relationship with student satisfaction, a better understanding of these mechanisms might be useful for subsequent efforts to improve the students' learning environment.

In summary, student satisfaction is an issue that warrants attention, as it may be related to a number of important factors. These include not only the economy of HEIs but also individual student performance and educational quality. Knowledge of how learning environment variables relate to student satisfaction is, therefore, vital for improving the quality of educational programs. Improving the factors of importance for student satisfaction can be instrumental to achieve the aim of continued educational quality.

Study aim
The aim of this study of occupational therapy students in Norway was to examine:

- the intrinsic relationships between five learning environment scales embedded within one measure and
- the associations between each of these scales and an overall measure of student satisfaction, while adjusting for individual background variables.

Methods

Design and study context

The study is a quantitative cross-sectional study that is part of a larger, longitudinal inquiry into the approaches to studying and the learning environment among occupational therapy students in Norway. As such, the study is anchored within the line of research concerned with "student approaches to learning" (Entwistle, 2018). It uses questionnaire data concerned with the students' perceptions of the learning environment while they were approximately halfway through the first of their three-year undergraduate education program. The data were collected at a time of convenience at each of the education programs, between December 2017 and March 2018.

Participants, recruitment and response rate

Students enrolled in the first year at each of the six occupational therapy education programs in Norway were invited to participate. The presentation of the results of the study is based on an agreement to be transparent about the names of the learning institutions. One faculty member at each education program distributed the questionnaires and consent forms to students. In total, 305 students were eligible participants and of these 187 students (response rate 61.3%) chose to participate. The response rates were 24/76 = 31.6% in Oslo, 56/77 = 72.7% in Trondheim, 19/39 = 48.7% in Gjøvik, 31/47 = 66.0% in Sandnes, 24/24 = 100.0% in Tromsø and 33/42 = 78.6% in Bergen. Of the participating students, 175 had valid scores on all variables used in the analyzes. Thus, these students constituted the present study sample, while those with missing scores on the relevant variables were excluded from the analyzes.

Measurement

Sociodemographic background and education-related variables. Information regarding sociodemographic background (age and gender) and education (prior higher education and time spent self-studying during a typical week) was collected as part of the questionnaire.

The learning environment. The original *Course Experience Questionnaire* (CEQ) (Ramsden, 1991), originally developed in Australia, was used to assess the students' perception of the quality of the education programs. This measure has been used in a vast amount of studies internationally (Byrne and Flood, 2003; Ginns *et al.*, 2007; Lizzio *et al.*, 2002 and Wilson *et al.*, 1997), including Norway (Pettersen, 2007), all of which generally in support of its validity and relevance for assessing learning environment factors in education programs.

The instrument has 30 items distributed onto 5 scales. The scales are, with example items in brackets, namely, clear goals and standards (e.g. "it is always easy here to know the standard of the work expected"), emphasis on independence (e.g. "there are few opportunities to choose the particular areas you want to study"), good teaching (e.g. "the teaching staff of this course motivate students to do their best work"), appropriate workload (e.g. "the workload is too heavy") and appropriate assessment (e.g. "to do well on this course all you really need is a good memory"). In addition, one item assesses the students' general satisfaction with the course ("Overall, I am satisfied with the quality of this course"). A "long version" of the CEQ (37 items) has also been established (Byrne and Flood, 2003; Ginns *et al.*, 2007;

Lizzio *et al.*, 2002), including a sixth scale concerned with generic skills (e.g. "this course has helped me develop the ability to plan my own work"). The Norwegian translation of the long 37-item version has previously been validated (Pettersen, 2007) and as this version was the most comprehensive of those available, it was used in the present study.

Scores on each item reflect that the participants agree (5), agree somewhat (4), are not sure (3), disagree somewhat (2) and disagree (1). Higher scale scores indicate that the education program is perceived to have:

- clearly established and disseminated goals;
- high levels of student autonomy and independence;
- teaching that engages and involves the students;
- a workload that is not too high and;
- assessment forms that promote and support learning; and that it
- supports the transfer of content knowledge and skills to the relevant work context.

For this study, the internal consistency (Cronbach's α; indicative of the overall correlation between individual items on the scales) of each of the scales were 0.73 ("clear goals and standards"), 0.63 ("emphasis on independence"), 0.70 ("good teaching"), 0.69 ("appropriate workload"), 0.45 ("appropriate assessment") and 0.83 ("generic skills"). Owing to its low internal consistency, the "appropriate assessment" scale was not used in the analyzes (Bonsaksen *et al.*, 2019).

Data analysis
All data were entered into the computer program IBM SPSS (IBM Corporation, 2019). Descriptive analyzes were performed on all variables using means (*M*), standard deviations (*SD*), frequencies and percentages as appropriate. Bivariate associations between the learning environment scales were assessed with Pearson's correlation coefficient *r*. A hierarchical linear regression analysis was conducted to assess direct relationships between the learning environment scales and the student satisfaction measure, while adjusting for individual background factors. Effect sizes from the analysis were reported as standardized beta coefficients (β). According to Cohen (1992), the effect sizes were interpreted as small (β about 0.10), medium (β about 0.30) and large (β about 0.50). The regression model also assessed the proportion of outcome variance explained by the model. Statistical significance was set at $p < 0.05$.

Ethics
Approval for collecting and storing the data was granted by the Norwegian Center for Research Data (October 12, 2017, project no. 55,875). The students were informed that completion of the questionnaires was voluntary, their responses would be treated in confidence and there would be no negative consequences from opting not to participate in the study. Written informed consent was provided from all participants.

Results
Participants
The participants' background characteristics, scores on the learning environment scales and scores on education program satisfaction are displayed in Table 1. The mean age of the participants in the sample was 23 years and 80.6% were women. Of the learning environment scales, "generic skills" showed the highest standardized score (highest scale

Characteristics	Scale range	Value	Std. value
Background variables			
Age (M [SD])		22.9 (4.7)	
Female gender (n [%])		141 (80.6)	
Prior higher education (n [%])		75 (42.9)	
Time spent on self-study (M [SD])		9.0 (6.2)	
Learning environment scales			
Clear goals and standards (M [SD])	5-25	16.7 (3.9)	3.3
Emphasis on independence (M [SD])	6-30	18.5 (4.0)	3.1
Good teaching (M [SD])	8-40	27.2 (6.1)	3.4
Appropriate workload (M [SD])	5-25	15.2 (3.7)	3.0
Generic skills (M [SD])	6-30	22.8 (4.0)	3.8
Education program satisfaction (M [SD])	1-5	3.9 (1.0)	3.9

Table 1.
Background characteristics and learning environment scale scores in the sample (n = 175)

Notes: All learning environment items are scored 1-5. Thus, the scale score range is a result of the number of items on the scale. The standardized scores (std. value) are scale scores divided by the number of items on the scale

score when adjusted by the number of items on each of the scales), while "appropriate workload" showed the lowest standardized score. However, student satisfaction was scored with a mean of 3.9 out of 5.

Associations between the learning environment scales
The bivariate associations between the learning environment scales are shown in Table 2. All intrinsic associations between the learning environment scales were positive (r ranging between 0.26 and 0.56) and statistically significant at $p < 0.001$. The scales' bivariate associations with education program satisfaction ranged between 0.32 and 0.59, all significant at $p < 0.001$.

Associations between learning environment and education program satisfaction
The results from the linear regression analysis is displayed in Table 3. Controlling for all variables in the final model, three variables were significantly associated with the outcome. Higher education program satisfaction was significantly associated with higher scores on "clear goals and standards" ($\beta = 0.18$, $p < 0.05$), "emphasis on independence" ($\beta = 0.22$, $p < 0.01$) and "good teaching" ($\beta = 0.31$, $p < 0.001$). None of the sociodemographic variables were significantly associated with student satisfaction. The final model

Learning environment scales	2.	3.	4.	5.	6.
1. Clear goals and standards	0.26	0.43	0.30	0.41	0.42
2. Emphasis on independence	1	0.56	0.36	0.48	0.51
3. Good teaching		1	0.31	0.52	0.59
4. Appropriate workload			1	0.29	0.32
5. Generic skills				1	0.45
6. Study satisfaction					1

Table 2.
Bivariate intrinsic associations between the learning environment scales and between the scales and study satisfaction (n = 175)

Notes: Learning environment scales are derived from the CEQ. Table content is Pearson's correlation coefficient r. For all associations, $p < 0.001$

Characteristics	Education program satisfaction Std. β	p
Background variables		
Age	−0.00	0.98
Gender (male is reference)	0.10	0.09
Prior higher education (none is reference)	−0.03	0.63
Time spent on self-study	−0.05	0.43
Explained variance	*3.2%*	*0.24*
Learning environment		
Clear goals and standards	0.18	<0.05
Emphasis on independence	0.22	<0.01
Good teaching	0.31	<0.001
Appropriate workload	0.06	0.38
Generic skills	0.10	0.19
R^2 *change*	*41.8%*	*<0.001*
Explained variance	*45.0%*	*<0.001*

Note: Table content is standardized beta coefficients with corresponding p-values, denoting the strength of each variable's association with education program satisfaction while adjusting for all other variables in the model

Table 3.
Associations between learning environment and education program satisfaction ($n = 175$)

accounted for 45.0% of the outcome variance, of which the scores on the learning environment scales contributed 41.8%.

Discussion

This study aimed to investigate the intrinsic relationships between the learning environment scales and to assess the associations between these scales and overall student satisfaction among undergraduate occupational therapy students in Norway. Our findings showed that all learning environment scales relate intrinsically and positively to each other, with associations showing mostly large effect sizes (Table 2). In addition, while adjusting for background and all learning environment variables, higher scores on "good teaching," "emphasis on independence" and "clear goals and standards" were significantly related to higher overall education program satisfaction.

As the learning environment scales were developed and refined as indicators of the quality of the learning environment in a given course (Pettersen, 2007; Ramsden, 1991), their consistent pattern of positive associations seem logical. The strongest associations, and perhaps the most interesting, were those between "good teaching" and "emphasis on independence" and between "good teaching" and "generic skills" (Table 2). This implies that students who scored higher on teaching quality ("good teaching") also perceived more strongly that the course and the educators emphasized student independence ("emphasis on independence") and that the course helped them develop skills for a variety of practice situations ("generic skills"). It appears that similar analyzes have not been performed previously. Thus, the empirical evidence of strong and positive associations between each of the learning environment scales is a unique contribution of the current study. The findings show that it is important for HEIs to have a broad approach to assessing student satisfaction and dissatisfaction, as the expressed level of satisfaction in one area may also relate to the satisfaction in other areas. A practical implication for the HEIs is to ensure that there are effective feedback-channels for the students and to follow up when dissatisfaction is reported.

Based on the regression analysis, as displayed in Table 3, the main findings of this study concern the adjusted relationships between the learning environment scales and the students' overall satisfaction with the occupational therapy education program. The overall interpretation – that students' satisfaction relates to their perceptions of the quality of the learning environment – corresponds with other research in the field (Campos *et al.*, 2017; Gibson, 2010; Navarro *et al.*, 2005). However, each of the above-cited studies revealed that among different aspects of the learning environment, the quality of teaching is the variable most strongly related to overall satisfaction. Our results also mirror these findings, as we found that the variable most strongly related to student satisfaction among the occupational therapy students was "good teaching." In the literature, "good teaching" is described as a complex and contextual phenomenon, intrinsically related to the students' learning process (Biggs, 1999; Devine *et al.*, 2013). For example, items comprising the scale include clarity of explanation, the teacher's enthusiasm and help with study problems (Pettersen, 2007; Ramsden, 1991). Thus, in view of the item composition and the correspondence with earlier research, it seems logical that this scale was found to be most strongly associated with the outcome.

In addition, the scales "emphasis on independence" and "clear goals and standards" were significantly associated with higher student satisfaction (Table 3). While these associations were only small to moderate in size (Cohen, 1992), their persistence is worth noting. To a degree, the scale "clear goals and standards" corresponds with what Gibson (2010) and Larkin and Richardson (2013) name "aspects of the curriculum" and is identified as important in explaining overall student satisfaction.

When adjusting for background and learning environment variables in the regression analysis, the scales "appropriate workload" and "generic skills" were no longer associated with student satisfaction (Table 3). While a high workload has been described as a potential driver toward students' use of a surface approach to studying (Entwistle, 2018), the results of our study indicate that this aspect was less relevant for understanding student satisfaction. Similarly, "generic skills" may be perceived as more relevant for understanding students' general perception of the outcome of the course, while less relevant for understanding their current satisfaction with the course (Pettersen, 2007).

The included sociodemographic variables explained only a very small proportion of the students' satisfaction scores. However, the learning environment scales contributed strongly, explaining almost 42% of the total variance in student satisfaction scores (Table 3). While the adjusted associations between the scales and student satisfaction scores were modest in size, the study has demonstrated the predictive value of learning environment measures for explaining occupational therapy students' satisfaction with the education program.

Study limitations
Although the sample size was modest, it was appropriately large for the adjustments performed in the multivariate analysis. The response rates differed between study sites, whereas the overall response rate was considered satisfactory for this type of study. As the participants were recruited by convenience, we cannot rule out the possibility of a selection bias. Those who opted to participate may have differed in their attitudes and perceptions (e.g. more motivated, perceiving the learning environment as more positive) compared to non-participants. In addition, it is possible that some of the given responses were affected from social desirability bias; i.e. that participants may have considered some responses more desirable than other and tended toward responding accordingly.

A recent study based on the same data material revealed significant differences between education programs with regard to the first-year students' scores on overall satisfaction with the quality of the study program (Thordardottir *et al.*, 2020). This raises the question of

how similar or different the participants from the six learning institutions were from one another, and therefore, whether they can be considered to represent one cohort. The internal consistency of two of the scales ("emphasis on independence" and "appropriate workload") were below the recommended threshold of 0.70 (Streiner, 2003; Streiner and Norman, 2008), indicating that the results for these scales should be treated with caution. Finally, the cross-sectional design of the study precludes us from making causal inferences about the results. The direction of the detected associations may be tested in subsequent longitudinal studies.

Conclusion and educational implications
The findings showed that higher scores on "good teaching," "emphasis on independence" and "clear goals and standards" were related to higher overall education program satisfaction. The HEIs have the potential to influence these learning environment variables. Efforts to improve the learning environment may, therefore, include emphasizing student-focused teaching, strengthening the autonomy of the students, and ensuring that the goals and standards of courses are clear and easy to understand. In turn, addressing these aspects may translate into higher levels of student satisfaction. In contrast, factors such as age and gender, prior experience from HEIs and time spent on independent studying, appear not to be of importance for the students' satisfaction with the education program.

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