



Working Paper
2019:1

Academic environment and quality of education

A literature review



Mari Elken & Sabine Wollscheid

NIFU

Working Paper
2019:1

Academic environment and quality of education

A literature review



Mari Elken & Sabine Wollscheid

Working paper 2019:1

Published by Nordic Institute for Studies in Innovation, Research and Education
Adresse P.O. Box 2815 Tøyen, N-0608 Oslo.
Visiting Address: Økernveien 9, N-0653 Oslo.

Project No. 21008

Customer NOKUT
Address PO Box 578, 1327 Lysaker

Photo Getty images

ISBN 978-82-327-0379-1
ISSN 1894-8200 (online)



Copyright NIFU: CC BY-NC 4.0

www.nifu.no

Preface

This report has been produced as a part of a project commissioned by NOKUT, with an aim to examine how the criteria for academic environments in current provisions of the Academic Supervisions Regulations (*Studietilsynsforskrift*) are reflected in existing research concerning education quality in higher education.

This report has been written by Mari Elken and Sabine Wollscheid, with Mari Elken as the project leader. The research librarian at NIFU, Huan V.D. Than was invaluable help while conducting searches in various databases. Bjørn Stensaker was a part of the project team to discuss both search strategy, alternative perspectives and the final conclusions in this report. We are also thankful to the expert advice and further suggestions from others.

Nicoline Frølich (head of research for higher education) and Sveinung Skule (director of NIFU) provided quality assurance of the final report.

Oslo, 21.01.2019

Sveinung Skule
Director

Nicoline Frølich
Head of Research

Contents

Summary	7
1 Introduction	9
1.1 Background and aims.....	9
1.2 Methodology	10
1.2.1 Literature review	11
1.3 Structure of the report.....	15
2 Findings from the review	16
2.1 Mapping and synthesis of the included studies	16
2.2 Findings from the literature search	17
2.2.1 Relationship between characteristics of academic environment and educational quality	17
2.2.2 Other adjacent and related discussions	23
2.3 How does academic staff matter for students' learning?.....	28
2.3.1 Relationship between staff approaches to teaching and student learning experience.....	29
2.3.2 Scholarship of teaching and learning	30
2.4 Summing up methodological limitations.....	31
3 Discussion	34
3.1 Limited findings = limited effect of the academic environments?	34
3.1.1 Possible explanations.....	35
3.1.2 How does academic environment matter?	37
3.2 Academic supervisions regulations	39
References	42
Appendix	47
List of tables	51

Summary

While it is well established in literature that teaching approaches and methods are important for educational quality, there are fewer studies that explicitly examine the importance of academic environments on educational quality. Academic environment in this context refers to the Norwegian concept '*fagmiljø*'. The key finding from the review is that there seem to be limited number of studies that directly examine the relationship between the characteristics of academic environments and the quality of education in higher education.

The aim of the review was to explore current research evidence concerning the relationship between the characteristics of academic environments and the quality of education in higher education. The secondary aim of the project was to provide a reflection of existing criteria in the relevant sections of NOKUTs Academic Supervisions Regulations (*Studietilsynsforskrift*).

The literature search identified few studies that had systematically examined how specific characteristics on group level matter for educational quality, and the few studies we identified came to rather inconclusive results. Nevertheless, given the multitude of studies that show how important individual academic staff is for teaching and learning, it can be expected that their role is also important on a group level. Moreover, concepts such as microcultures in academic development also suggest that teaching can also benefit from a collaborative approach. At the same time, this also implies that there is less knowledge about how specific characteristics of academic environments as collectives influence educational quality (e.g. size, scope, stability, qualifications, etc). In sum, one can conclude *academic environments are important*, but there is limited research evidence to make definite conclusions concerning the specific characteristics of such environments. Thus, the literature examined in this review does not provide any basis for specific quantitative targets concerning the size, stability and scope of academic environments.

This study was conducted in two stages. First, we conducted a literature review, inspired by systematic review methods. Second, drawing on the findings from the literature review we conducted a reflection of existing regulative framework in this area. The literature review at hand was informed by a systematic review

approach but was conducted in an 'accelerated' form. The methodological approach consisted of the following iterative steps: the development of search terms; literature search; selection of studies and finally a qualitative synthesis. During each stage, the pool of relevant studies was refined. A key methodological concern was that both the term academic environment and educational quality are extremely ambiguous concepts.

1 Introduction

1.1 Background and aims

In Norway, there has in recent years been increased attention on identifying factors that contribute to high quality in higher education (Damşa et al., 2015). One of the factors that contributes to educational quality is those who teach students – their teachers. The fact that the way in which students learn is associated with how staff teaches is rather well established in existing literature (Baeten, Kyndt, Struyven, & Dochy, 2010; Biggs & Tang, 2011; Trigwell, Prosser, & Waterhouse, 1999).

The necessity for teaching staff to have the appropriate competence has also found its way to policy discussions. For instance, in the European Standards and Guidelines (2015), Standard 1.5 states that:

Institutions should assure themselves of the competence of their teachers. They should apply fair and transparent processes for the recruitment and development of the staff.

As a guideline to the standard, it is noted:

The teacher's role is essential in creating a high quality student experience and enabling the acquisition of knowledge, competences and skills. The diversifying student population and stronger focus on learning outcomes require student-centred learning and teaching and the role of the teacher is, therefore, also changing. (...) Higher education institutions have primary responsibility for the quality of their staff and for providing them with a supportive environment that allows them to carry out their work effectively.

Assessment of the academic environment responsible for educational provision has been an important aspect of quality assurance procedures in Norway. The criteria included cover a broader aspect than merely the teaching competence of the individual academic staff and outline a number of expectations for the academic

environment¹ responsible for educational provision. These criteria are specified in NOKUT's Academic Supervisions Regulations². Section 2-3 described the criteria for academic environments, including its size, stability, coverage of programme topics, educational competence, formal qualifications (specific share of staff with associate professor or professor/docent competence), research activity and quality, as well as national and international partnerships and networks.

To examine whether these criteria also reflect state of the art literature on the topic, NOKUT has commissioned a literature review to examine current research evidence concerning the relationship between the characteristics of academic environments and the quality of education in higher education.

The literature review process was led by three research questions:

- RQ1: What does the research literature say about the relationship between the characteristics of the academic environment (for instance size and quality) and the quality of the education offered?
- RQ2: What does the research literature say about similarities and differences between disciplines and types of study programmes (theory-oriented, practice-oriented and artistic programmes) in terms of the characteristics of the academic environment and the quality of the education?
- RQ3: To which extent are the relevant requirements in NOKUT's academic supervisions regulations research-based?

The aim of this report is thus twofold: first, to provide a literature review informed by a systematic review approach for searching and systematizing literature; and second, to provide an analysis of existing regulative frameworks that takes a point of departure in the findings of the review.

1.2 Methodology

This study has been conducted in two stages. First, we conducted a literature review, inspired by systematic review methods. Second, drawing on the findings from the literature review we conducted an analysis of existing regulative frameworks.

¹ This refers to the Norwegian concept '*fagmiljø*', which could also be translated as academic community or group that works together in a specific discipline or field of knowledge. It is a well established concept in Norway which is difficult to translate to English in a precise manner.

² Regulations concerning Supervision of the Educational Quality in Higher Education. Accessed at: https://www.nokut.no/siteassets/om-nokut/nokut_academic_supervisions_regulations.pdf

1.2.1 Literature review

A systematic literature review is a method that comprehensively retrieves, appraises and synthesizes the literature on a previously defined research questions in a transparent way (Petticrew & Roberts, 2006). The literature review at hand was informed by a systematic review approach that considers a broad range of studies, both qualitative and quantitative. The methodological approach consists of the following iterative steps: the development of search terms; literature search; selection of studies and synthesis.

The process of systematic reviews is usually time and resource consuming. Given limitations in time and resources, we therefore chose a brief review format, considered as a “quick and clean” or “accelerated” version of a systematic review (Abrami et al., 2010). Addressing the specific needs of policy makers for a relatively quick answer to a predefined question, a brief review approach allows to make compromises in terms of the individual steps of a systematic review, where this is appropriate.

Development of search terms

The two research questions R1 and R2 leading the review include several key concepts that were the starting point for the definition of search terms.

The English term **academic environment** is a means to translate the Norwegian concept of *'fagmiljø'*. While the term is rather well established in the Norwegian context, it is a term which does not translate well to English. We have opted to translate the term as “academic environment”, as this is also the translation used in NOKUT's own academic supervisions regulation. In terms of its content, the term has overlaps with terms such as research communities and groups, or more broadly academic staff who collaborate in some form. Given this ambiguity in terminology, our search strategy was to employ multiple keywords, including rather broad terms such as “academic staff” and more narrow terms such as “academic/research/teaching environment/group”. We assumed that this could further be supplemented with specific terms for the characteristics of the groups/environments (size, qualifications, pedagogical competence, etc).

The other key concept in the research questions is the notion of **quality in higher education**. While we have information about the factors that matter for student learning (Damşa et al., 2015), quality in higher education is a notoriously multifaceted term. The most widely cited is likely Harvey and Greens conceptualisation of quality as excellence, efficiency, adherence to standards, transformation, or fitness for purpose (L. Harvey & Green, 1993). Having this in mind, there are rather different possible operationalisations of what high quality education entails and how it can be identified. This could take the form of emphasizing higher

learning outcomes measured in grades, enhanced labour market outcomes, self-reported data about learning outcomes or educational quality (e.g. student satisfaction surveys), externally compiled completion rates (within nominal time to degree) and reduced dropout, to note a few. In our conceptualisation, the heart of the matter is enhancement of student learning. Nevertheless, this implication added possible additional keywords to our search strategy.

The third key aspect in the RQs is the notion of **disciplinary or field-specific differences** between study programmes. Disciplinary difference is a core characteristic of academic work – both with respect to education (Neumann, Parry, & Becher, 2002) and research (Becher & Trowler, 2001). In the outset, we expected the number of relevant studies to be small and the opportunity to make systematic cross-disciplinary comparisons to be limited. This also turned out to be the case. We will, however, reflect on the consequences of disciplinary differences in our concluding chapter.

Table 1 lists the search terms that were considered as potentially relevant, according to the two core concepts, academic environment and quality of education. This list of terms was further refined during the further search process, and the final set of keywords and the combination of these was developed during the literature search process.

Table 1. Potentially relevant search terms identified prior to the search

Search terms for the academic environment	Search terms for the characteristics of the academic environment	Search terms for quality of education
Academic/teaching staff Academic environment Research group Etc.	Number/size Qualification Competency Quality Pedagogical training Etc.	(Educational) quality Completion rate and time to degree Grades Student satisfaction Learning outcomes Programme design Teaching/assessment methods Pedagogical innovation Dropout rate Etc.

Literature search

Relevant research publications were retrieved in collaboration with the in-house research librarian at NIFU. Given a high fragmentation of studies in the field, the overall search strategy combined several sources and methods to retrieve eligible studies.

Having in mind the status of the field on educational quality in higher education, we expected that most of the relevant studies would be qualitative studies. Qualitative studies are supposed to be more difficult to identify in conventional

databases than quantitative studies, in particularly effect studies. Challenges for locating qualitative studies include for example the variability of qualitative methods, the spread of qualitative studies across journals, nonspecific titles and abstracts, deficiencies in bibliographic indexes (Sandelowski & Barroso, 2007, cited in Saini & Shlonsky, 2012)

In this project, we combined a literature search in three established electronic databases with alternative search strategies.

Search in electronic databases: We selected the following electronic databases for a systematic literature search: Web of Science, ERIC and Google scholar that we assume might add to one another. The inclusion of Google Scholar, which is estimated to be the most comprehensive academic database also secures the inclusion of books (Gusenbauer, 2018). We expected that the combination of these three databases would assure a good coverage of possible sources. We limited our search to the time period from 2000 to 2018. Due to a lack of standardized terms in the field of study, we conducted several test searches by using different combinations of search terms for the publication period 2000 until 2018. As recommended by our research librarian we ended up with a combination of relatively broad search terms that were applied in three electronic databases.

For the three databases we tested several combinations of search terms to achieve a balance between specificity (few hits, but more relevant hits) and sensitivity (many hits, but relatively less relevant hits) of the literature retrieval. We ended up with the following search strategy combining the following terms: (academic OR "higher education") AND (staff OR environment) AND quality.

As we chose a broad search strategy with few relevant but broad search terms, we ended up with many hits, i.e., 1 300 000 in Google Scholar, 1 432 in Web of Science³ and 2 625 in ERIC⁴. This combination of search terms turned out to be more inclusive and sensitive than the initial search with more narrow search terms.

Web of Science is supposed to be the most elaborated scientific database compared to ERIC and Google Scholar covering six online databases including journals and books in many disciplines such as social sciences and education.⁵ Thus, we considered Web of Science as our master database and chose to screen the complete list of 1432 references.

In all the three databases references are listed according to relevance in terms of the search strategy. For ERIC and Google Scholar we limited the screening of the high amount of hits to the first listed 400 references in each database. We did this

³ In Web of Science we limited the original amount of 4 709 hits to the thematic fields Education; Educational Research and Education Scientific Disciplines.

⁴ In ERIC we limited the original amount of 6 576 (peer-reviewed) hits to the thematic field Higher Education, ending up with 2 640 hits.

⁵ <https://clarivate.com/products/web-of-science/> [retrieved: January 10th 2019]

strategic choice to save time in the screening process and to avoid retrieving unnecessary duplicates in more than one database.

Titles and abstracts that were retrieved by searching in these databases were screened for further inclusion by at least one author. A small number of references was piloted to develop high agreement between the coders before screening the remaining references.

If included, references were roughly categorized according to the two research questions and retrieved in full-text, if this was appropriate. In the next step, they were further coded according to sub-categories and themes. In this part of the search process we identified many studies using a similar terminology, but with a different meaning than the terms used in our review questions.

B. Other searching strategies: Given the ambiguity of the search terms in this study, we combined the search in electronic databases with alternative search strategies to reduce bias. We applied the following search strategies:

- Consultation with experts in the field: We used our scholarly network and contact researchers working with similar topics to retrieve further eligible studies.
- Footnote chasing: We further checked reference lists of the most relevant articles that were located, including those from previously conducted reviews.
- Handsearch: Additionally, we conducted a manual literature search in the following selected journals of the topic: Higher Education Research and Development; International Journal of Academic Development; Studies in Higher Education; Teaching in Higher Education.

Selection of studies and synthesis

The retrieved references were imported into an Endnote-database and were screened in a two-stage process: 1) titles and abstracts, according to inclusion/exclusion criteria and 2) full-text articles if necessary. Given limitations in time and resources in the project, we did not appraise the methodological quality of studies but provide a map and a synthesis of the included studies, according to the main research questions RQ1 and RQ2. We synthesized the included studies according to the following codes for each of the review questions. Database; study ID (first author, year); country where the study was conducted; review question and relevance according to review question; original research question; academic environment characteristic; indicator of educational quality; study design; discipline (only R2) and main conclusions.

Based on this synthesis, a narrative synthesis was provided of relevant articles. In this process, the review distinguishes between articles that are directly relevant for the research questions, and those that are indirectly relevant. In addition to this, some articles were discarded as not relevant during the qualitative review.

1.3 Structure of the report

The report is structured in three chapters. The first chapter has now presented the background and aims of this study, and the methodological approach employed for the review.

In chapter 2, we present the main findings from the review. We summarise studies that were retrieved both during the literature search and provide additional themes that were suggested by experts in the field.

In chapter 3, we first provide a broader discussion of the findings. After this, the chapter provides an outline of current regulations in light of the findings, and suggestions for further development.

2 Findings from the review

2.1 Mapping and synthesis of the included studies

In total, approximately 90 references (i.e., titles and abstracts) were initially assessed as potentially relevant. Among these, we identified studies that were irrelevant for this review, as they would for instance focus on students' learning approaches and not discuss the role of academic environments. After further reading, 36 studies were selected and assessed as potentially relevant for our review. 31 references address RQ1, while only 5 references address disciplinary issues, i.e., RQ2. Disciplines addressed were public administration education, psychology, human resource management, law studies and medicine.

Drawing on titles and abstracts, and full-text articles where necessary, we coded the included according to the two core concepts: 1) academic environment and 2) quality of education. In addition, we used the following codes: First author and year of publication; country where the study was conducted; study design and discipline, where reported. Finally, we collected the research question and the main conclusion into an Excel-file that was used for data collection.

For the two core concepts, academic environment and quality of education the coding process was informed by the list of search terms that were considered as potentially relevant (see: Table 1).

For academic environment we ended up with the following main codes:

- Academic environment broadly defined and comprising several dimensions
- Academic quality comprising teaching and research quality of staff
- Access to staff including small class sizes
- Pedagogical training provided to staff
- Quality issues related to program, lectures, accreditation
- Research education nexus, including research activity of teachers

For quality of education we ended up the following main codes:

- Learning quality perceived by students
- Student satisfaction and experience
- Student attrition/dropout

- Learning outcomes
- Student motivation

First, we provide a description of the studies according to publication year and country of origin. The majority of included studies - 20 studies - was published between 2015 and 2019. For country of origin, eight of 37 studies were conducted in the United Kingdom, six in Australia and four in Portugal. The remaining studies were widely spread and conducted in different countries in Europe, America and Asia. The studies included qualitative and quantitative studies and studies that applied a mixed-method design and literature reviews. The majority of studies (24) was coded as quantitative, while only a small part (5) were coded as qualitative. Two studies were coded as reviews and one study was categorized as mixed-method study. Thus, this picture contradicts our expectation to identify more qualitative than quantitative studies in our literature search.

Second, we provide a description and synthesis of studies. Table 2 in Appendix provides a simple description of the 36 studies considered for the qualitative synthesis. After reading the article full texts, further studies were either discarded or assessed as indirectly/partially relevant for the questions in this review.

2.2 Findings from the literature search

Overall, it is possible to argue that when examining educational quality, there seem to be more studies that focus on *teaching* in higher education rather than *teachers* themselves, in particular on an aggregate level. Nevertheless, a number of the articles termed as indirectly relevant nevertheless provide some relevant insights, even if they do not address directly the relationship between staff characteristics and educational quality. For this reason, these articles are summarised separately in section 2.2.2. The studies assessed as relevant for this review are summarised in section 2.2.1.

2.2.1 Relationship between characteristics of academic environment and educational quality

We have organised studies identified in this section into three sections: those that focus on effects of academic environment on graduation rates those that explore graduate outcomes, and those that explore the consequences of academic staff research tasks. We found few studies that would provide a detailed account on the relationship between student learning processes and the characteristics of academic environments.

Quality as graduation rates

One can argue that if one conceptualises quality in higher education as efficiency, dropout and graduation rates are one way to examine whether the higher education system is educating the candidates it should be educating. In this category, we identified two studies that in some manner explored the characteristics of academic environments for graduation rates.

Goenner and Snaith (2004) examined student dropout in the US by trying to examine what factors predicted graduation rates. Their starting point for the analysis was the striking variation of graduation rates in US research universities, as they noted that six years after graduation 9% at Texas Southern University had completed their studies, while 97% had done so at Harvard University. While these two institutions have a range of differences, not least in terms of their student body, they were placed similarly in the Carnegie classification. By analysing over 200 institutions placed in the same category of the Carnegie classification, Goenner and Snaith analysed various individual and institutional factors through regression analysis. Among their institutional factors they also included characteristics of relevance for the academic environment – e.g. share of full-time faculty, educational expenditures and student-staff ratios. They find that share of full-time faculty has a positive effect on graduation rates after six years, but the effect is not significant for four- or five-year outcomes. Similar pattern also emerges for educational expenditures. They also analysed student-staff ratio, but the results were inconclusive, and the authors suggest there might be an intervening variable they do not have data on. The final institutional factor, tuition fee, seems to have a relationship with graduation rates. Overall, however, it is student characteristics that are a major factor for graduation rates.

In another study, Martínez, Borjas, Herrera, and Valencia (2015) explored the relationship between undergraduate attrition (dropout) and three different measures of academic quality in the Colombian context: namely accreditation status of study programmes, graduation test scores, and number of research groups in the institution, the latter being used as a proxy for research intensiveness at the institution. Their starting point for including this as a variable was that research intensiveness is considered as an important quality dimension in the Colombian system. While the QA system does not use the number of research groups as a variable, the authors argue that it can function as a proxy to indicate institutions' research orientation. Martínez et al highlight that student dropout is driven by both individual (demographic, socio-economic and academic) and institutional (policy initiatives, teacher-student interaction) factors. The study was carried out in 2009 in the Colombian Caribbean region institutions, with a total of 19 higher education institutions. The results of the analysis suggest that it is the number of accredited programmes that matters for student attrition in a significant manner. Regarding

the number of research groups, the study did not find a significant relationship. Nevertheless, it also was not the case that higher number of research groups (and thus presumably more research intensity) lead to increased dropout. The authors note that concerning this variable it is also possible that this indicator “may not reflect the substantive characteristics related to the quality of research” (Martínez et al., 2015, p. 12), which is arguably a reasonable conclusion.

Both of these two studies also discussed other literature concerning dropouts in higher education and emphasize that such studies explore both institutional and individual factors. Nevertheless, the institutional factors do not seem to refer to the specific characteristics of academic environments in a comprehensive manner. A relevant factor could be student-staff ratio, however, in this respect the first study yielded inconclusive results⁶.

Quality as graduate outcomes

In this group, we can identify two types of studies. The study by Stes, De Maeyer, Gijbels, and Van Petegem (2012) is in the first group that in fact aimed to examine whether academic development yielded actual positive results for students. In the other group, we have identified a range of studies that have in some form examined the relationship between staff characteristics and student satisfaction, while some of these remain also indirect arguments.

Stes et al. (2012) conducted a quasi-experimental study to examine the effects of instructional development on student outcomes. As the authors note, emphasis on development of teaching skills has obtained considerably more focus in recent years. They note that while studies have established its positive effect on teaching approaches, studies of the effectiveness of such training on student learning is comparatively scarce. The study was carried out at University of Antwerp which has been holding instructional courses since about 2000. In the study, in total 37 teachers and the students of their respective courses participated, covering various fields of knowledge and both courses with under 30 students and over 100 students. For all teachers who were undergoing instructional training, a “matching” colleague was selected to assure comparability of the two groups. The study showed that the effects of the instructional course on student learning outcomes was rather limited. The authors, however, note a range of possible explanations for this lack of effect, including that it is possible that those who had taken a course had no yet changed their teaching methods. Time could thus be an important

⁶ There is a separate body of research that looks into the consequences of changing student-staff ratios in higher education. In a recent research review, McDonald noted that most of the studies seem to emphasize negative effects of large classes, but there are also contrasting views that find either no difference or opposite effects. Moreover, it has been also suggested that class size might matter differently, depending on the educational task at hand – for example, whether students are learning facts or need to develop their critical thinking skills (McDonald, 2013).

factor, given that change of teaching approaches likely does not change overnight. In a different study, Trigwell, Caballero Rodriguez, and Han (2012) examined the effects of a pedagogical development programme and found moderate, but positive outcomes – both in terms of student satisfaction and teaching awards. A key message thus is that while academic development can provide tools for staff to enhance their educational practices, it is also necessary that there are favourable institutional conditions to put these skills into practice.

While student satisfaction surveys are prone to a range of intervening variables⁷, students nevertheless represent an important group to provide feedback about their learning experience. Most of the studies we have identified in this review seemed to focus on learning environments more generally, rather than staff characteristics. The studies included here did in some form mention staff profile or characteristics, while some of these arguments are made in an indirect manner.

For example, Ellis, Sawyer, Gill, Medlin, and Wilson (2005) explored a range of aspects often emphasized as beneficial for international students' learning: small class size and in this manner good contact with academic staff, accessible campus, small town environment, available housing. They carried out their empirical study in a small regional college in Australia, aiming to examine whether the characteristics of a regional campus had any consequence for their outcomes both in terms of graduate perceptions, satisfaction and outcomes. The study was carried out in survey form, where 62 graduates were included, of which 25 responded. The responses largely confirmed benefits of studying in a small campus. This study thus does make some inferences about the size of academic community. In the outset, it is proposed that smaller environments facilitate more interaction between staff and students. While the study confirms these as positive aspects of their learning experience, the sample and scope of the study remains very limited.

In a rather different line of argument, we have identified some studies that would emphasize the relevance of specific kinds of staff activity profile. For example, Hurn (2016) explored an educational project where engineering students conducted live projects with the industry at the University of Derby. Hurn found that students greatly appreciated this opportunity. Such live projects had an impact on student performance and engagement. Based on this, Hurn argues that such projects should be integrated to teaching practice. This, in turn, can be seen as an

⁷ Studies that have examined student satisfaction, find for example also a range of alternative factors that influence student satisfaction. As an example, in the UK context student satisfaction with their studies is also positively correlated with university position in league tables (Gibbons, Neumayer, & Perkins, 2015). Özcan (2013) examined undergraduate students' perceptions of quality education in Turkey by employing the SCEQ questionnaire, finding also that students in older institutions were more satisfied than those at the younger ones, which can also be seen as a proxy for prestige. In other countries, student surveys have found different results concerning prestige and student satisfaction. In sum – student satisfaction is a concept that is also highly context dependent and influenced by a wide set of variables.

example of new demands that teachers meet, which also emphasizes that they need the competence to do so. In a different sector and context, Mojarradi and Karamidehkordi (2016) argued for more practical training in the area of agriculture education. When discussing what factors matter for offering high quality agricultural education in Iran, they note that also staff skills and interaction with students are important in providing sufficient practical skills. Based on survey data, they argue that the quality of the provision of practical education is related to three main factors: active participation of instructors, effective management, and effective communication. While being based in very different contexts, these studies point towards a specific set of challenges in professionally oriented knowledge fields, where the academic environments also should have sufficiently good knowledge of the practice field to sufficiently integrate this to educational processes.

Overall, the results can also be seen as rather inconclusive. While they point towards the importance of academic staff, they also note that academic staff is embedded in a wider institutional context.

Staff research competence and student educational outcomes

A theme that emerged during the search process was also the relevance of staff research competence on educational practices, and some of the studies screened addressed the issue of research-based education. Given that the relationship between education and research in more general terms has been explored elsewhere (see, e.g. Elken & Wollscheid, 2016), in this section we only examine the studies that came up in our literature search. It should be noted that these studies also address the question of educational outcomes. We have chosen to group them as a separate group, given that it represented a distinct theme in the literature we have examined.

A recent article by Berbegal-Mirabent, Mas-Machuca, and Marimon (2018) conducted an analysis of whether student satisfaction was influenced by research performance of individual lecturers. Based on existing literature, they explore three hypotheses: whether previous teaching experience influences positively student satisfaction; whether research intensity mediates previous teaching experience influence on student satisfaction; and that there are significant differences between permanent and non-permanent staff. The study was carried out at the Universitat Internacional de Catalunya (UIC), a private university in Spain, where 229 individual subjects (and the corresponding lecturer for that subject) were analysed. The sample included four broad subject categories (social science, humanities, health and architecture). In the analysis of student satisfaction, both gender and knowledge field were used as control variables. By employing various statistical methods, the authors examined the relationship between teaching experience

and student satisfaction, as well as the mediating effect of research. Their empirical results indicate that teaching experience (measured as the years employed in that institution⁸) positively correlates with student satisfaction. However, research intensity seems to show a negative impact and therefore mediate the effect of teaching experience on student satisfaction. Based on this, they argue that teaching and research do come across as competing rather than complementary tasks. The article thus also suggests that it is important for institutions to provide sufficient incentives for teaching excellence and for better alignment of teaching and research tasks. As they argue, current incentive systems have led to perverse effects, rather than facilitating a complementary relationship between research and education.

In another analysis, Shin (2011) examined the relationship between teaching quality and research performance by analysing data from a South Korean university. The article had three hypothesis that suggested that career stage, research ability and discipline would have an effect on teaching quality. Teaching quality in the article was examined through course evaluations. The analysis found that while domestic publication was positively correlated with teaching quality, then international publication had a negative correlation. This effect is persistent through all career stages. Shin explains this with the scarcity model, which would imply that teaching and research have to compete for time, energy and resources. This result is also different from a range of other similar studies on the relationship between research intensiveness and education; Shin also argues that contextual factors may play an important role in these patterns.

Others have reached different conclusions. McLean and Barker (2004) conducted an extensive literature review and an empirical study in the area of history. Based on this, they argue that “*some research activity on the part of university teachers is a strong – though not necessary – ‘pre-condition’ of desirable educational goals*” (McLean & Barker, 2004, p. 407). However, as they argue, there is little indication that this research needs to be cutting edge, or that those who do not have researcher profile necessarily would not be able to teach well. Based on this, they argue against the idea that mere existence of a critical mass of researchers in a department in itself is a sufficient condition for quality in education. Instead, they argue that the research-teaching nexus needs articulation to facilitate educational quality. Their study, however, does point to the benefit of having at least some proportion of staff with researcher competence, but it also emphasizes that this competence can mean somewhat different things and that quantifying such measure is rather complicated.

⁸ They do note that this measure has its limitations, but a better measurement of teaching experience was not available for the researchers.

Mägi and Beerkens (2015) studied whether a research-intensive learning environment provides students a better learning experience. The study was conducted in Estonia, where a national survey of academic staff was carried out. The results indicated that staff who are active researcher to a higher degree involve students in research-related activities: *“they are more likely to engage students in research groups, co-publish with students, and use information from their own research and conferences in their teaching”* (Mägi & Beerkens, 2015, p. 254). These results, however, had systematic disciplinary differences – where academic staff in natural sciences was more likely to include students in research groups and co-publish, whereas staff in humanities and social sciences was more likely to include their own research or conference experience into their teaching. However, also they note that it is by no means a requirement that this research needs to be international (world-class). Their data showed that participation in international research projects showed positive effects on teaching practices, this was not significant, whereas national networks and projects seemed to have a significant positive effect. Mägi and Beerkens note that research-based teaching has been a policy priority in Estonia in recent years. Nevertheless, they also caution against viewing this as a simple relationship and argue that it is necessary that teachers have a commitment to the teaching task.

While these studies have explored this relationship directly, they also present somewhat ambiguous results. Given that the number of studies is also small, this does not give a basis for conclusive inferences regarding the issue.

2.2.2 Other adjacent and related discussions

In this section, we discuss studies that we initially reviewed as potentially relevant but were in the review process assessed as indirectly relevant. First, we cover some studies that examine the notion of academic development and quality of staff. Next, we discuss studies that explore the notion of learning environment from a somewhat broader perspective, including also a sub-section of studies on learning environment that use the DREEM questionnaire. It should be noted that some of these discussions would likely yield a much broader result when searched separately with more targeted keywords. In this section, we have only included studies that turned up in our literature search and were included during the initial screening.

Quality of teaching staff

A theme that comes up in a range of studies on educational quality and academic staff is the idea of quality of academic staff. The studies that did come up in our search represent a rather multifaceted set of articles.

Quality of staff is an important criterion in current policy discussions. For example, as indicated earlier, it is also a criterion in the European Standards and Guidelines. Cardoso, Tavares, and Sin (2015) analysed how ESG had been implemented on institutional level in Portugal. The study was carried out in four Portuguese institutions, where case studies were carried out based on both document analysis and interview data. In the analysis, they also explored what kind of institutional support is provided for the quality of teaching performance and found that such support was either incipient or absent. For staff pedagogical competence, this was largely left for the individual academics themselves, and support for teaching infrastructure is limited due to the difficult financial situation of Portuguese higher education sector. Their empirical study finds that the way in which these institutions implement ESG is partial manner, and it is possible to find several interpretations of both the ESG and also national criteria in this area. While their study suggests a range of possible institutional measures for appraisal of teaching quality, this is not explicitly linked to educational quality.

In a different study in the Portuguese context, Sarrico and Alves (2016) examined staff quality in public administration education that had been through considerable growth, prompting questions of staff quality. The empirical study is based on a database compiled for Portuguese quality assurance agency for evaluation purposes. The database includes information about staff providing public administration education and their profile. The findings indicate that even when the personnel statutes for public university teaching staff require 70% of the staff to be professors or full professors – the actual share was about 26%. Only 67% of staff held a doctoral degree, and almost 12% do not even have a Masters' degree. Overall, they still conclude that in most dimensions, the staff profile meets the standards, while improvement is needed concerning formal qualifications and research intensity.

Another aspect of staff quality is their working conditions and whether this influences their opportunities to provide high quality education. One such example is the use of temporary staff. In an introductory editorial to a special issue on the theme sessional staff, M. Harvey (2013) emphasized that sessional staff has also needs for academic development, but also noted that Australia has several examples of good practice on the topic. The issue of sessional and temporary staff is an important debate of academic quality, where most of education is now offered by sessional staff, as indicated by Harvey. In a different study,

It should be noted that these studies are also closely connected to broader discussion of academic development. Academic development represents a broad field of studies concerning 'what works' in enhancement teaching and learning in

higher education⁹. While studies on academic development often emphasize positive effects on changing conceptions of teaching, there are few studies that have managed to measure the effect of academic development on student outcomes, and the few studies that have done this also report problems with measurement (Trigwell et al., 2012, p. 508).

A broader discussion of academic development as a field of expertise is beyond the scope of this review.

Students' learning environment

A number of the studies that came up in the search focused on students' learning environments. A "learning environment" is usually defined as a broad term that includes various contextual factors in which students' learning processes are embedded in. In this manner, it represents a much broader term than academic environment which here is defined as the staff responsible for educational provision.

Choy, Yim, and Tan (2017) analysed the relationships between quality of learning and various institutional and personal factors in a mixed methods study in Malaysia. In their model, they explored four characteristics – instructional delivery and support; learning skills, learning environment and curriculum. In their study, learning environment is defined as "the perceived relationship of students with the staff and peers in the university, and the learning climate in the university". The findings indicated strong positive relationships between these factors, while there was an inverse relationship between emphasis on learning skills and perceived quality of education. According to the authors, this implies a necessity to start with the change "in the mind-set of how learning takes place" (Choy et al., 2017, p. 510). As with several other studies, the notion of learning environment remains somewhat open and includes some elements that are of relevance for this review, but also includes a range of additional factors.

Elen, Clarebout, Leonard, and Lowyck (2007) analysed student perceptions of teacher- and student-centred learning environments. Taking a starting point in different conceptions of learning environments, they re-analysed three sets of survey data. Their study is embedded in the calls for transferring from teacher- to student-centred learning environments. They note that in some of existing literature these had earlier been proposed as different ends of a continuum, with a radically different distribution of roles. Other studies would suggest a transactional or independent view – stressing mutual adaptation or independence of tasks. The empirical analysis in the article suggests that students do not view student- and

⁹ However, some have argued that academic development as a term should be viewed in a more holistic and comprehensive manner, encompassing both teaching and research activities (see, for example, Hay, 2008). Academic development is a rather heterogenous field which has long roots; it emerged as an area of research and expertise already in the 1960s. During the 1990s international networks in the area emerged, along with a specialized journal for the field (Clegg, 2009).

teacher-centred learning environments as opposite poles of a continuum. A consequence of this is that student-centred learning environment does not imply a reduction of teacher responsibility, but rather a transformation of the roles. Based on this one can suggest that at times of changing teaching and learning approaches, this likely also sets higher demands for academic staff.

In another study, Yin, Lu, and Wang (2014) examined Chinese students approaches to teaching and views of educational quality. They also tested the widely used CEQ questionnaire in a Chinese context and found that a number of the factors showed internal inconsistency, suggesting that cultural factors can have an influence on the validity of such psychometric instruments. The responses nevertheless suggest that clear goals, emphasis on independence, generic skills and appropriate assessment facilitated deep learning approaches rather than surface ones. At the same time, the study also found that “good teaching” “increased students’ surface motive and surface strategy, but had no effect on their deep motive and strategy, indicating that the increase of instructors’ effort and commitment to teaching could only facilitate Chinese students’ surface approach (Yin et al., 2014, p. 966).

Chi, Liu, and Bai (2017) explored student intellectual development in college and how various aspects of college environment contributed to this. They operationalised college environment to consist of course challenge, faculty guidance, academic environment and interpersonal relationships. In the study, they analyse whether this influences intellectual development, either directly, or indirectly, by influencing students’ involvement. The analysis was conducted in China in a university that had obtained excellence funding. A survey was distributed to almost 3800 students who were in their junior year, with a response rate of 39,6%. While the contextual factors could also be interpreted to mean academic staff involvement, the questions used in the survey do not address specific characteristics of the staff, but rather what staff does (question about feedback and expectations form academic staff, and expectations regarding time spent on studies and encouragement of collaboration among students). The empirical results show that faculty guidance was a strong predictor for students’ intellectual development.

García-Aracil (2012) used the data from REFLEX survey, a large European survey funded by FP programme, where the dataset includes responses from 2600 graduates in 14 countries. The main aim of the project was to study the new societal demands on higher education graduates. In this article, the focus is on analysing the role of academic environments on student satisfaction. They defined academic environments as educational variables, academic environmental factors and other individuals-specific characteristics. They find that academic environments have an important role, but their definition of this is more focused on

teaching approaches and study programme characteristics, than the characteristics of teaching staff.

Lubicz-Nawrocka and Bunting (2018) analysed student perceptions of teaching excellence. They note that there is ample literature on staff conceptions of teaching excellence, while studies on student conceptions of excellence remain scarce. The empirical study was carried out at University of Edinburgh, where a student run teaching excellence award is run. The data for the article includes nomination texts which have been anonymized. In that year, nearly 3000 nominations were proposed, of which almost 1200 were for best teacher. Employing a grounded theory approach, the analysis found four broad categories in these nomination texts: concerted visible effort; commitment to engage students; low teacher-student barriers; and stable support. Nevertheless, these texts seem to emphasize teachers engagement rather than their formal qualifications as the main characteristics of excellence teachers: “student perceptions of teaching excellence emphasise staff working in an authentic, moral manner to prioritise both students’ short-term and long-term interests as learners who enjoy learning. These teachers are approachable individuals who care about their students’ development, and who work to facilitate their future successes within and beyond higher education” (Lubicz-Nawrocka & Bunting, 2018, p. 75).

These studies illustrate the variety of studies that emerge under the label learning environment. The term academic environment is also sometimes used interchangeably with learning environments in a broad sense. Some of the studies in this section primarily focused on teaching quality and how this is related to student experience (for example, Yin et al., 2014). While these are examples of studies that do not explicitly address the characteristics of academic environments as defined in this project, they nevertheless have some consequences for staff profile. The expectations and factors that shape a productive learning environment, one can outline a range of expectations for teacher profile and competence. The question then is whether and how specific characteristics of teachers (and of academic environments) can better support learning processes.

DREEM studies of the educational environment

A sub-section of the studies on learning environments were a set of articles that all employed a specific survey instrument. All these studies used a quantitative design and applied the Dundee Ready Educational Environment Measure (DREEM) questionnaire measuring five domains, i.e., students’ perception of learning (SPL), students’ perception of teachers (SPT), students’ academic self-perception (SASP), students’ perception of atmosphere (SPA), and students’ social self-perception (SSSP). These studies addressed medical students’ perception of the educational environment. DREEM-based surveys are often used to monitor

changes in the educational environment over time, to measure gender differences or differences according to geography. In the following we provide some examples of these studies.

Hongkan, Arora, Muenpa, and Chamnan (2018) have examined the perception of the educational environment among clinical year students in Thailand using the DREEM questionnaire. They show that students were satisfied with their academic learning environment, with variations across different size of teaching hospitals. According to the study authors repeat assessment of educational environment is needed for monitoring changes after the implementation of educational interventions. Looking at first year students and clinical year students Abraham, Ramnarayan, Vinod, and Torke (2008) compared two student groups' perceptions of learning environment at an Indian College also with respect to gender differences. In general, learning environment was perceived positively by both students' groups, even though also critical areas of learning environment at the respective college was identified. Similarly, Altemani and Merghani (2017) examined gender differences in students' perception of quality of the educational environment at a medical faculty in Saudi. They find significant gender differences in the perception of the educational environment in favor of female students. In another study, Mojaddidi et al. (2013) reassessed the perception of all undergraduate students in a medical college in Taibah for the educational environment during the academic year 2010-2011 in comparison with the assessment three years earlier to identify changes. The use of DREEM helped them to identify areas of change in students' perception in terms of several aspects of the educational environment and to identify areas in need for improvement by the college administration and staff.

According to specific dimensions of academic environment, the DREEM questionnaire can identify areas of improvement related to administrative and teaching staff. Nevertheless, these studies also did not explicitly address characteristics of staff profile and characteristics on the level of academic environments.

2.3 How does academic staff matter for students' learning?

While the search identified few studies that explicitly explored characteristics of academic environments (e.g. size, scope), our search strategy also included consultation with experts in the field. Based on their recommendations of specific authors and literature, two distinct but interlinked arguments can be proposed.

2.3.1 Relationship between staff approaches to teaching and student learning experience

As indicated earlier, there are several studies that emphasize the role of teachers approaches to teaching for educational quality (Baeten, Dochy, Struyven, Parmentier, & Vanderbruggen, 2016; Baeten et al., 2010; Trigwell et al., 1999). Nevertheless, these studies also highlight that this effect is sometimes difficult to measure and that there are several contextual factors that also play a role for this relationship.

Baeten et al. (2010) suggested that while the research evidence is inconclusive concerning the specific role of student-centred learning environments on students' adoption of deep approaches of learning, the review also suggested that teacher conceptions and teaching approaches are important, even if modified by several contextual factors. In a later study Baeten et al. (2016) indicated that in student-centred learning environments, adequate teacher instruction is important for student learning. In another study, Hativa, Barak, and Simhi (2001) suggest in the outset that effective teaching is dependent on how teachers think about their teaching, their pedagogical knowledge and instructional behaviour. However, reviewing literature they also note that research had been inconsistent concerning how exactly these factors influence behaviour in the classroom. They do, however, note that the social context in which teaching takes place, likely plays a role (including both organizational context, but also other teachers) (Hativa et al., 2001, p. 702). Moreover, their empirical analysis shows that there is also variation in how effective teaching is achieved. Other studies suggest that staff commitment to both academic achievement and social integration in the student group are associated with high degree of student satisfaction (Xiao & Wilkins, 2015). For educational quality, then, what the individual teacher *does* is a rather important factor.

This implies that student learning and teacher activities are inherently inter-linked. In a recent literature review, Damşa et al. (2015, p. 38) argued that "*it is not feasible to address teaching and learning as isolated processes*", and that recent developments concerning our understanding of student learning imply that there is a fundamental change in how students and teachers interact in the process of knowledge construction. Teachers' roles vary substantially depending on the pedagogical approach. The review concludes that a variety of teaching and learning methods is likely most productive for quality. However: "*quality is most likely not just an issue of finding adequate combinations in pedagogical approaches. Our review suggests that quality is perhaps more about being conscious of for which purposes and under what conditions different pedagogical approaches are productive*" (Damşa et al., 2015, p. 62). However, an ability to navigate in this landscape of different pedagogical approaches, and their disciplinary variations sets new demands for the kind of pedagogical competence academic staff should possess.

A recent empirical study concerning educational quality in the Norwegian context outlined a range of factors that are important for stimulating quality. Among other things, the manner in which teachers organise tasks, content and processes has important consequences for students' learning (Nerland et al., 2018, p. 189). This finding is also in line with the arguments from Baeten et al. (2016) concerning the role of teachers' instruction in student-centred learning environments. In addition to this, the study by Nerland et al points out the importance of different forms of curriculum coherence, which also requires collaboration and coordination among teaching staff. Moreover, given that student bodies are increasingly diverse (whether in terms of their prior knowledge or their engagement during the course), there seem to be few "one size fits all" approaches for educational practices. In order to facilitate students' learning, "*what is needed is guided and teacher-supported engagement in the knowledge domain, which is organised in line with the specific knowledge content and practices being worked on in the course and the learning challenges the students face*" (Nerland et al., 2018, p. 194). The quote effectively sums up the importance of teaching staff in students' learning processes and makes a case for the importance of the pedagogical and content-specific knowledge of teaching staff.

For a discussion on academic environments, the core question then is the relationship between individual teacher approaches and competence, and how this is related to the notion of an academic environment as a more abstract entity. A core question in this respect is whether members of an academic environment also share specific characteristics, preferences and conceptions in terms of their pedagogical approaches. In other words, is an academic environment more than the sum of its parts?

2.3.2 Scholarship of teaching and learning

In addition to the individually oriented relationship proposed in the previous section, we also identified a set of literature that builds on the notion of "scholarship of teaching and learning" (Boyer, 1990)¹⁰ and collaborative aspects of teaching practices. Boyer's original work suggested a conscious emphasis on teaching as one aspect of scholarly work, and argued that academic staff should explicitly work on developing their teaching practices, by among other things emphasizing the role of communities of practice (Boyer, 1990). Adcroft and Lockwood (2010) suggest that communities of practice is an important factor in developing and spreading communities of practice across an institution. In this process, trust and collegiality are an important factor.

¹⁰ These arguments have also been used for the basis for arguing for a strong relationship between education and research (Brew, 2003; Elken & Wollscheid, 2016; Kreber, 2002).

A newer strand that focuses on the scholarship of teaching emphasizes strong microcultures and communicative aspects of teaching practices (Mårtensson & Roxå, 2016; Mårtensson, Roxå, Olsson, & Development, 2011; Roxå, Mårtensson, & Alveteg, 2011; Roxå & Mårtensson, 2009). A shared aspect of these studies is that they conceptualise academic identities from a socio-cultural perspective and emphasize collaborative aspects of teaching practices.

Roxå and Mårtensson (2009) explore the so-called “backstage” of teaching practices where teachers in higher education have conversations with colleagues about their educational practices. As they argue, such conversations are paramount for developing and also changing conceptions of teaching. Building on Becher and Trowler’s work on small and large networks in research practices, they find that similar patterns also apply for teaching. Teachers have meaningful conversations with a small number of colleagues. Such conversations are characterised by a high degree of trust and intellectual content, and they are predominantly private in that they involve a limited number of few individuals. Roxå and Mårtensson call these small networks “significant networks” for teaching practices. These significant networks also transcend organizational boundaries (e.g. departments).

The microcultures perspective suggests that students way of teaching is not only influenced by the individual teacher, but also by the microcultures in which the individual teacher is embedded, as the latter directly influences how teachers are engaged in their teaching practices (Mårtensson & Roxå, 2016). In another study, they also argue that any change processes in higher education need to consider the networked characteristics of teaching and learning practices in higher education. This takes place both in the small tightly knit clusters that they emphasized in the 2009 study, but also takes place in the broader networks that are characterised by weak ties. Any attempts to change practices thus need to take a comprehensive approach – both concerning different initiatives and also over time (Roxå et al., 2011).

However, while these studies clearly emphasize the collaborative aspect of teaching and establish that having a productive academic environment is important for educational quality, they do not provide specific quantitative measures on conceptualising the specific optimal size of an academic environment, nor its scope and stability.

2.4 Summing up methodological limitations

Finally, we summarise the most important limitations of method used in this project. A systematic review approach requires a well-defined research question building on clearly defined terms. Given limitations in time and resources, we

applied a brief review format, that requires a less complex search strategy compared to a full systematic review, including a limited number of sources and a more efficient way to map and synthesise studies.

At the same time, any approach informed by systematic review methodology remains challenging as the review questions (R1 and R2) are based on broad terms with unclear boundaries and ambiguous terminology. These challenges are well-known in the field of higher education, characterized as multi-disciplinary with a lack of unambiguous terminology (Bearman et al., 2012) and highly related to national contexts.

The Norwegian term '*familmiljø*' is highly contextualized and difficult to translate into English without changing its meaning. The English term "academic environment" is broader than the Norwegian term and includes both staff and course-related characteristics in addition to social characteristics (e.g., tutoring, mentoring). We were aware that broad research or review questions including ambiguous and unclear key terms, led to a relatively broad and time-consuming literature search, that might result into few relevant studies. This was also the case for the review at hand.

Higher education as a research field is relatively non-standardized in terms of keywords, as opposed to medical research with a long tradition of reporting in a standardized manner. Thus, too specific and rigid defined inclusion criteria that are reflected in the search strategy might probably result in false positive and false negative results in case of ambiguity concerning key terms (see also Bearman et al. 2012). To address this issue, we conducted an extensive search in several databases combined with alternative sources and alternative search strategies, such as consultation with experts in the field. Given limitations in time and resources and the chosen format of a brief review, we made compromises in the selection process, by choosing a sample of studies for further screening and analysis.

Finally, we ended up with relatively few studies that were assessed as relevant for answering the review questions. In the first step, we included a larger number of studies, including those with medium or little potential relevant. In the second step, we focused on studies that were termed as relevant based on the title and abstract. In the final stage, these studies were qualitatively reviewed. However, the terms academic environment and learning environment sometimes seem to be used interchangeably, which also implied that in the qualitative synthesis further studies were discarded from the overall list.

One main limitation in the systematic review methodology refers to the openness of our review questions and the ambiguity of the terminology. Our sample of selected studies can be characterized as highly heterogenous in terms of research question, terminology, method and findings. To provide an example, studies investigating the importance of academic environment on quality dimensions showed

to be different both in how they defined academic environment and quality in education. Moreover, the included studies were conducted in quite different countries. National context is of importance for how the terms educational quality and academic environment are defined and understood, which again makes it difficult to synthesise and compare the studies in our sample. To address this limitation, we used few and simple categories as reference.

Despite these limitations, the review did identify some important knowledge gaps. Thus, we can provide some implications for further research and the review of the regulations. At the same time, our synthesis does not allow a systematic account of disciplinary differences (R3).

3 Discussion

In this chapter, we first discuss the implications of findings, then focus on current formulations in the academic supervision regulations in light of the findings from the literature review, and then provide some concluding remarks.

In the outset, this review was guided by three research questions:

- RQ1: What does the research literature say about the relationship between the characteristics of the academic environment (for instance size and quality) and the quality of the education offered?
- RQ2: What does the research literature say about similarities and differences between disciplines and types of study programmes (theory-oriented, practice-oriented and artistic programmes) in terms of the characteristics of the academic environment and the quality of the education?
- RQ3: To which extent are the relevant requirements in NOKUT's academic supervisions regulations research-based?

As emphasized in the previous chapter, the results concerning research question one were limited, when examining this relationship on group level. We will further elaborate on the explanations and implications in the next section (3.1). Concerning research question two, it is clear that the sample of studies identified in this review is far too small to make conclusive arguments about disciplinary differences. Concerning research question three, we will examine this in the final section of this report (3.2).

3.1 Limited findings = limited effect of the academic environments?

While studies on scholarship of teaching emphasize the importance of social dimension for teaching and there are indeed ample studies that emphasize the socio-cultural aspects of teaching practise, our targeted literature searches did not yield in a large number of studies. Do limited findings in the search imply that the characteristics of academic environment do not matter for educational quality? While

we cannot identify many studies to examine this relationship, there are a number of other, more indirect, arguments for why it would be invalid to conclude that the effects would likely be limited.

The characteristics of academic environments that are in focus in this study are placed on group level. They concern the size, scope, formal competence, and stability of a group of academic staff that is involved in providing a study programme. While there are studies that examine the influence of individual teachers and a range of studies have examined broader factors on institutional level (see Brockerhoff, Huisman, & Laufer, 2015, pp. 23-28 for a summary of various studies), academic environments as defined here represent the 'meso' level. As discussed in our methodology section and the concluding limitations section in previous chapter, the notion of *'fagmiljø'* can be somewhat abstract and difficult to translate. While it cannot be directly equalized by formal organizational structure (e.g. units such as department), in some institutions this can be the case. This also makes it very difficult to identify group level characteristics in a systematic manner from a research perspective. Even studies that focus on academic staff would more often emphasize the individual characteristics of academic staff or the specific teaching approaches and methods, rather than explore the characteristics of groups of staff connected to a study programme. Why is there a lack of studies that examine this explicitly?

3.1.1 Possible explanations

In our view, the lack of studies can have several possible explanations. One possible explanation, of course, is that studying this relationship is rather difficult, given that the notions of academic environment (or group, community) and educational quality are both rather ambiguous – even when only conceptualised in English, without all the troubles of translation. The ambiguity implies that any attempt to systematically study this as a (causal) relationship would be prone for a whole range of errors and in this manner not necessarily yield valid and meaningful results. Given that any such effect would likely be indirect it would consist of a whole chain of effects where various contextual factors would also have a significant role. Therefore, one explanation could be that this specific relationship is just academically not viable to study.

An entirely different possible explanation is that there is also an element of common sense in some of the dimensions of interest. The fact that you need a sufficient number of teachers to be able to provide education can also be seen as rather straight forward, rendering the necessity to study this as irrelevant and unnecessary. Of course, this nevertheless leaves open the question of scaling and size of academic communities.

A third possible explanation has to do with structural aspects of research on quality in higher education. In general, studies that examine what matters for good quality teaching and learning are not very well connected with more organizationally oriented studies of quality in higher education (Elken & Stensaker, 2018). Thus, the lack of studies that link together educational quality of the students and the more organizationally framed questions of group characteristics might well be a result of research traditions in this area. From our screening of the broader set of studies, it seems that several studies that are on a more organizational level instead seem to focus on much more practical and overarching concerns regarding educational quality: e.g. changing accountability regimes, rankings, reduced resources, overcrowded classrooms and lack of infrastructure, to name a few. Studies of student learning, on the other hand, seem to focus much more on the specific teaching and learning situations and approaches that can facilitate quality of learning processes.

Moreover, while we have in multiple instances emphasized that the term academic environment is complex, it should also be emphasized that educational quality is by no means less ambiguous and multifaceted term. If the measure adopted is the assurance of a high-quality learning process, then this also sets specific boundaries for how such effects can be studied and point towards the methodological complexities of establishing causal arguments about the factors that matter for students learning. While recent literature has established that student centred teaching approaches tend to have a positive effect, such approaches also provide a range of challenges and dilemmas (Nerland & Prøitz, 2018) and require that teaching staff has sufficient competence to address these dilemmas and can discuss study programme coordination and organisation to mitigate these.

What does this mean for the questions raised in this study? While we have not identified many studies at a group level, in section 2.3.1 we emphasized some of the ample literature that has emphasized the role of teacher approaches to teaching in facilitating productive student learning processes (Baeten et al., 2010; Trigwell et al., 1999). There is no reason to assume that this relevance would disappear on group level, whether this group is defined by organizational boundaries or more abstractly, such as the case for academic environments. Given that much of teaching in higher education is conducted individually, these studies have obvious relevance for any discussions on academic environments as defined in the Norwegian regulation. The consequence, however, is that there is some distance between the concept 'academic environment' and the specific educational practices.

Thus, we would nevertheless conclude that, despite the seeming lack of studies that precisely examine the points emphasized in the research questions, it is clear

that staff engagement, competence and profile are important factors for educational quality.

3.1.2 How does academic environment matter?

If we maintain that staff engagement, competence and profile are important, how can this be aggregated to group level? While the literature examined did not provide precise arguments, we argue that there are several chains of arguments. To exemplify this, we provide a reasoning concerning formal staff competence and size of academic environments in the following paragraphs.

If one then assumes that there is sufficient evidence to argue that the characteristics of the teachers matter for quality of education, and that these effects would not disappear on group level, this implicitly also creates expectations on group level. While it is possible for each individual teacher to obtain knowledge about teaching approaches by their own initiative in an informal manner, one can expect that the overall levels of pedagogical competence in a group would matter. Indeed, on a group level, it has been shown that academic development courses show positive effects in terms of changing teachers' conceptions of teaching (Trigwell et al., 2012, p. 507).

In a similar vein, one can also expect that their level and scope of their subject knowledge would matter if one expects that teaching and research should be linked. While there is variation in how teaching and learning can be combined and what this implies for the role of individual staff (to be an active researcher or to have researcher competence), most of these would imply the necessity to have some form of research competence (Elken & Wollscheid, 2016). Given that in the Norwegian context both research competence and pedagogical competence are criteria for obtaining professor status (while the former has been traditionally prioritized), one can argue that formal staff competence matters. This does not mean that academic qualifications are a guarantee for quality of teaching on individual level, but on a broader level one can assume that this would be a relevant indicator. It is less clear, however, how this should be quantified.

Having in mind that educational provision is a complex task in modern higher education institutions, there are a range of factors that contribute to this task and that indirectly point towards the fact that '*academic environments matter*' and that for example the size of an academic environment would have some implication for teaching in the study programme. There is a purely practical consideration. Given that one person has specific number of working hours, you do need a certain amount of staff to actually teach the courses that are included in the study programme. A practical consideration is also that it will be obviously different to teach a course with three students, from one that has 300 students. These two situations

would have essentially different demands in terms of resources that need to be available for teaching and assessment. Too limited teaching resources can also have adverse effects on pedagogical choices in the course if efficiency concerns completely override any academic arguments. This is particularly important when discussing aspects such as feedback that students receive (or the lack thereof), or supervision capacity necessary among academic staff when balance of bachelor and master degree students is changing.

However, there is also an organizational aspect, which means that there are different ways to organize teaching and research tasks, and that this also has consequences for staff teaching capacity. For instance, this would concern whether staff also has research time in their position, and if so, how much research time academic staff has. One can also argue that there would be an academic consideration, as any staff allocated for teaching tasks also needs to update their knowledge that is being transmitted to students. Teaching as a scholarly activity is not just the time spent in classroom or marking exams, there is also a scholarly dimension of being up to date in the specific field.

It is less clear, at least in existing literature we have examined in this review, whether all of the above can be adequately measured in quantitative terms and whether requiring that academic environments providing a study programme include certain shares of staff with a specific academic qualification (e.g. professor level competence or PhD) would be a sufficient guarantee for quality. Thus, it is by no means clear that there is a positive *exponential* relationship between size and quality – that bigger is always better, beyond certain minimum numbers physically necessary to be able to provide the courses in the study programme.

All of the above raises questions about the term academic environments and what is actually meant by the term. While we have emphasized that the term is difficult to translate to English, its implications are not necessarily clear in Norwegian either. For example, the notion of '*fagmiljø*' does not *necessarily* imply a community of practice among academic staff concerning their teaching activities. Such a community of practice could also imply that there is some sense of shared conceptions of teaching and learning (e.g. agreement on the use of various teaching methods), by for example emphasizing scholarship of teaching perspectives.

In sum, while all of these suggest that there are good reasons to argue that the academic environment responsible for providing an educational programme should have some form of minimum size and that it is important that teaching staff is competent, existing research provides meagre evidence for more precise statements and the studies that were identified in the review suggest a rather scattered set of evidence.

3.2 Academic supervisions regulations

NOKUTs academic supervision regulations were revised in 2017¹¹. The regulations form the basic guideline for quality assurance procedures. The regulations consist of six chapters that provide a basic framework for assessment of quality in supervision processes and also accreditation processes of study programmes and institutions. The requirements for academic environment are listed in Section 2.2 that stipulates the criteria for obtaining accreditation.

The requirements include seven points:

1. The academic environment for each programme must be of a size proportionate to the number of students and the programme's characteristics, be stable over time in terms of competence and have a composition that covers the programme's topics and subjects.
2. The academic environment must have relevant educational competence.
3. The programme must have a clear academic leadership with defined responsibilities for quality assurance and the development of the study programme.
4. At least 50 per cent of the academic full-time equivalents affiliated to the programme must be staff with their primary employment at the institution. Of these, academic staff with at least associate professor qualifications must be represented among those who teach the core elements of the programme. In addition, the following requirements apply to the academic environment's level of competence:
 - For first-cycle programmes, at least 20 per cent of the members of the academic environment must have at least associate professor qualifications.
 - For second-cycle programmes, at least 50 per cent of the members of the academic environment must have at least associate professor qualifications. Within this 50 per cent, at least 10 per cent must have professor or docent qualifications.
 - For third-cycle programmes, the academic environment must consist of academic staff with at least associate professor qualifications. At least 50 per cent must have professor or docent qualifications.
5. The academic environment must be actively engaged in research and academic development work and/or artistic research, and be able to demonstrate documented results with a satisfactory quality and scope in relation to the programme's content and level.
6. The academic environment for programmes that lead to a degree must actively participate in national and international partnerships and networks that are relevant for the programme.
7. For programmes involving mandatory supervised professional training, the members of the academic environment must have relevant and updated knowledge from the field of the professional practice.

¹¹ https://www.nokut.no/siteassets/om-nokut/nokut_academic_supervisions_regulations.pdf

Based on the review and reasoning, we can argue that academic environments matter, especially if one views teaching as a scholarly activity itself. However, a key concern for these criteria is the definition of academic environments in these criteria. In these regulations, an academic environment refers to the staff responsible for programme provision. For professional fields, this can be a rather complicated definition, given that there may be several academic environments involved.

Concerning the first criterion, there are some possible arguments in literature for benefits of full-time staff and concerns for academic development of fixed term staff, but the evidence has not been sufficiently broad to make conclusive statements regarding this. Small-scale studies would also suggest that smaller campuses can also have certain benefits, but these results should be validated in a more systematic manner. It is rather obvious that some minimum level is necessary to operate a study programme, but the specific scale and scope beyond this has not been quantified in existing literature.

Concerning the second criterion, studies would emphasize positive effects of academic development, but there are also other ambiguous results. Nevertheless, the general argument in the research seems to support that pedagogical courses can change teachers' approaches to teaching.

Concerning the third criterion, the review did not explicitly address the issue of leadership. This has been an important topic in Norway, but existing studies suggest that this function has in the Norwegian context also been rather underspecified (Aamodt et al., 2016).

Concerning the fourth and fifth criteria, the evidence seems to be rather complicated. A point raised in the literature is the issue of incentive structures, and how this can influence the priorities of fixed vs permanent staff. If systems only prioritize research, this is also likely to influence behaviour of staff, especially staff who are in recruitment positions.

Fifth and sixth criteria both refer to staff competence and their research activities. While the studies included in this review suggested that there are some benefits of staff research competence, they also noted that it is not important that staff research is world-class or cutting edge, or that it would not be possible to provide high quality education without research profile. However, a study among educational leaders in Norway suggested that a key factor for changes in study programme were developments within the discipline or field of study (Aamodt et al., 2016). This would suggest that it is important that staff who provides the education are up to date concerning recent developments.

In sum, there is little evidence in the literature examined that it would be possible to establish a simple quantification of how large share of staff should have a specific level of competence. There is, however, ample evidence that it is beneficial

that there *is* an 'environment' and that staff can develop a community of practice as teachers. This has been emphasized in studies of scholarship of teaching since the 1990s, and there are no indications that this would be any less relevant in contemporary higher education institutions, with new demands for productive teaching and learning methods that can enhance students' learning processes.

If one does make a case for a more collaborative approach and emphasis on practices, this could be seen to have a range of implications for how to think about facilitating educational quality. It would emphasize the necessity to examine the specific collaborative practices within an academic environment, and also have implications for how pedagogical training is organised, just to provide some examples. Moreover, an important baseline in Norwegian higher education is to provide research-based education. While the formal research competence of teaching staff is an important factor in providing research-based education, a more collaboratively and student-centred oriented approach would also suggest that it is productive to examine what students actually do and how they are engaged in inquiry activities, and not just staff competence.

In other words, one cannot *a priori* assume that academic environments would work with educational quality in a collaborative manner. Rather than assuming that a group of academic staff with specific criteria would automatically provide high quality education, it is perhaps more productive to shift focus on what academic environments actually *do*, how they collectively work to enhance educational quality. In recent research, this kind of emphasis on practices has been emphasized as an important dimensions when discussing educational quality (Elken & Stensaker, 2018). There are good reasons to think that these arguments would also be relevant for discussions of academic environments.

References

- Aamodt, P. O., Hovdhaugen, E., Stensaker, B., Frølich, N., Maassen, P., & Dalseng, C. C. F. (2016). Utdanningsledelse: En analyse av ledere av studieprogrammer i høyere utdanning. In *NIFU Rapport 10/2016*. Oslo: NIFU.
- Abraham, R., Ramnarayan, K., Vinod, P., & Torke, S. (2008). Students' perceptions of learning environment in an Indian medical school. *Bmc Medical Education*, 8. doi:10.1186/1472-6920-8-20
- Abrami, P. C., Borokhovski, E., Bernard, R. M., Wade, C. A., Tamim, R., Persson, T., . . . Surkes, M. A. (2010). Issues in conducting and disseminating brief reviews of evidence. *Evidence & Policy*, 6(3), 371-389. doi:10.1332/174426410x524866
- Adcroft, A., & Lockwood, A. J. T. i. H. E. (2010). Enhancing the scholarship of teaching and learning: an organic approach. *15*(5), 479-491.
- Altemani, A. H., & Merghani, T. H. (2017). The quality of the educational environment in a medical college in Saudi Arabia. *International Journal of Medical Education*, 8, 128-132. doi:10.5116/ijme.58ce.55d2
- Baeten, M., Dochy, F., Struyven, K., Parmentier, E., & Vanderbruggen, A. (2016). Student-centred learning environments: an investigation into student teachers' instructional preferences and approaches to learning. *Learning Environments Research*, 19(1), 43-62. doi:10.1007/s10984-015-9190-5
- Baeten, M., Kyndt, E., Struyven, K., & Dochy, F. (2010). Using student-centred learning environments to stimulate deep approaches to learning: Factors encouraging or discouraging their effectiveness. *Educational Research Review*, 5(3), 243-260.
- Bearman, M., Smith, C. D., Carbone, A., Slade, S., Baik, C., Hughes-Warrington, M., & Neumann, D. L. (2012). Systematic review methodology in higher education. *Higher Education Research & Development*, 31(5), 625-640. doi:10.1080/07294360.2012.702735
- Becher, T., & Trowler, P. R. (2001). *Academic tribes and territories: intellectual enquiry and the culture of the disciplines*. London: Routledge.
- Berbegal-Mirabent, J., Mas-Machuca, M., & Marimon, F. J. S. i. H. E. (2018). Is research mediating the relationship between teaching experience and student satisfaction?, *43*(6), 973-988.

- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university: what the student does*. Berkshire: Open University Press.
- Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*: ERIC.
- Brew, A. (2003). Teaching and Research: New relationships and their implications for inquiry-based teaching and learning in higher education. *Higher Education Research & Development*, 22(1), 3-18.
doi:10.1080/0729436032000056571
- Brockerhoff, L., Huisman, J., & Laufer, M. (2015). Quality in Higher Education: A literature review. *CHEGG. Ghent University. Ghent*.
- Cardoso, S., Tavares, O., & Sin, C. (2015). The quality of teaching staff: higher education institutions' compliance with the European Standards and Guidelines for Quality Assurance—the case of Portugal. *Educational Assessment, Evaluation Accountability*, 27(3), 205-222.
- Chi, X., Liu, J., & Bai, Y. (2017). College environment, student involvement, and intellectual development: evidence in China. *Higher Education*, 74(1), 81-99.
- Choy, S. C., Yim, J. S.-C., & Tan, P. L. (2017). Student's perceptions of quality learning in a Malaysian university—a mixed method approach. *Quality Assurance in Education*, 25(4), 500-515.
- Clegg, S. (2009). Forms of knowing and academic development practice. *Studies in Higher Education*, 34(4), 403-416. doi:10.1080/03075070902771937
- Damşa, C., de Lange, T., Elken, M., Esterhazy, R., Fosslund, T., Frølich, N., . . . Aamodt, P. O. (2015). *Quality in Norwegian Higher Education. A review of research on aspects affecting student learning*. Oslo: NIFU.
- Elen, J., Clarebout, G., Leonard, R., & Lowyck, J. (2007). Student-centred and teacher-centred learning environments: What students think. *Teaching in Higher Education*, 12(1), 105-117.
- Elken, M., & Stensaker, B. (2018). Conceptualising 'Quality Work' in Higher Education. *Quality in Higher Education*. doi:10.1080/13538322.2018.1554782
- Elken, M., & Wollscheid, S. (2016). The relationship between research and education: typologies and indicators. A literature review. In. Oslo: NIFU.
- Ellis, B., Sawyer, J., Gill, R., Medlin, J., & Wilson, D. (2005). Influences of the learning environment of a regional university campus on its international graduates. *The Australian Educational Researcher*, 32(2), 65-85.
- García-Aracil, A. (2012). A comparative analysis of study satisfaction among young European higher education graduates. *Irish Educational Studies*, 31(2), 223-243. doi:10.1080/03323315.2012.660605
- Gibbons, S., Neumayer, E., & Perkins, R. J. E. o. E. R. (2015). Student satisfaction, league tables and university applications: evidence from Britain. 48, 148-164.

- Goenner, C. F., & Snaith, S. M. (2004). Predicting graduation rates: An analysis of student and institutional factors at doctoral universities. *Journal of College Student Retention: Research, Theory & Practice*, 5(4), 409-420.
- Gusenbauer, M. J. S. (2018). Google Scholar to overshadow them all? Comparing the sizes of 12 academic search engines and bibliographic databases. doi:10.1007/s11192-018-2958-5
- Harvey, L., & Green, D. (1993). Defining Quality. *Assessment & Evaluation in Higher Education*, 18(1), 9-34. doi:10.1080/0260293930180102
- Harvey, M. (2013). Setting the standards for sessional staff: quality learning and teaching. *Journal of University Teaching & Learning Practice*, 10(3), 4.
- Hativa, N., Barak, R., & Simhi, E. (2001). Exemplary university teachers: Knowledge and beliefs regarding effective teaching dimensions and strategies. *The Journal of Higher Education*, 72(6), 699-729.
- Hay, D. (2008). Developing Academic Development. Involving lecturer/researchers in research of student learning. In London: The Higher Education Academy.
- Hongkan, W., Arora, R., Muenpa, R., & Chamnan, P. (2018). Perception of educational environment among medical students in Thailand. *International Journal of Medical Education*, 9, 18-23. doi:10.5116/ijme.5a4a.1eda
- Hurn, K. M. (2016). Joined up thinking? A review of the impact of a higher education and industry partnership on undergraduate product design students. *Industry and Higher Education*, 30(2), 129-139.
- Kreber, C. J. I. h. e. (2002). Teaching excellence, teaching expertise, and the scholarship of teaching. 27(1), 5-23.
- Lubicz-Nawrocka, T., & Bunting, K. (2018). Student perceptions of teaching excellence: an analysis of student-led teaching award nomination data. *Teaching in Higher Education*, 1-18.
- Martínez, A., Borjas, M., Herrera, M., & Valencia, J. (2015). Relationship between measures of academic quality and undergraduate student attrition: the case of higher education institutions in the Colombian Caribbean region. *Higher Education Research & Development*, 34(6), 1192-1206. doi:10.1080/07294360.2015.1024622
- McDonald, G. (2013). Does size matter? The impact of student–staff ratios. *Journal of Higher Education Policy and Management*, 35(6), 652-667.
- McLean, M., & Barker, H. (2004). Students making progress and the ‘research-teaching nexus’ debate. *Teaching in Higher Education*, 9(4), 407-419.
- Mojaddidi, M. A., Khoshhal, K. I., Habib, F., Shalaby, S., El-Bab, M. E. F., & Al-Zalabani, A. H. (2013). Reassessment of the undergraduate educational environment in College of Medicine, Taibah University, Almadinah

- Almunawwarah, Saudi Arabia. *Medical Teacher*, 35, S39-S46.
doi:10.3109/0142159x.2013.765554
- Mojarradi, G., & Karamidehkordi, E. (2016). Factors influencing practical training quality in Iranian agricultural higher education. *Journal of Higher Education Policy and Management*, 38(2), 183-195.
- Mägi, E., & Beerkens, M. (2015). Linking research and teaching: Are research-active staff members different teachers? *Higher Education*, 1-18.
- Mårtensson, K., & Roxå, T. (2016). Peer engagement for teaching and learning: competence, autonomy and social solidarity in academic microcultures. *UNIPED*, 39(02), 131-143.
- Mårtensson, K., Roxå, T., Olsson, T. J. H. E. R., & Development. (2011). Developing a quality culture through the scholarship of teaching and learning. 30(1), 51-62.
- Nerland, M., & Prøitz, T. S. (Eds.). (2018). *Pathways to quality in higher education : Case studies of educational practices in eight courses*. Oslo: NIFU.
- Nerland, M., Prøitz, T. S., Damsa, C., De Lange, T., Esterhazy, R., Fosslund, T., . . . Wittek, A. L. (2018). Quality of educational practices: Lessons learned and recommendations for the future In M. Nerland & T. S. Prøitz (Eds.), *Pathways to quality in higher education. Case studies of educational practices in eight courses*. Oslo: NIFU/UiO.
- Neumann, R., Parry, S., & Becher, T. (2002). Teaching and Learning in their Disciplinary Contexts: A conceptual analysis. *Studies in Higher Education*, 27(4), 405-417. doi:10.1080/0307507022000011525
- Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: a practical guide*. . USA: Blackwell
- Roxå, T., Mårtensson, K., & Alveteg, M. J. H. E. (2011). Understanding and influencing teaching and learning cultures at university: A network approach. 62(1), 99-111.
- Roxå, T., & Mårtensson, K. J. S. i. H. E. (2009). Significant conversations and significant networks—exploring the backstage of the teaching arena. 34(5), 547-559.
- Saini, M., & Shlonsky, A. (2012). *Systematic synthesis of qualitative research*: OUP USA.
- Sandelowski, M., & Barroso, J. (2007). *Handbook for synthesizing qualitative research*. New York: Springer.
- Sarrico, C. S., & Alves, A. A. J. H. E. (2016). Academic staff quality in higher education: an empirical analysis of Portuguese public administration education. 71(2), 143-162. doi:10.1007/s10734-015-9893-7
- Shin, J. C. (2011). Teaching and research nexuses across faculty career stage, ability and affiliated discipline in a South Korean research university AU -

- Shin, Jung Cheol. *Studies in Higher Education*, 36(4), 485-503.
doi:10.1080/03075071003759052
- Stes, A., De Maeyer, S., Gijbels, D., & Van Petegem, P. (2012). Instructional development for teachers in higher education: Effects on students' perceptions of the teaching-learning environment. *British Journal of Educational Psychology*, 82(3), 398-419.
- Trigwell, K., Caballero Rodriguez, K., & Han, F. (2012). Assessing the impact of a university teaching development programme AU. *Assessment & Evaluation in Higher Education*, 37(4), 499-511. doi:10.1080/02602938.2010.547929
- Trigwell, K., Prosser, M., & Waterhouse, F. (1999). Relations between teachers' approaches to teaching and students' approaches to learning. *Higher Education*, 37(1), 57-70.
- Xiao, J., & Wilkins, S. (2015). The effects of lecturer commitment on student perceptions of teaching quality and student satisfaction in Chinese higher education. *Journal of Higher Education Policy and Management*, 37(1), 98-110.
- Yin, H., Lu, G., & Wang, W. (2014). Unmasking the teaching quality of higher education: Students' course experience and approaches to learning in China. *Assessment & Evaluation in Higher Education*, 39(8), 949-970.
- Özcan, K. (2013). Undergraduate Students' Perceptions of Teaching Quality in Higher Education. *Education and Science*, 38(169), 142-158.

Appendix

Table 2. Simple description of the studies considered

	Study ID (first author, year)	Country	Aims
1	Barattucci (2017)	Italy	The relationship between academic environment and learning quality has become central, leading to a broad range of studies. In the present study we investigated the applicability of Biggs' 3P learning process model to the Italian context.
2	de Morais (2017)	Portugal	A conducive academic environment for learning relates to the provision of opportunities for the assumption of responsibility and directed reflection, which refer to the possibility of applying the knowledge to diverse circumstances and their respective directed and guided reflection. This study aimed to identify such opportunities at a Pedagogy course, in the perception of students and teachers
3	Elen (2007)	Belgium	This contribution explores the relationship between teacher-centred and student-centred learning environments from a student's perspective
4	Berbegal- Mirabent (2018)	Spain	Universities must ensure that academic staff are qualified and competent for performing their job. Teaching and research are two key activities in which lecturers should excel. (...) This study aims at shedding new light on this debate. We first examine the relationship between teaching experience and student satisfaction. In a second stage we explore the mediating effect of research intensity in this relationship. Lastly, we examine potential differences due to contract status.
5	Garcia-Ara- cil (2012)	European	This article identifies those aspects of the academic environment that are associated with graduates' overall satisfaction with their higher education (HE) course.
6	Harvey (2017)	Australia	Quality learning and teaching with sessional staff: systematising good practice for academic development
7	Martínez (2015)	Columbia	Using official databases from the Colombian Ministry of Education for the year 2009, this study explores through analysis of variance the relationship between attrition and three measures of academic quality: accreditation status, professional test scores required to graduate (Saber Pro Exam) and the number of research groups at HEI.
8	Lubicz- Nawrocka (2019)	Scotland	This research explores student voice and student perceptions of teaching excellence in higher education, and authors suggest implications for student engagement and student/staff partnerships in teaching and learning.
9	Ozcan (2013)	Turkey	The purpose of this study was to examine undergraduate students' perceptions of teaching quality.

10	Mojarradi (2016)	Iran	This paper presents an analysis of the factors influencing the practical training quality of agricultural higher education programmes from the senior students' perspective
11	Cardoso (2015)	Portugal	This paper is concerned with the institutional level implementation of European and national policies which target the quality of teaching staff. It reports on the findings of a study conducted in order to analyse if Portuguese higher education institutions are taking measures to improve and assure the quality of teaching staff in compliance particularly with the ESG
12	Sarrico (2016)	Portugal	This article embarks on an empirical study of what academic staff quality means, how it is measured, and how different aspects of staff quality relate to each other. It draws on the relatively nascent Portuguese experience with study programme accreditation.
13	Goenner (2004)	US	This study examines the role of institutional factors in determining graduation rates at doctoral universities
14	Ellis (2005)	Australia	Staff and students at small regional campuses often consider them to be a learning environment with many advantages. Students can benefit from the opportunities for enhanced access to staff provided by factors such as small classes and a compact campus. International students from non-English-speaking backgrounds are one group for whom these factors can be particularly helpful in their adjustment to a new society as well as in their continuing study program. This belief is tested in the study described in this paper.
15	Kilgour (2016)	international	Problem-based learning (PBL) and other small-group, active learning methodologies have been widely adopted into undergraduate and postgraduate healthcare curricula across the world. Although much research has examined student perceptions of these innovative teaching pedagogies, there are still questions over which factors influence these views. This article aims to identify these key elements that affect healthcare student satisfaction with PBL and other small-group learning methods, including case-based and team-based learning
16	Lenton (2015)	UK	In this study, we examine the determinants of the NSS overall student satisfaction score across eleven subject areas for 121 UK universities between 2007 and 2010.
17	Meizlish (2018)	US	This paper presents a quasi-experimental evaluation of a required, teaching-focused, new faculty program at a large research university
18	Stes (2012)	Belgium	Importance of instructional development program (competency) for beginning university teachers on students' learning outcomes
19	Richards (2017)		This article reports on a learning and teaching project undertaken in the School of Justice (Faculty of Law) at Queensland University of Technology that sought to address this issue. The project involved delivering an evidence-based training workshop to all casual academic staff in the School, on how to provide quality constructive feedback to students
20	Saleh (2012)	Iraq	This study aimed to assess the existing teaching methods in the Hawler College of Medicine, Iraq from teaching staff perspectives and assess the knowledge of the teaching staff about student-centred learning
21	Gibbs (2004)	UK/ international	This article reports a study on the effectiveness of university teachers' training involving 22 universities in 8 countries. A training group of teachers and their students were studied at the start of their training and one year later. A control group of new teachers received no training and both they and their students were studied in the same way.
22	Balasoorya (2009)	Australia	This study investigates the impact of a new integrated medical educational design on students' approaches to learning.
23	Yin (2015)	China	this study examined the quality of undergraduate teaching by investigating the relationships between students' course experience, the learning outcomes demonstrated by the students and the learning environment.

24	Cheng (2016)	UK	Student satisfaction and the quality of education are of compelling interest to students, academic staff, policy-makers and higher education researchers internationally. There is a widespread belief in their cause and effect' relationship. This paper tests these beliefs and explores how the level of student satisfaction is linked with the perceived quality of PhD education.
25	Sin (2017)	Portugal	The paper analyses the impact of programme accreditation in Portugal further to the operations of the Agency for Assessment and Accreditation of Higher Education, which were initiated in 2009.
26	Vnouckova (2016)	Czech Republic	The quality of education, lessons, subjects and teachers perceived by students is currently often discussed topic regarding strategic management of universities. Assessment of higher education learning outcomes represents internalization of a higher education competition. The aim of the article is to evaluate perception of education quality of lectures, subjects and teachers by university students in the area of human resource management in private Czech university and to identify main approaches to academic staff.
27	McLean (2004).	UK	The paper argues that research activity is a strong condition for teachers of university history to pursue student progress
28	Marsh (2002)	Australia	Plausible arguments can be made as to why teaching and research activities should be complementary, conflicting, or unrelated to each other
29	Mägi (2016)	Estonia	In the global competition of higher education, research intensity has become the key indicator of the quality of universities. This raises the issue of how, and whether at all, a research-intensive environment offers a better learning experience for students. One potential answer to this dilemma lies in research-related teaching. In this empirical paper we examine whether research-active staff members are indeed different teachers and whether they are more likely to use research-related teaching practices
30	Deignan (2009)	England	Traditional lecture-based teaching methods are being replaced or supplemented by approaches which call for reframing the roles and identities of teachers and learners. Enquiry-Based Learning (EBL) is one such approach. This paper reports on a study investigating the perceptions of staff and students (N=25) involved in an EBL capacity building project in the north-west of England
31	Vereijken (2018)	Netherlands	In this study, we describe relationships between first-year medical student perceptions of research, learning outcomes and beliefs about the value of research.
32	Jenkins (1998)	UK	This study investigates the relationship between teaching and research focusing on undergraduate students from a range of disciplines
33	Turner (2008)	North-America	This paper explores the implications of the effective integration of research, teaching and learning for academic development through the lens of an international multi-institutional comparison of student perceptions of research and its impact on their learning environment.
34	Garcia-Aracil (2012)	European	This article identifies those aspects of the academic environment that are associated with graduates' overall satisfaction with their higher education (HE) course
35	Jensen (2016)	UK	This paper explores a model for developing student and staff partnerships to enhance the quality of teaching and learning and situates the model in literature on student engagement
36	Shin	South Korea	The relationship between teaching and research is a controversial issue in higher education research. Many empirical studies have reported a near zero relationship although academics believe that teaching and research are related in diverse ways. This study focused on how the relationship differs by faculty characteristics (career stage and their academic ability), their affiliated disciplines and each measure of research publication (book, domestic journal and international journal publication), to address the gaps between empirical studies and academics' beliefs.

37	Trigwell (2011)	Australia	Four different indicators are used to assess the impact of a year-long university teaching development programme in an Australian research-led university.
----	--------------------	-----------	--

List of tables

Table 1. Potentially relevant search terms identified prior to the search	12
Table 2. Simple description of the studies considered	47

Nordisk institutt for studier av
innovasjon, forskning og utdanning

Nordic institute for Studies in
Innovation, Research and Education

www.nifu.no