



DOING THE SPLITS OR DANCING A DUET?

Integration of Teaching and Research at Dutch Universities

Summary

The Academy has noted that the integrated nature of teaching and research is under pressure at Dutch universities. It has therefore produced a position paper discussing the importance of this integration, the way in which it takes shape, and trends that are impacting it.

The Academy considers that the integration of teaching and research represents the core of university education. Their close relationship allows students to develop an enquiring and critical attitude, an academic skill essential in all professions for which they are being trained, whether in academia or elsewhere. Integration of teaching and research is thus vital to the contribution that universities make to society. Teaching and research can be combined in different ways, depending on the discipline and phase of study. The combination may vary from covering recent research findings in lecture classes to involving students in ongoing research through theses or internships.

Various factors are putting pressure on the unified nature of teaching and research. They include: keen *competition in research*, the fact that research sometimes enjoys *higher status* than teaching, the *increasing number* of students combined with *declining state funding* per student, and the growing *workload* of academic staff.

The Academy has published this position paper to highlight the importance of integrating teaching and research. It makes specific recommendations for protecting their close relationship in the shorter term. These recommendations focus on *raising the status of teaching* and *reducing the workload* of academic staff, and on *having teaching play a bigger role in research and the award of research funding*. More important than these short-term measures, however, are structural changes to the academic system that may be necessary to safeguard the integration of teaching and research in the longer term. Such changes will require discussion on a broader level. The Academy will include this theme in its programme of forum activities for the coming year.¹

1. On 26 November 2018, VSNU, NWO, NFWO and ZonMw published a statement in which they announced activities meant to drive changes in the recognition and rewarding of researchers. The Academy supports the discussion of this topic and will re-align any academy events related to this position paper with activities that VSNU, NWO, NFWO and ZonMw will organise.



Background

The Academy has noted that the integrated nature of teaching and research is under pressure at Dutch universities. It is becoming increasingly difficult for academics to combine their teaching and research duties. The danger is that a wedge is being driven between the role of teacher and researcher. As a result, integration of teaching and research is under threat, even though such integration represents the very core of university education. The same observation has been reported in publications by the Rathenau Instituut (Koier 2016), the Advisory Council for Science, Technology and Innovation (AWTI 2015) and the Association of Universities in the Netherlands (VSNU 2018e).

In the present position paper, the Academy considers:

- why the integration of academic teaching and research is important;
- the way in which this integration currently takes shape in the various disciplines and phases of a study programme;
- trends and developments that are affecting this integration.

The position paper ends with various conclusions that underpin a set of recommendations for supporting university teaching and research. Implementing these recommendations will improve the symbiosis between the two for a number of years. At the same time, however, it may be necessary to make more structural changes to the academic system so that the integration of teaching and research is guaranteed in the longer term. A broader discussion of this issue is necessary.

This position paper focuses exclusively on the integration of teaching and research in Bachelor's and Master's study programmes at Dutch universities.

Why is it important for teaching and research to be integrated?

Added value for students

Unlike study programmes in higher professional education, the purpose of an academic study programme is to help students develop a critical attitude towards the acquisition of new knowledge and to assess others' research, so that they become resilient individuals. They consequently receive instruction that covers scientific and scholarly methods and recent research findings. This is their initiation into various academic traditions. In the case of study programmes whose graduates primarily end up working in academic research, integration of teaching and research is obvious and natural. It is also extremely important for the growing number of students pursuing careers outside academia (LERU 2017).

Academically trained employees are in demand in many non-academic settings. Examples include primary and secondary school teachers, judges, nurses and other practitioners for whom evidence-informed working is becoming ever-more important. These professionals are not expected to conduct research themselves, but to use scientific and scholarly knowledge in their work. In that respect, we can refer to the growing 'scientification' of non-academic/practice settings. University graduates can be expected to have developed the following competences:

- an understanding of the current state of knowledge in a specified research domain;
- an understanding of the way in which researchers obtain results and how these results should be assessed in terms of their value and practical relevance;
- academic skills, including a critical attitude, the ability to determine which information is needed to answer a research question, and proficiency at collecting a wide variety of data and interpreting and evaluating what may be contradictory information.



The more progress a student makes in his or her study programme, the more integrated teaching and research become. Research is a more important factor in the Master's phase than in the Bachelor's phase. This idea is expressed in the international Dublin descriptors, used by universities to describe the level of competence that students must have attained upon graduation (JQI 2004).

Very little empirical research has been conducted on the impact of student involvement in research on academic achievement. Most studies suggest, however, that students benefit from a research-rich environment if it is infused with a culture in which they can participate actively in the research process (LERU 2017). In their vision statements, universities consequently refer to 'research-intensive' or 'enquiry-based learning'. The Commissie Toekomstbestendig Hoger Onderwijs Stelsel (Committee on a Futureproof Higher Education System) explained the importance of integrating teaching and research in the following words in 2010: 'Every form of higher education needs research to develop students' academic and practical skills. These skills can only be acquired in an educational setting that integrates research.' More recently, the Dutch Ministry of Education has also stressed the immense importance of integrating teaching and research in its *2025 – Vision for Science, Choices for the Future* (OCW 2014) and its *Strategic Agenda for Higher Education and Research 2015-2025* (OCW 2015).

FROM THE INTERVIEWS: 'Every once in a while, lecturers take the time to ask students what they think about their research. When they do, I feel engaged with the university and the research that's taking place there.' – student of Social History

What students think about the integration of teaching and research

Interviews conducted with Bachelor's students for this position paper show that they make a sharp distinction between lecturers who are active as researchers and those who are not. Interviews with Master's students show that they are willing to put up with less well-structured lectures if that is offset by the lecturer's enthusiasm for research. All of the students interviewed like to have instruction interspersed with examples from research practice. These examples help them to better understand why the subject matter is important, give them an idea of what it means to have a career in research, and highlight the social relevance of academic knowledge. Students view working on projects, giving presentations and writing reports in groups as a formative challenge, especially when such work involves excursions, although there is less and less time for the latter.

Added value for academic staff

There is broad agreement about the importance of research for good teaching, but the added value of teaching for research is less clear. On the one hand, it is not always challenging to teach entry-level courses, which involve giving the same lectures every year to the next new group of students. On the other hand, teaching can be inspiring and contribute to research.

FROM THE INTERVIEWS: 'Researchers who teach basic courses still learn something new every time.' – associate professor of Chemical Engineering

Although researchers have little to gain from teaching first-year students about current research, teaching more advanced students often inspires them to narrow down or broaden their research aims. The challenge of explaining complex subjects and answering questions posed by critical students puts lecturers' knowledge to the test. Researchers' interactions with students keep them on their toes. On top of this, giving lectures on the latest research may inspire students to opt for an academic career, and therefore functions as a long-term investment in research. Having students do their Bachelor's or Master's thesis on ongoing research is a good way of exploring future research topics.



An international perspective on the integration of teaching and research

The integration of teaching and research is an issue in other countries as well. The following examples are illustrative in that regard.

Examples of countries with little integration of teaching and research

India is struggling with the fact that research institutes (for example the Tata Institute of Fundamental Research and the Indian Statistical Institute) attract the best researchers, and that this is gradually undermining the quality of research at universities. The Indian government is trying to broaden and intensify the teaching portfolio of research institutes so that the country can derive maximum benefit from the symbiosis between teaching and research.

In **France**, the Centre National de la Recherche Scientifique employs many researchers who do not have teaching duties. Some do have positions at academic institutions but often have little to do with ongoing educational matters. University researchers, on the other hand, are often saddled with a heavy teaching load in the early stages of their career, limiting the extent to which they can do their own research. There is often no integration between teaching and research, apart from in the major academic centres of Paris, Lyon and Marseille.

Examples of countries where teaching and research are closely integrated

The government of **Denmark** has absorbed several research institutes into universities in recent years, leading to closer relationships in the conduct of research, in the training of researchers, and in disseminating research findings. Teaching workloads vary throughout researchers' academic careers. Tenure trackers, for example, do less teaching so that they can satisfy the research standards for an international academic career.

In **Germany**, the Humboldt tradition is still very strong. Students grow up in a climate in which teaching and research go hand-in-hand. Researchers affiliated with the Max-Planck-Gesellschaft, the Leibniz-Gemeinschaft and other institutes often have part-time appointments at universities and teach lecture classes.

Teaching and research are closely integrated in the **United Kingdom** within the colleges at Cambridge and Oxford, for example. The best researchers serve as tutors and there is a stringent selection process at the gate: only students who take a broad view are accepted by the best colleges. The stringent selection criteria give rise to a favourable student-staff ratio, making close supervision possible.

How are teaching and research integrated?

Teaching and research are not two separate university tasks; instead, they influence each other and, where possible, are mutually enhancing. What works best differs from one field of study to the next. Below are some examples of how teaching and research are integrated:

- *Require students to complete research assignments and practicals.* In the early part of the Bachelor's phase, students often acquire their first research skills by carrying out specific assignments and completing practicals. Such assignments allow them to familiarise themselves with the research tradition in the relevant discipline. They extend this knowledge in the Master's phase.
- *Involve students in ongoing research.* It is customary in many disciplines to involve students in research by having them write a thesis, complete an internship, or undertake a graduation project or a research Master's. PhD students and post-docs often play a role in supervising students. On the one hand, this means that students can already become well acquainted with academic research during their study programme and contribute to an ongoing research project. On the other hand, it allows young researchers to gain experience in teaching and gives them the opportunity to incorporate that experience into their research.
- *Have researchers provide tuition.* Traditionally, the tasks of teaching and research have been combined in the positions of assistant, associate and full professor. This makes it possible to incorporate the findings of ongoing research into teaching. Students attending survey courses learn how research has



shaped the relevant field of study. Lecturers can make the connection with ongoing research by selecting the courses to be included in the curriculum and the topics to be covered in those courses. The University Teaching Qualification (UTQ) and the Senior University Teaching Qualification (STQ) were introduced to improve the quality of academic teaching, not least by promoting the idea of 'duality'.

- *Honours colleges.* Many study programmes offer students capable of tackling an extra challenge the opportunity to enrol in an honours college. This is one way of bringing talented students and active researchers together early on in the student's study programme.
- *Appoint staff at research institutes to professorships.* Some staff members at NWO and Academy institutes (who do not teach in that capacity) have part-time appointments or hold endowed chairs at a university. This dual role allows them to link teaching to research taking place outside the university.

The two text boxes below provide more detailed examples of the integration of teaching and research.

Integration of teaching and research in the History study programme

Students enrolled in the History study programme learn the research basics by gradually familiarising themselves with different types of sources and research methods and how they are used. From day one, students examine printed sources in archives, digitalised sources and large databases. They learn to date and contextualise these sources, and write papers of varying length about them. This approach is taken in both the Bachelor's and the Master's phases. Students also learn to evaluate the research of others on such criteria as reliability, validity and argumentation.

Integration of teaching and research in the exact sciences

In exact disciplines such as mathematics, physics, chemistry and astronomy, students often interact more intensively with research staff and PhD students. This approach is based on the conviction that student participation in research groups is the best way to ensure a solid grounding in the field and that students can only acquire the relevant knowledge and understanding if they themselves engage actively in the struggle inherent to mastering science.

In the exact sciences, Bachelor's and Master's theses are often fertile ground for new lines of research, which can ultimately result in well-formulated PhD research. Students quickly gain entry to a university department or get involved in a research group in this way, for example by making a direct contribution to ongoing research. They may also be invited to assist in organising meetings about science for a wider audience.

Concerns about the integration of teaching and research

There are several factors that have put the integration of teaching and research under pressure.

Competition for research funding at the expense of teaching

Widespread competition for research funding, whether in the national or international arena, is putting increasing pressure on the integration of teaching and research. More than half of all university research is financed through external sources, and this share is increasing (VSNU 2018d). The success rate for funding applications is low and competition for funding is fierce (NWO 2017; De Jonge 2017). In addition,

FROM THE INTERVIEWS: 'I don't know whether I'd still advise young people to become researchers. We often "entice" young researchers with the prospect of doing interesting research, but as soon as they start they're under pressure to obtain research funding and to take on a lot of teaching.'- professor of Mechanical Engineering

academic staff who do succeed in obtaining funding then spend more time doing research, leaving them less time to invest in teaching. Students are thus deprived of the opportunity to meet inspiring role models and to become acquainted with outstanding



research. Conversely, the researcher misses out on inspiring interactions with students. Acknowledging that the pressure to apply for funding is too high and the likelihood of success too low, NWO introduced a set of mitigating measures in October 2017 (NWO 2017).

Widespread competition for external funding also has another effect, namely that universities increasingly channel their efforts into broad strategic themes and organise their research into interfaculty and multidisciplinary research institutes. There is sometimes less interest in monodisciplinary approaches or in specific subdisciplines. Because teaching is often monodisciplinary in nature, the research themes identified by the university end up being only tenuously related to education. That can have an adverse impact on the connection between theme-driven research and the study programmes.

Research enjoys a higher status than teaching

The adverse effect of competition for research funding on university teaching is further exacerbated by the fact that universities' staffing policies have focused primarily on research achievement in recent years, for example the acquisition of external research funding and publications in high-impact journals. Traditionally, the tasks of teaching and research have been combined in the positions of assistant, associate and full professor. In many fields of study, however, a professor's research output is in fact a

FROM THE INTERVIEWS: 'The message is that even prizewinning teachers will get the boot if they don't manage to acquire research funding.' – winner of the 'Teacher of the Year Award'²

more important factor in his or her career progress. As a result, academic staff are encouraged to prioritise research. Another factor is that research is carried out in an international context, and what counts in that context is research achievement.²

In the *Strategic Agenda for Higher Education and Research 2015-2025*, the Minister of Education has indicated the need for more appreciation of teaching compared to research, for example by promoting more differentiation in the careers of academic staff. The *Agenda* also announced a Comenius Grant for teaching staff and education managers as an incentive for educational reform and to foster more appreciation for teaching (OCW 2015). Universities are working to improve the status of teaching in their HRM policies and to examine the way in which teaching achievement is assessed. More broadly speaking, there is currently a great deal of government interest in the theme 'assessment of researchers', for example in the National Platform Open Science.

To improve the status for teaching, it is essential to encourage greater career differentiation. Not every scientist needs to be equally active and successful in both teaching and research at every stage of his or her career. Another point to consider when promoting teaching as a career path is to focus not only on innovations such as blended learning, digital aids and 'ateliers' but also on updates to scientific and scholarly content that promote the unified nature of teaching and research. It is vital to spark the enthusiasm of ambitious lecturers and facilitate their work. Administrative talent with pedagogical vision should also be encouraged to take the lead in educational policy.

Several universities have taken steps to offer talented lecturers career prospects by appointing 'teaching professors' or professors with teaching as a focus area. On the one hand, this gives researchers who are gifted lecturers an extra career opportunity. On the other hand, such terms may cause confusion; after all, teaching is an important duty of *all* professors. The appointment of special teaching professors may pose a risk to the unified nature of teaching and research

FROM THE INTERVIEWS: 'The proper use of research in teaching should be discussed during annual performance appraisals, and should also be included in educational evaluation processes.' – Economics professor

² In 2016, Goudsteen & Company interviewed fourteen winners of the 'Teacher of the Year Awards' and the 'Education Prizes' at Dutch universities. All of these interviewees said that there is little interest in quality of teaching and little appreciation for the work of teachers. Of the instructors interviewed, 79% said that formal performance appraisals paid little if any attention to teaching achievement. Research is a much more important factor in such assessments (Goudsteen & Company 2016).



if the teaching professor is not given sufficient time to carry out research in his or her field, or if the appointment results in teaching being regarded as less important for ordinary professors.

Declining state funding per student

The number of students enrolled in a Bachelor's or Master's degree programme has been increasing for years (see Appendix, Figure 1a-c). Enrolment in 2016 was 20 percent higher than in 2008 and as much as 60 percent higher than in 2000 (VSNU 2017a). Expectations are that the rise in student numbers will continue in the coming years (OCW 2017). This sharp rise is leading to a heavier workload, because the number of academic positions is not keeping pace with the number of students (SoFoKles 2017, VSNU 2018e).

In recent years, government funding per student has fallen from €20,100 in 2000 to €15,300 in 2018, a decline of almost 25 percent (both figures at 2018 price level) (VSNU 2018e). The precise impact of diminishing government funding per student varies greatly per university and department. The university itself decides how the block grant it receives for teaching and research is distributed among its faculties, and the deans then determine how the money is distributed within their faculty. In its report *Spinning Plates*, the Rathenau Instituut explains that it is virtually impossible for some faculties to combine teaching and research. This could very well drive a wedge between the role of teacher and the role of researcher (Koier 2016).

QUOTES BY SEVERAL DEANS TAKEN FROM THE RATHENAU INSTITUUT REPORT 'SPINNING PLATES':

A dean in the Natural Sciences domain said: 'Only groups that teach large numbers of students are viable, or groups that are especially successful at obtaining external funding. The balance between teaching and research will change; some groups will do more teaching because that's their key to survival and some groups will undertake more research.'

A dean in the Law domain explained it as follows: 'We're going to change the teaching-research ratio in some fields. In some cases to 80 percent teaching, 20 percent research. Mainly because those fields have little chance of acquiring European and external funding.'

The recent cuts in student financial aid have encouraged students to graduate quickly but have also forced many of them to take jobs while studying to reduce their student debt. As a result, they have less time and interest in a broad academic education (*'bildung'*). This is in fact contrary to the needs of employers, which prefer employees who have broad multidisciplinary training.

Increase in teaching staff

The increase in the number of students and the reduction in government funding per student make it even more urgent to ensure a balanced and well-considered distribution of teaching duties among PhD students, junior lecturers and senior researchers. Factors that universities take into account in this respect are the teaching methodology, the phase of the study programme, the teaching competencies of staff members, and image. Funding also plays a role; staff members whose salaries are paid entirely by external sources may not be available for teaching.

Staff appointed solely to teach increased by 26 percent between 2008 and 2016. By comparison, total academic staff (all categories) at universities rose by 16 percent in the same period (VSNU 2017b). Most of the additional teaching appointments occurred in the 'HOOP'³ domains Agriculture, Natural Sciences, Behavioural & Social Sciences, and Law.

The sharp increase in the percentage of academic staff appointed solely to teach is worrying, if the implication is that they will spend many years doing nothing else and that their teaching will not be sufficiently informed by research. Without input from current research, they may not update their

³ 'HOOP' refers to the planning document (the Higher Education and Research Plan) that the Minister of Education, Culture and Science issues at regular intervals. The plan divides the entire Dutch education system into nine broad domains: Agriculture, Natural Sciences, Engineering, Health & Life Sciences, Economics, Law, Behavioural & Social Sciences, Language & Culture, and Cross-sector. The same domains are used when recording number of students and academic staff. The DUO website shows which study programmes are categorised under which domain, see <https://www.duo.nl/zakelijk/hoger-onderwijs/studentenadministratie/croho.jsp>.



teaching materials and perhaps end up teaching obsolete information. This is especially problematic in highly dynamic fields. The result would be a decline in the quality of university education. A point of concern for the lecturers themselves is their poor career prospects (De Jonge Akademie 2018).

While the above reasons make it unadvisable to increase the percentage of academic staff who only teach, that increase is probably unavoidable given the growing numbers of students and declining government funding per student. Effective career guidance and continuing professional development for teaching staff can help to make this an acceptable solution. More important than conducting research themselves is for such staff members to be aware of the latest developments in research. Appointments that allow lecturers to spend less than 20 percent of their time on research have little added value. Many universities are making efforts to promote continuing professional development among lecturers (VSNU 2018a). Indeed, one of the themes of the *Research Universities Sector Agreement 2018* is continuing professional development for lecturers, i.e. improving the professional quality of lecturers and appreciation of their work.⁴

Heavier workload and more bureaucracy

Researchers at universities and university hospitals work an average of 28 to 34 percent more hours than provided for by their appointment (in full-time equivalents, FTEs) (Koens et al. 2008). Research by SoFoKleS and FNV (SoFoKleS 2016, FNV 2017) shows that a majority of the academic staff feel stressed: 79 percent perceive the workload as heavy to very heavy; three quarters think that work pressure has increased in the past three years. The need to combine different tasks (teaching, research, valorisation, management, administration) is mentioned as one of the main stressors (SoFoKleS 2016). In addition to increased international competition in research and rising student numbers, the stress has been exacerbated by efforts to improve the student success rate, by the digitalisation of education, and by the growing number of bureaucratic rules and regulations (VSNU 2018e). All these factors hamper the integration of teaching and research and impede educational innovations (VSNU 2018e, Kolster et al. 2018). The current educational accreditation requirements may also prevent new research findings from being incorporated into teaching. Because the attainment targets for study programmes, modules or exams must be specified in detail, it is difficult to make changes to educational programmes.

FROM THE INTERVIEWS: 'We're dealing with a growing administrative burden and more pressure to perform. That's why it's become almost impossible for anyone to be both a top teacher and a top researcher.'—Psychology professor

In 2017, universities started drafting work plans to reduce the perceived pressure on staff members. The details make allowance for the specific circumstances of the university, faculty and department concerned (VSNU 2018b).

Trends and solutions in each domain

Trends in student numbers and academic staff differ from one discipline to the next. Table 1 and Figure 2 in Appendix 1 show the overall numerical trends per domain for the 2002-2016 period (VSNU 2017a and 2017c). Within the domains, trends in student intake and number of academic staff in FTEs may naturally vary by study programme and field of study. Student-staff ratios provide a mere indication of these trends, since academic staff sometimes teach in other domains.

The biggest increase in the number of Bachelor's students in this period was in the Agriculture, Natural Sciences and Cross-sector domains. The increase in the latter can be attributed to the rise of broad

⁴ A number of universities have already developed separate career paths for lecturers who are outstanding teachers. Examples can be found in the VSNU factsheet 'Onderwijs carrières' (Careers in Education) (VSNU 2018c).



Bachelor's programmes (which generally attract large numbers of students) and 'university colleges'. The number of students enrolled in Master's degree programmes increased most in Agriculture, Natural Sciences and Engineering. There, growth in the number of academic staff in FTEs lagged behind the increase in student numbers, resulting in a significant jump in the number of students per staff member.

To gather qualitative information on trends in each domain, the Committee also interviewed a number of researchers and students. Appendix 2 summarises the outcomes of these interviews. Besides differences, the domains also display many similarities. For example, there is a trend in many fields towards broader Bachelor's degree programmes, with specialisation occurring later on in the study programme and with a particular focus on the relationship between teaching and research in the Master's phase. In addition, it is becoming harder across the board to maintain that relationship, owing to research specialisation and growing pressure on researchers to align their research with strategic themes that match European funding programmes.

One important innovation in the Dutch education system is the university college, established at several universities over the past 20 years. University colleges have been successful in many respects. They attract large numbers of students and receive high marks in terms of student satisfaction. Given the broad, interdisciplinary nature of these programmes, however, there is very little integration between research and teaching. There are opportunities to do more here.

Conclusion

- 1 It is the Academy's observation that the integration of teaching and research are universally regarded as the core of university education. A close relationship between the two is essential to the contribution that universities make to society. Through its connection with research, a university education fosters an academic attitude in students. That attitude is obviously important for those who intend pursuing a career in academia, but given the 'scientification' of non-academic settings, it is also increasingly important for those seeking a job outside the academic world.
- 2 Teaching and research are combined in different ways depending on the discipline and, more particularly, the phase of the study programme. The combination may vary from covering recent research findings in classes to involving students in ongoing research through theses or internships.
- 3 There are various forces that make it difficult to preserve the unified nature of teaching and research. The main impediments are:
 - Keen competition in research: researchers are spending more and more of their time applying for funding. Competition for external funding has also led universities to channel their research efforts into broad strategic themes. This, in turn, may mean that the university's research themes end up being only tenuously related to its teaching.
 - Research sometimes has a higher status than teaching: academic staff are encouraged to prioritise research. Another factor is that research is carried out in an international context and what counts in that context is research achievement.
 - Declining government funding per student poses a threat to the desired ratio between teaching time and research time driving a wedge between the role of teacher and the role of researcher.



- Cuts in student financial aid mean that students are encouraged to graduate quickly and that many students also hold down jobs alongside their studies. As a result, they have less time and interest in a broad academic education (*'bildung'*). This is in fact contrary to the needs of employers, which prefer employees who have broad multidisciplinary training.
- Staff workload: the need to combine different tasks (teaching, research, management, administration, valorisation) contributes to a heavy workload among academic staff. A heavy workload can lead to stress and is an inhibiting factor both for the integration of teaching and research and for educational innovation.
- The extent to which integration between teaching and research is under pressure and the associated problems differ from one discipline to the next and, in particular, from one phase of study to the next.
- There is a trend in many fields towards broader Bachelor's programmes, with specialisation occurring later on in the programme and with a particular focus on the relationship between teaching and research in the Master's phase.
- The deployment of lecturers who do not have any research tasks is often unavoidable in large-scale Bachelor's programmes. It does not, however, appear to be affecting the quality of the Bachelor's programme in all cases.
- Many research funding bodies have developed a preference for thematic research in recent decades. The impact of this is heightened by the fact that universities, faculties and research groups appear to be capitalising on this policy. Research specialisation of this kind makes the integration of teaching and research more complex owing to the widening gap between research, which is often multidisciplinary in nature, and teaching, which tends to be monodisciplinary.

Recommendations

The recommendations in this position paper focus on reinforcing the integration of teaching and research in the years ahead. More important than these short-term measures, however, are structural changes to the academic system that may be necessary to ensure such integration in the longer term. These changes will require discussion on a broader level. The Academy will include this theme in its programme of forum activities for the coming year⁵. It will announce these debates and report on their outcomes on its website. (actor: Academy)

For the short and medium term, the Academy makes the following recommendations:

1 Recommendations to enhance the integration of teaching and research despite keen competition in research

Having teaching play a bigger role in research and in the award of research funding can make a positive contribution to the integration of teaching and research.

⁵ On 26 November 2018, VSNU, NWO, NFWO and ZonMw published a statement in which they announced activities meant to drive changes in the recognition and rewarding of researchers. The Academy supports the discussion of this topic and will re-align any academy events related to this position paper with activities that VSNU, NWO, NFWO and ZonMw will organise.



- In the knowledge utilisation section of grant applications, give researchers the opportunity to state whether and, if so, how the results of their research will benefit teaching or how those results can be incorporated into teaching. (actor: NWO)
- Although staff members who are successful at obtaining research funding may be excused from some of their teaching duties, the basic idea is that *everyone* should contribute to teaching. Just how much staff members teach can vary per person and career phase. For example, staff members can alternate periods of intensive teaching with sabbaticals during which they devote extra time and effort to research. (actors: universities and faculties)
- Encourage research clusters at universities and national research consortia so as to develop courses or training for teaching related to important research themes. (actors: universities and NWO)

2 Recommendations to improve the status of teaching

One way to increase appreciation for the teaching achievements of academic staff is to develop and make effective use of indicators for this purpose. Another is to make students, lecturers and administrators more aware of the importance of integrating teaching and research.

- Aim to raise awareness among students, lecturers and administrators of the way in which study programmes integrate teaching and research. Encourage lecturers to share best practices in enquiry-based learning. Draw explicit attention to the presence of research elements in teaching, so that students realise that they are in fact engaged in research in certain parts of their study programme. Emphasise the integration of teaching and research in courses leading to the University Teaching Qualification (UTQ) and the Senior University Teaching Qualification (STQ). Create a climate of curiosity, collaboration and engagement. (actors: universities and faculties)
- When recruiting staff members, communicate clearly about their career prospects. Make sure that teaching and research achievements are assessed as equally important and offer academic staff leeway for career differentiation. Develop indicators for teaching achievement and see that they are incorporated into HRM policy. Reward researchers who are outstanding lecturers and encourage them to innovate in teaching, for example by offering them extra financial or human resources. (actors: universities and faculties)
- Channel more funding or prizes to groups of researchers rather than to individual researchers. This will encourage teamwork. The Dutch National Research Agenda and NWO's Gravitation Programmes offer striking examples of this. (actors: NWO and Academy)

3 Recommendations in response to the growing number of students and declining government funding per student

Appointing staff solely for teaching duties is a common solution to the problems associated with large-scale and rapidly growing Bachelor's degree programmes. This is not a desirable trend but it can be an acceptable solution provided that teaching staff are given enough opportunity for continuing professional development and receive career guidance. It is crucial that they remain up to date on the latest developments in research. (actors: universities and faculties)

4 Recommendations for easing the workload

Perceived heavy workload at universities and university hospitals is a critical issue that organisations are already tackling. The Academy would recommend the following, above and beyond existing measures:

- Ease the workload by reducing the administrative burden associated with teaching and external programme reviews. Give staff more flexibility to make interim changes to the curriculum so that



they can take new developments in research into account. (actors: universities and Ministry of Education)

- Make better use of the knowledge and expertise at the Academy and NWO institutes by having more of their researchers participate in teaching. (actors: NWO, Academy, universities and faculties)

5 Other recommendations

Emphasise the unified nature of teaching and research by undertaking joint reviews of teaching and research. The first step might be to address the outcomes of both reviews collectively during regular meetings between the board and staff of the units under review. (actors: universities and faculties)

About this publication

The idea for this position paper was suggested by the Academy's advisory councils. Various members of these advisory councils expressed concern about the growing pressure on the integration of teaching and research. The position paper was drafted by a committee whose members represent all of the Academy advisory councils and The Young Academy. They are:

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APPENDIX 1

Sharp increase in student numbers

On 1 October 2016, the number of students enrolled in a Bachelor's or Master's degree programme in the Netherlands came to 264,838, 20 percent more than in 2008 and as much as 60 percent more than in 2000. Figure 1a shows that 43 percent of this increase is attributable to the rising number of international students, while Figure 1b reveals that approximately two thirds can be accounted for by an upswing in the number of Master's students. Figure 1c shows that both Bachelor's and Master's students are increasing.

The increase in student numbers is expected to continue in the years ahead. The number of young people enrolled at a Dutch university will reach about 300,000 in 2025 (OCW 2017). Not all fields of study are growing at the same pace. The biggest increase in the number of Bachelor's students is in the Agriculture, Natural Sciences and Cross-sector domains. The number of students enrolled in Master's degree programmes increased most in Agriculture, Natural Sciences and Engineering. There has been a slight decline in the number of Bachelor's students and a sharp decline in the number of Master's students in the Language & Culture domain.

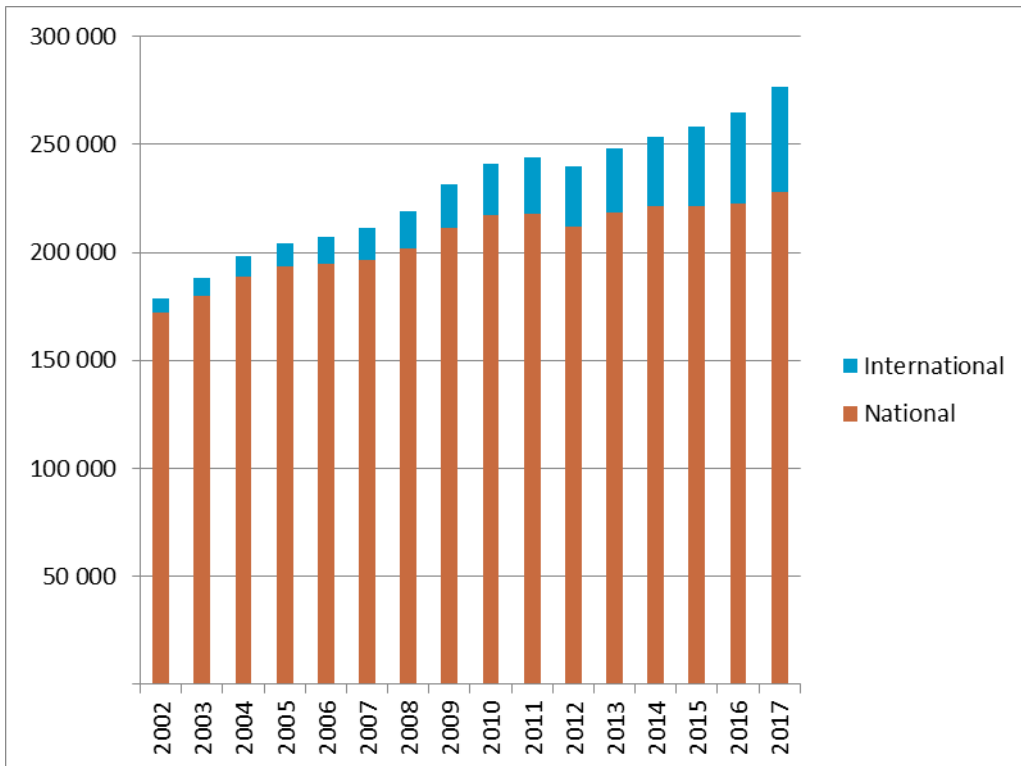


Figure 1a: Number of Bachelor's and Master's students, by year (VSNU 2017a).

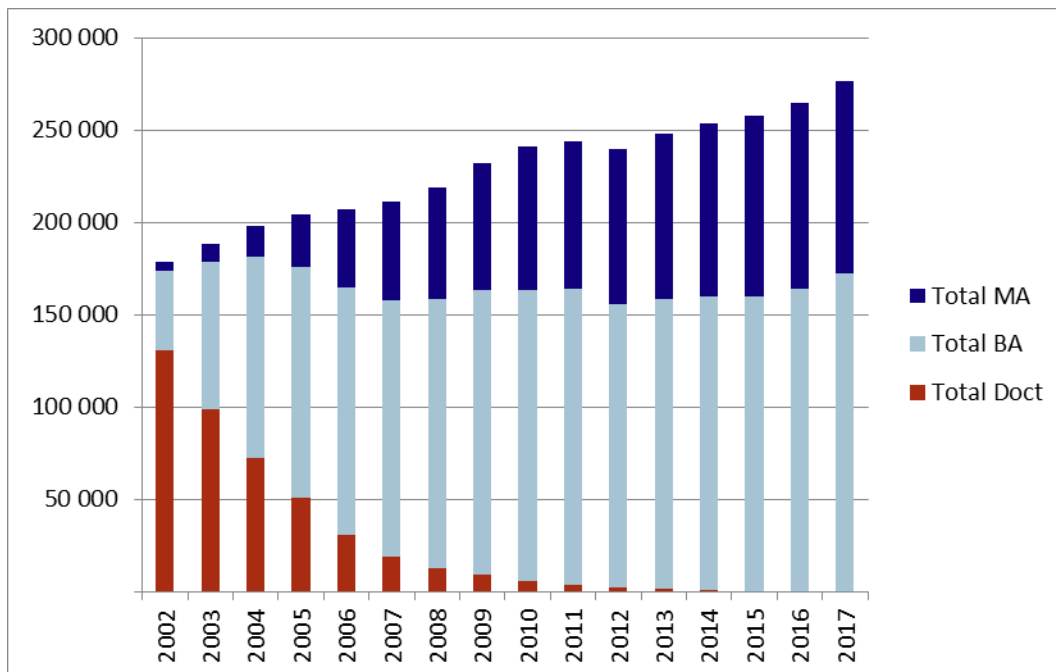


Figure 1b: Number of students enrolled at universities, broken down by study phase (the Bachelor-Master structure was introduced in Dutch higher education in June 2002; the category 'doctoraalstudent' - Doct - was phased out gradually) (VSNU 2017a).

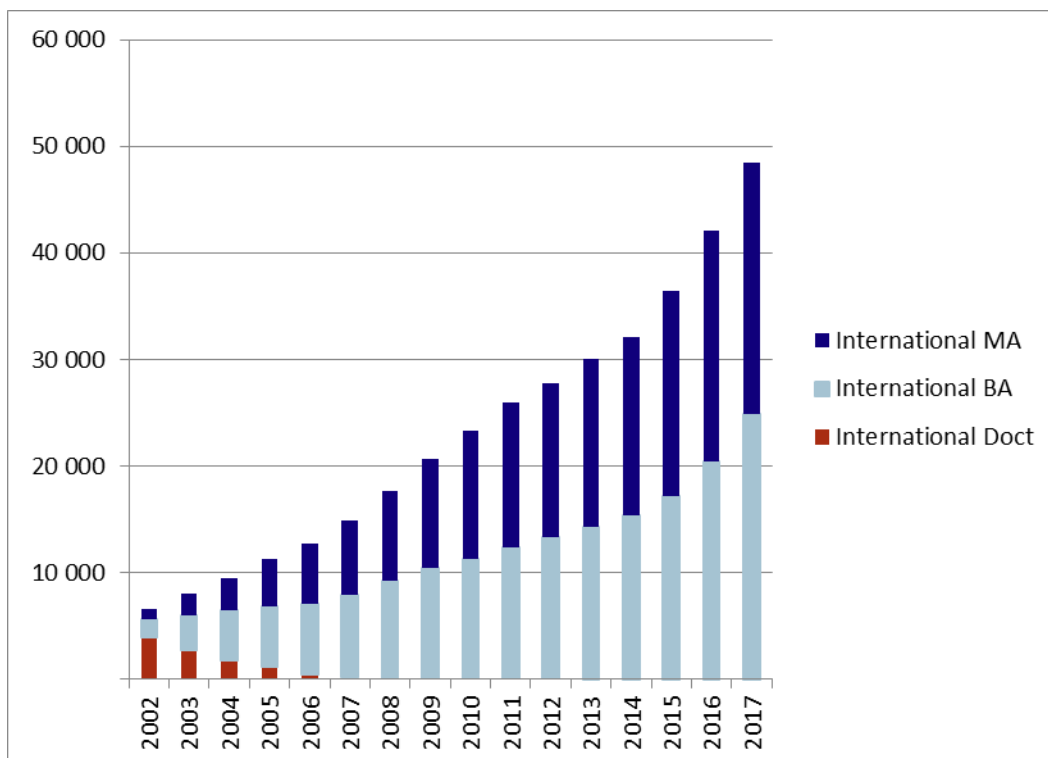


Figure 1c: Number of international students enrolled at Dutch universities (VSNU 2017a)



Student-senior staff ratios

The student-senior staff ratio varies from around 18 students per senior staff member (Natural Sciences and Language & Culture) to about 38 (Economics), see Table 1. By senior staff, we mean: assistant, associate and full professors. These figures are merely indicative, since staff in one domain sometimes teach classes in study programmes that come under another domain. The Bachelor-Master structure was introduced later in the Health & Life Sciences domain than in the rest, and we have therefore decided to report the figures for all students (Bachelor's, Master's and *doctoraal* combined). There is no reliable staff data available in this domain; whereas faculty staff at almost all Dutch university hospitals had previously been employed by the affiliated university, they became employees of their university hospital in this period, making it impossible to calculate the student-staff ratio. We were also unable to calculate the student-staff ratio for the Cross-sector domain because teaching is provided by staff in different domains.

| | Agriculture | Natural Sciences | Engineering | Health & Life Sciences | Economics | Law | Behav. & Soc. Sciences | Language & Culture | Cross-sector | Education |
|--|-------------|------------------|-------------|------------------------|-----------|------|------------------------|--------------------|--------------|-----------|
| Rise in Bachelor's students 2009-2016 | 61% | 40% | 12% | 10% | 6% | -11% | -8% | -21% | 269% | |
| Rise in Master's students 2009-2016 | 120% | 70% | 77% | | 18% | 24% | 19% | 17% | | 28% |
| Rise in FTE's for senior academic staff (FTEs) (assistant, associate and full professor) 2009-2016 | 7% | 11% | 4% | | 5% | 23% | 19% | 13% | -4% | |
| Rise in student/FTE senior staff ratio 2009-2016 | 74% | 35% | 28% | | 5% | -20% | -17% | -22% | | |
| Rise in student/FTE senior staff ratio 2002-2016 | 150% | 118% | 53% | | 7% | 1% | -4% | 3% | | |
| Student-senior staff ratio (FTEs) in 2016 | 20 | 18 | 22 | | 38 | 29 | 22 | 18 | | |

Table 1: Trends in student-senior staff ratios (VNSU 2017a, VSNU 2017b).

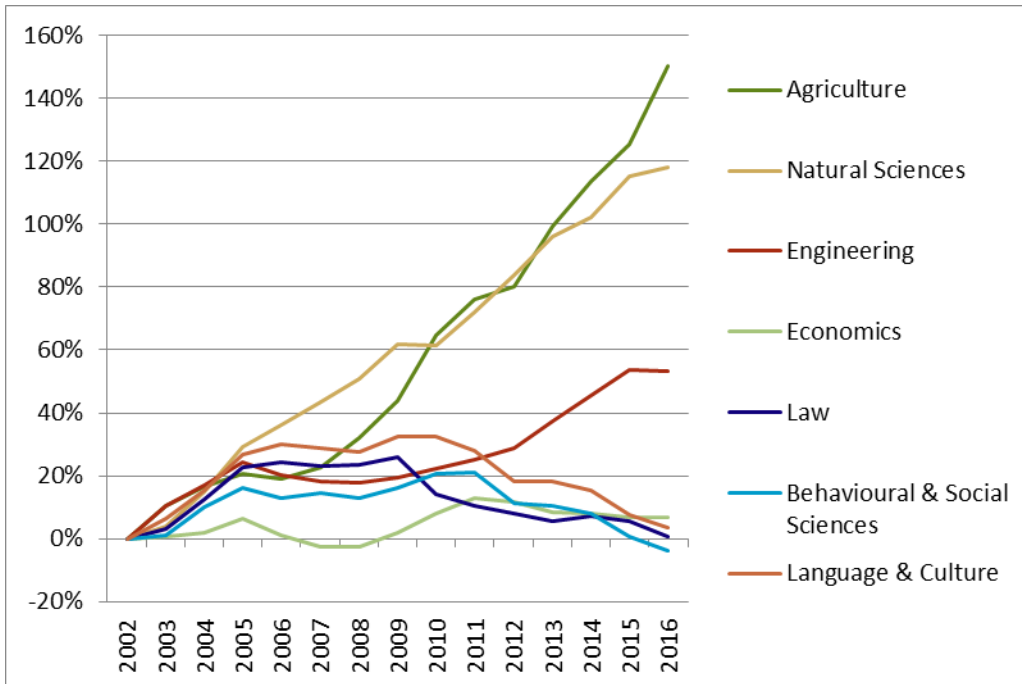


Figure 2: Trends in student-staff ratios (staff: FTE academic staff in assistant, associate and full professor categories) (VNSU 2017a, VSNU 2017b).



APPENDIX 2

To explore trend differences between domains, the Committee interviewed a number of researchers and students. Below we summarise the outcomes of our interviews.

Agriculture, Natural Sciences and Engineering

Academic staff in Agriculture, Natural Sciences and Engineering have relatively more time for research than their counterparts in other domains. With a relatively large number of smaller study programmes in these domains, staff and students usually interact a great deal. The rise of broader Bachelor's programmes has resulted in a significant increase in student numbers. Some monodisciplinary study programmes have also grown considerably. Because academic staff numbers have not kept pace, the number of students per staff member is increasing, which means less interaction between staff and students. This poses a threat to the unified nature of teaching and research. Current solutions include appointing staff members to exclusively teaching positions and promoting cooperation between smaller programmes on a national scale with a view to freeing up teaching capacity. An entry quota is being considered in some broader Bachelor's programmes and in Engineering, even though the labour market badly needs university graduates with technical training.

Health and Life Sciences

The largest study programme in the Health & Life Sciences domain is the programme in Medicine, which is subject to an entry quota. Because it doubles as a professional training programme covering many entry-level subjects, lecturers who do only a little research are not seen as a problem. Academic training takes place later in the programme and during individual internships. Patient care puts additional pressure on researchers' workload in the Health & Life Sciences domain.

Economics and Law

Economics and Law are similar in that the programmes are practice-based and attract relatively large numbers of students. There is also a relatively large number of students per staff member. Student enrolment is growing, compensated only in part by an increase in the number of academic staff. Many programmes have resorted to appointing lecturers solely to teach. The researchers we interviewed said that integration between teaching and research is a focus of attention mainly in the Master's phase. The increasing level of research specialisation and growing pressure to align research with strategic themes complicates efforts to integrate teaching and research.

Behavioural & Social Sciences

In the Behavioural & Social Sciences domain, the number of Bachelor's students has fallen slightly in recent years, while the number of Master's students has grown. The number of academic staff measured in FTEs has also increased. In our interviews, researchers said that the study programmes in this domain are growing broader all the time; specialisation is only introduced at a later stage. Increasingly, it is only in the Master's phase that programmes emphasise the close integration of teaching and research.

Language & Culture⁶

In the Language & Culture domain, the number of Bachelor's students has fallen slightly in recent years, while the number of Master's students has increased. The number of academic staff measured in FTEs has also increased. Teaching and research are integrated in this domain mainly through close interaction between students and lecturer, usually in small groups. The researchers we interviewed observed that not only the heavy workload but in particular the trend towards broader study programmes put the integration of teaching and research at risk. In addition, the growing importance of EU funding is driving the research agenda, with the risk that researchers may become alienated from their core expertise, putting further pressure on the integration of teaching and research. EU funding also plays an increasingly

⁶ This domain includes foreign languages, general linguistics, philosophy, art history and history. The research traditions in these fields of study differ considerably. The observations in this domain therefore do not all apply to History as a subject.



significant role in other domains, but it was the interviewees in Language & Culture that specifically mentioned its impact on the research agenda.

Cross-sector

This domain consists of study programmes that attract relatively large numbers of students. It encompasses the broad Bachelor's degree programmes developed over the past few decades, including the university colleges. Because teaching is provided by academic staff active in other domains, it was difficult to calculate the student-staff ratio and to track the associated trends.