

# Small third-cycle programme environments

Challenges and factors for success



Report 17

Small Third-cycle Programme Environments – Challenges and factors for success

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# Introduction

This report presents an in-depth analysis of the third-cycle programmes evaluated in 2017–2019 with regard to the programme environment and size.<sup>1</sup> The Swedish Higher Education Authority (UKÄ) has evaluated 123 third-cycle programmes in 17 research subjects in several different fields of research. The assessment *under review* was given to 29 programmes. Of these programmes, 24 had fewer than ten doctoral students in the evaluated research subject. Experience from UKÄ’s appraisals of degree-awarding power for third-cycle qualifications shows that quantitatively and qualitatively, the size of the third-cycle environment is a common problem. The matter has been equally relevant in the third-cycle programme evaluations, where it was a frequent topic of discussion at assessor meetings. The assessors also frequently commented and reflected on the programme environments, especially the ones with few doctoral students, in both the reports and in the cover letters with each evaluation report.<sup>2</sup> Some of the issues raised in the evaluations of small environments include: a course offering that is too small, lack of supervisor resources, and a small research environment. However, this report contains several good examples of how the higher education institutions (HEIs) have handled these issues.

The terminology used in this report, such as the concepts “research subject” and “third-cycle subject” may require clarification: When planning for the third-cycle programme evaluations in the 2017–2022 six-year cycle, UKÄ started the selection process based on the research subjects, fields of application and fields of research and development as defined in the 2011 Swedish Standard Classification of Research Subjects (*Standard för svensk indelning av forskningsämnen 2011*).<sup>3</sup> On the other hand, the HEIs name and describe their third-cycle subject areas themselves in each general syllabus. A research subject and a third-cycle subject area therefore may not coincide, which occasionally complicates the process. However, the HEIs incorporate the research subjects when reporting in LADOK for each doctoral student, thus synchronising both concepts to some extent.

The primary documents for analysis are the assessment panels’ cover letters with the reports, the individual reports and the HEIs’ self-evaluations. The goal is to provide a qualitative overview of the challenges faced by the HEIs in third-cycle programme environments with few doctoral students in the third-cycle subject area, but also the

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<sup>1</sup> Parts of this report have also been published previously in the report *Review for development. 95 evaluated third-cycle programmes 2017–2018* Report 2019:1 (Swedish Higher Education Authority 2019).

<sup>2</sup> Usually, each research subject is reviewed in its own evaluation report.

<sup>3</sup> *Swedish Standard Classification of research topics 2011. Updated August 2016* (UKÄ 2016).

factors for success that can be inferred. The focus is not on what it was like to assess small third-cycle programme environments compared to bigger environments. Nor does the study examine the underlying causes of why some third-cycle environments are smaller than others. Some disciplines are traditionally smaller and have fewer doctoral students, while financial factors (funding of doctoral students and new employment of researchers who can supervise) naturally play a significant role.

Statistics are used sparingly because from a statistical perspective, the numbers are small. The diagrams used in the report are intended to illustrate the evaluation results and to serve as a basis for the logic in the analysis. Finally, the study can also provide a foundation for a more exhaustive analysis, quantitatively and qualitatively, based on all of UKÄ's third-cycle programme evaluations after concluding the evaluation cycle.

# Small third-cycle programme environments

The number of doctoral students in the 123 programmes evaluated ranged from 0 to 101.<sup>4</sup> Just over half of the programmes (63) did not have more than 10 doctoral students.

How big does a group of doctoral students need to be to have a high-quality third-cycle programme? What can be considered a small third-cycle programme environment can vary depending on the discipline involved. Among other things, the research focus and the context the doctoral students are in must be explored as potential issues. For example, a third-cycle programme in music differs significantly from a programme in computer science, regardless of which HEI is being reviewed, both with respect to the number of doctoral students and the structure of the environment.

The guidelines for the Swedish National Agency for Higher Education's (HSV) previous appraisals of degree-awarding powers state:

A prerequisite for a thriving academic environment is that it contains enough teachers and researchers. One benchmark is that it initially has at least ten potential supervisors within the area. /.../ Interaction not only between researchers and doctoral students, but also among doctoral students themselves is important for the quality of a third-cycle programme. A creative environment presumes a sufficient number of doctoral students on site. One goal could be at least 15 doctoral students.<sup>5</sup>

These quantitative guidelines were eliminated from later instructions, but the intent remains to some extent. A viable academic environment and a high-quality third-cycle programme require a critical mass. But the number of doctoral students in each subject and the critical mass of a third-cycle programme environment do not always have to mean the same thing. The study shows that many programmes with a small group of doctoral students work strategically with networks and the like to broaden the environment.

In this study, UKÄ has chosen to start from subjects with ten or fewer doctoral students. Moving forward, they will collectively be referred to as “small third-cycle programme environments”. This quantitative demarcation is based primarily on the assessors' discussions of third-cycle programme environments in cover letters and reports. Naturally, it

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<sup>4</sup> In UKÄ's first and second round of third-cycle programme evaluations.

<sup>5</sup> *The Swedish National Agency for Higher Education's appraisal of applications for degree-awarding powers at the third-cycle level in an area*, Reg. No.: 641-5096-10 (HSV 2009).

is not possible to know through the number of registered doctoral students in the programme how often doctoral students are physically present in the third-cycle environment and actively contributing to a thriving academic setting with other doctoral students and researchers. But the goal of this study is to investigate this as a potential issue through the discussions held by both assessors and representatives from the HEIs.

The third-cycle subject areas included in the evaluations conducted in 2017–2019 belong to 17 different research subjects (see Annex 1). Small environments occur within all of the research subjects evaluated. A list of the HEIs that were evaluated (23 in total) can be found in Annex 2.

## Results

The study is based on documents from two evaluation rounds. The guidelines for evaluations of third-cycle programmes were revised before the second round, which resulted in, among other things, the term *aspect area* being changed to *assessment area*. Similarly, the aspect area *Environments, resources and areas* is now known as the assessment area *Preconditions* and *Working life perspective* as *Working life and collaboration*.<sup>6</sup> The titles from the updated guidelines will be used throughout this study to simplify reading.

The following four assessment areas were assessed at the third-cycle level in both evaluation rounds:<sup>7</sup>

- Preconditions (previously Environments, resources and areas)
- Design, implementation and outcomes
- Doctoral student perspective
- Working life and collaboration (previously Working life perspective)

If an assessment area was assessed as *not satisfactory*, then the programme was given the assessment *under review*.

### The result for programmes with fewer than ten doctoral students

Of the 123 programmes evaluated, 63 had ten doctoral students or fewer. Of the 29 programmes given the assessment under review, only five had more than ten doctoral students in the third-cycle subject area. In other words, this means that 83 per cent of the programmes under review had ten or fewer doctoral students. Another way of viewing this is that 38 per cent of the programmes with few doctoral students are under review, while the corresponding figure is 8 per cent of the larger environments.

Diagram 1 shows the distribution of the number of doctoral students relative to the programme result. When it comes to the small third-cycle programme environments, we see that programmes with 1–5 doctoral students have the most *under review* assessments, but also that a large share of programmes with 6–10 doctoral students have been judged as *high quality*. This also confirms the initial argument that it is important to conduct a qualitative analysis in order to ascertain what is behind the different results. In small third-cycle programme environments, there are both factors for success and challenges that deserve to be illuminated.

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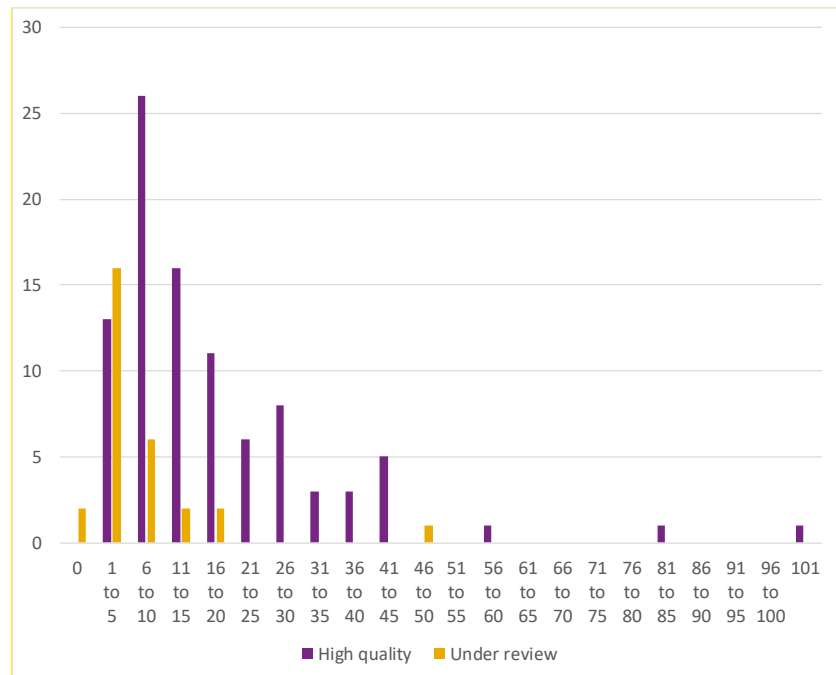
<sup>6</sup> *Guidelines for the evaluation of third-cycle programmes* (UKÄ 2016) and *Guidelines for the evaluation of third-cycle programmes* (UKÄ 2016, revised 2018).

<sup>7</sup> In the first evaluation round, *Gender equality perspective* and *Follow-up, measures and feedback* were their own assessment areas. In the second round, they became assessment criteria within the assessment area *Design, implementation and outcomes*.



**Diagram 1.**

Distribution of the number of doctoral students relative to the programme result.

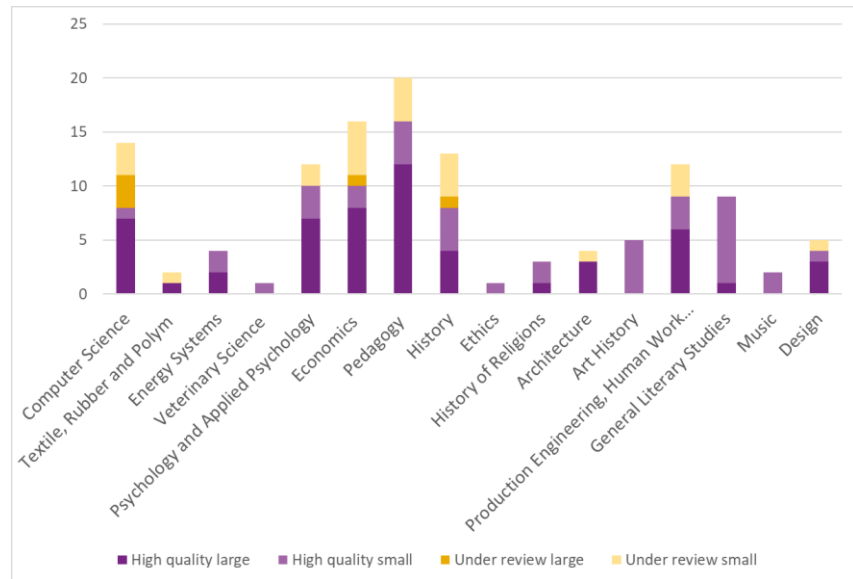


### Different research subjects

Diagram 2 shows that around one third of the programmes in some research subjects are under review, and among them, several programmes have few doctoral students. But it also shows that many research subjects have been assessed as *high quality* in all programmes, even those with few doctoral students. The fact that in general, the quality of some third-cycle subject areas is not under review could be explained in part by the fact that these are traditionally small subjects where, regardless of the HEI to which they belong, supervisors and other researchers are used to focusing on finding alternative ways and strategies to create high-quality third-cycle programme environments for smaller groups of doctoral students.

**Diagram 2.**

Distribution of assessments by research subject in large and small environments, respectively.



### What are the inadequacies?

For programmes with few doctoral students in the research subject that were judged as *under review*, it is reasonable to assume that at least one of the following two assessment areas were assessed as *not satisfactory*:

- *Preconditions*: The assessment area contains the assessment criteria *staff* and *third-cycle programme environment*, which can both be connected to the number of doctoral students, supervisors and other researchers in the environment. The size of the third-cycle programme environment is thus included in the reasoning behind the assessment of the area.

*Design, implementation and outcomes*: The assessment area contains *achievement of qualitative targets for 'knowledge and understanding'*, which includes broad knowledge and understanding in both the third-cycle subject and method. In these cases, the reasoning has revolved around broad knowledge and understanding relative to the critical mass.

This assumption is correct in all cases, with two exceptions. For two programmes in computer science, which have 3 and 4 doctoral students, respectively, only the gender equality perspective is assessed as *not satisfactory*.<sup>8</sup>

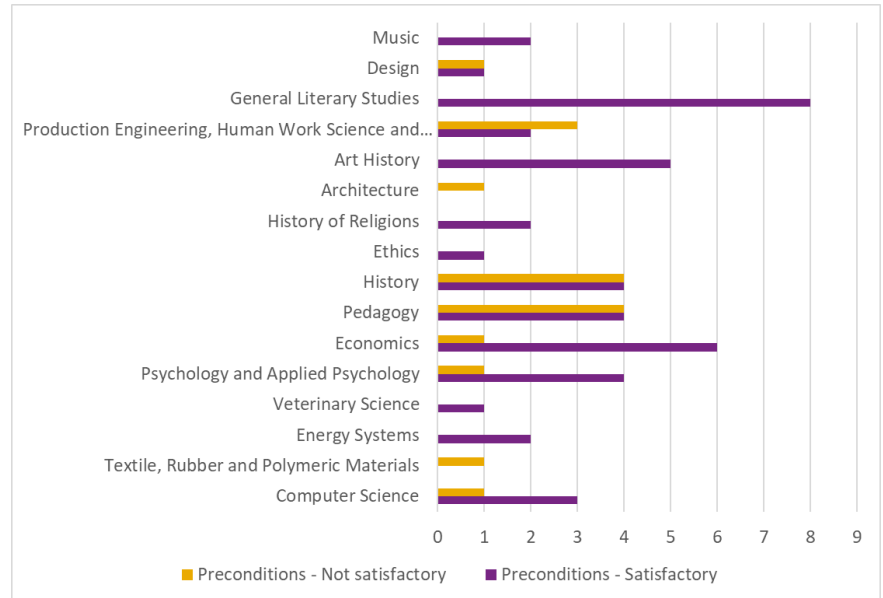
Diagrams 3-4 shows how the assessment criteria *Preconditions* (formerly *Environments, resources and areas*) and *Design*,

<sup>8</sup> Computer science. (Reg. No. 411-00357-16).

*implementation and outcomes* have fallen out in the different research subjects when the number of doctoral students was small.

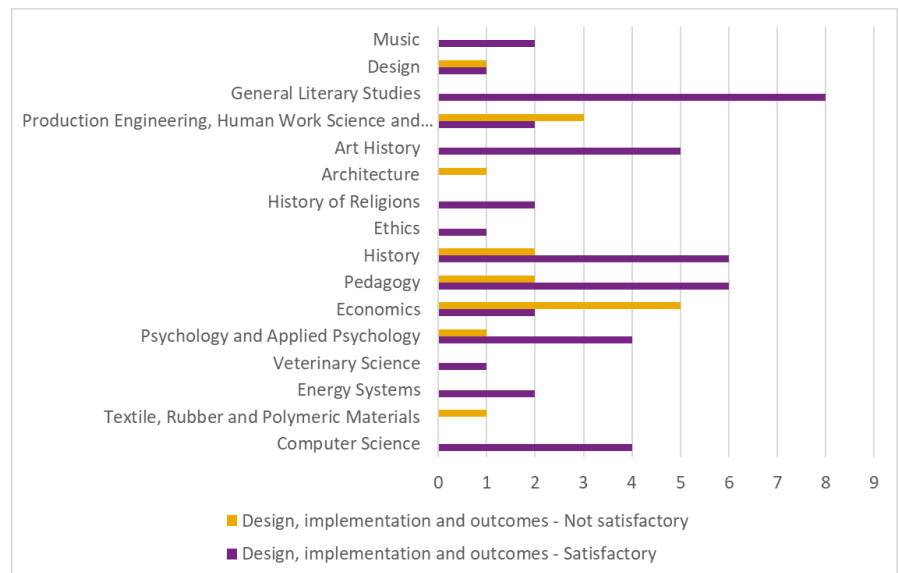
**Diagram 3.**

Result for *Preconditions* by research subject in small environments.



**Diagram 4.**

Result for *Design, implementation and outcomes* by research subject in small environments.



## Analysis of cover letters, reports and self-evaluations

What are the underlying causes of the result? A review of the HEIs' self-evaluations and the assessment panels' cover letters and reports shows how the HEIs and the various assessment panels discussed programmes with a small number of doctoral students, including both the individual programmes and at an overarching national level, i.e., by research subject.

In veterinary science, which had only one programme; in art history, with four evaluated programmes; and in music, where there were two programmes, no programme had more than ten doctoral students. The other evaluations covered both small environments with up to ten doctoral students, and environments with more than ten doctoral students in the research subject. The research subjects with the greatest variation are computer science and economics. These third-cycle programme environments ranged from 2–83 doctoral students and 1–101 doctoral students. These research subjects, together with pedagogy (1–40 doctoral students), comprised the largest evaluations, based on the number of evaluated third-cycle programmes. In the cover letters for these evaluations, the assessment panels also discussed the significant differences between the evaluated programmes, for example with regard to the number of doctoral students.

In the evaluation of production engineering, the importance of the size of the third-cycle programme environment was eagerly discussed and the conclusion was that none of the programmes were judged to have dissatisfactory quality due to small size alone. On the other hand, the assessors do see differences, with larger environments having better conditions for meeting all of the assessment criteria.<sup>9</sup>

### Background

#### *Supervision*

Third-cycle programmes should be run at a high scholarly or artistic level, which requires access to research staff who can serve as supervisors. Many programmes with fewer than ten doctoral students have a limited number of supervisors at hand, which has proven in several cases to be problematic because it makes these third-cycle programme environments too vulnerable. Several assessment panels have noted this.<sup>10</sup> The assessment panel for the evaluation of pedagogy concludes, for example:

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<sup>9</sup> Production engineering, human work science and ergonomics (Reg. No. 411-00087-18).

<sup>10</sup> Psychology and applied psychology, Reg. No. 411-00401-16), Pedagogy (Reg. No. 411-00367-16), Textile, Rubber and Polymeric Materials No. 411-00431-16), Energy Systems (Reg. No. 411-00432-16) and Economics (Reg. No. 411-00391-16).

The higher education institutions that have been given the assessment *under review* are characterised by small operations with few doctoral students enrolled, and these are rarely physically present. They also have few permanently employed teachers and supervisors.<sup>11</sup>

Small third-cycle programme environments risk increased dependence for both doctoral students and supervisors. The problem has been illuminated from the perspectives of both doctoral students and supervisors in the evaluations.<sup>12</sup> For doctoral students, a limited number of supervisors can make supervision more difficult, for example due to conflicts or retirement. For staff members at the HEI, this makes it more difficult to obtain the academic qualifications that comes from supervision if there are too few doctoral students.

Another problem noted by the assessment panel for economics is the challenge of small programmes with few resources having to compete with the large ones, nationally and internationally, for doctoral students, supervisors and researchers.<sup>13</sup>

Many HEIs have solved the problem of limited staff members who can serve as supervisors within the subject by hiring supervisor resources from adjacent subjects. When lacking internal specialist expertise, external supervisors from other HEIs have occasionally been hired as needed.<sup>14</sup> These solutions can be good ways to temporarily manage the problem or as a combination with an existing, functioning group of supervisors. But it is important to bear in mind that if too much of the programme depends on external expertise, other problems may arise, such as confusion about where responsibility lies. It is therefore extremely important for the quality of the third-cycle programme that the HEI has a longer-term strategy for staffing the programme than just bringing in external staff. To give the subject fair conditions, hiring more researchers who are subject experts and can serve as primary supervisors should therefore be considered.

#### *Third-cycle programme environments*

A high scholarly or artistic level within the third-cycle programme also means there is subject breadth in the environment, where doctoral students have access to different perspectives and focuses within the subject. The structure of meeting places for scholarly discussion, such as advanced seminar programmes and similar, is of great significance for a high-quality third-cycle programme environment. The assessment panel for the evaluation of psychology concludes that it is usually the larger environments which, for natural reasons, offer a more varied third-cycle environment with more doctoral students and supervisors/researchers

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<sup>11</sup> Pedagogy.

<sup>12</sup> Psychology, applied psychology and pedagogy.

<sup>13</sup> Economics.

<sup>14</sup> For example, psychology, applied psychology and pedagogy.

than smaller environments.<sup>15</sup> Similarly, attention should be paid to international exchange in smaller third-cycle programme environments. In the evaluation of economics, for example, the assessment panel noted that small environments are notable for having a more limited international exchange than larger third-cycle programme environments.<sup>16</sup>

The critical mass in a third-cycle programme environment is dependent on the number of supervisors, researchers and doctoral students. Furthermore, physical presence in the environment is often a prerequisite for integration into the group. The assessment panel for the evaluation of pedagogy noted that the necessary breadth of the third-cycle subject is often carried by a small number of researchers in the undersized third-cycle programme environments. These tend to represent individual, specific research focuses, which in turn entails a scattered third-cycle programme environment for doctoral students.<sup>17</sup> On the other hand, in the evaluation of third-cycle programmes in art history, the assessment panel emphasizes that there are viable small third-cycle programmes with strong supervisor resources. In these cases, vulnerability of the third-cycle programme environment is instead due to doctoral student groups that are too small.<sup>18</sup> Here, many HEIs would like to see more doctoral students in their programmes to maintain a thriving art history seminar culture.<sup>19</sup> Within a production engineering programme, the assessment panel pointed out that it was of crucial importance for more doctoral students to be recruited as soon as possible in order to ensure a critical mass and the quality of the third-cycle programme environment.<sup>20</sup>

The assessment panel for the evaluation of pedagogy asserts that opportunities for discussing the dissertation project with other doctoral students are limited in small third-cycle programme environments, as are doctoral students' chances to socialise in an active research setting and gradually expand their opportunities for participating in different scholarly contexts. Occasionally the HEI also lacks awareness of the problem, which means there is no long-term strategy for dealing with and correcting the situation.<sup>21</sup>

Nevertheless, the evaluations show that many HEIs are working strategically within the small third-cycle programme environments to counteract the problems described above.

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<sup>15</sup> Psychology and applied psychology.

<sup>16</sup> Economics.

<sup>17</sup> Pedagogy.

<sup>18</sup> Art history. (Reg. No. 411-00423-16).

<sup>19</sup> Art history.

<sup>20</sup> Production engineering.

<sup>21</sup> Pedagogy.

*Increased participation* has been discussed in several of the evaluations. Active participation by both senior researchers and teachers is essential to achieving a seminar culture with joint, regular advanced seminars when there are few doctoral students on site in the environment.<sup>22</sup> The assessment panel in the evaluation of general literary studies has seen constructive efforts to increase participation through mandatory presence at the workplace during seminar days and mandatory participation in special seminar courses worth credits, for example.<sup>23</sup>

Several examples have also been raised by the assessment panels regarding the HEIs' efforts to expand doctoral students' third-cycle programme environments. This has been done through the HEIs' various methods for uniting doctoral students from the relevant third-cycle programme with other doctoral students and their supervisors to form a broadened community. The assessors for the history evaluation note, for example, that small doctoral student groups were often integrated in different contexts to provide the opportunity to have sufficiently comprehensive and intensive scholarly socialisation in their own or adjacent disciplines.<sup>24</sup> International activities by doctoral students have also been encouraged to this end.

Several evaluations raised *interdisciplinary collaboration* with related subjects at the same HEI as a way to correct the issue of small doctoral student groups. The assessment panel for the evaluation of general literary studies concludes, for example:

But the documents have also made it clear that the doctoral student group has decreased significantly, leading to the subject having to develop new critical environments, primarily through interdisciplinary collaboration. In practice, this means that doctoral students in general literary studies now often take courses together with doctoral students from other subjects.<sup>25</sup>

There are many examples of successful interdisciplinary structures. At the same time, several assessment panels also point out that this approach does not solve the fundamental problem of having too few doctoral students in the subject. The assessment panel for the evaluation of art history has pointed out the concern, for example, that collaboration with related subjects may pose a risk to the subject's identity.<sup>26</sup>

*Collaborating with other HEIs* but within the same research subject to strengthen the third-cycle programme environment is another option that was brought up in most of the evaluations. The assessment panel for the evaluation of general literary studies writes:

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<sup>22</sup> History (Reg. No. 411-00394-16) and Ethics and history of religions (Reg. No. 411-00450-16).

<sup>23</sup> General literary studies (Reg. No. 411-00084-18).

<sup>24</sup> History.

<sup>25</sup> General literary studies.

<sup>26</sup> Art history.

Even if the assessment panel sees several examples of successful interdisciplinary arrangements in the third-cycle programme, increased collaboration with literary subject environments at HEIs within or beyond Sweden could strengthen the subject.<sup>27</sup>

In several cases, a stimulating research environment has successfully been created despite having few doctoral students in the programme by expanding the environment through various collaboration models, such as networks and graduate schools. The assessment panel for the evaluation of general literary studies points out the significance of the collaborative work of the National Council for Third-cycle Education in Literary Studies (NRFL). This collaboration involves shared courses and gives doctoral students good opportunities to make contacts with both fellow doctoral students and with senior teachers and researchers at various HEIs. The different forms of exchange and collaboration also improve expertise for doctoral students and supervisors alike, and they make a positive contribution to the third-cycle programme environment.<sup>28</sup> Similarly, the assessment panel for the architecture evaluation raised the importance of the Swedish Research School in Architecture (ResArc).<sup>29</sup>

*Specialisation* of third-cycle subject areas was also discussed in several of the evaluations. The assessment panel in the evaluation of history said that one way to handle a shrinking third-cycle programme environment could be to give the programme a clearer specialisation at each HEI. The assessors consider the largest challenge currently to be that in general, third-cycle programmes in history are small or shrinking. They say that one solution to the small size could be a national specialisation in research between the HEIs.<sup>30</sup> The assessors of the economics evaluation use similar reasoning when they conclude that programme quality is not determined by the programme size. Smaller programmes can have conditions that compete with larger programme environments both through specialisation and through collaboration with other HEIs.<sup>31</sup>

## **Design, implementation and outcomes**

### *Scholarly basis*

The need to conduct third-cycle programmes at a high scholarly or artistic level also requires that doctoral students have access to a varied course offering or the equivalent. If a doctoral student group is too small, it can be difficult for the HEI to set aside the resources required to equip the students with a sufficient and varied course offering, both regarding

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<sup>27</sup> General literary studies.

<sup>28</sup> General literary studies.

<sup>29</sup> Architecture (Reg. No. 411-00465-16).

<sup>30</sup> History and Design (Reg. No. 411-00072-18).

<sup>31</sup> Economics.



method courses and more subject-specific, advanced courses. The assessment panel for the pedagogy evaluation, among others, argues that the course offering is negatively affected by environments that are too small. One effect of excessively small groups is that the HEIs have a hard time offering courses to meet the needs of doctoral students and to the extent described in the general study plan as a requirement for reaching the qualitative targets.<sup>32</sup> It is not uncommon for a small group of doctoral students to also have a small group of supervisors. In this context, the assessors for general literary studies noted that it can be problematic for a small group of supervisors to handle the balance between literary specialisations and broad, general expertise.<sup>33</sup>

There are several possible solutions for addressing the lack of learning opportunities among small groups of doctoral students. *Financial aid* may make it possible to take courses at other HEIs, which is a practical solution that gives doctoral students access to a broadened academic environment. In one of the reports, the assessment panel for general literary studies notes that doctoral students' substantial funding for expenses as a good example.<sup>34</sup>

*Collaborations in national networks* are emphasised in several evaluations. The assessment panel for the evaluation of economics concludes that a small environment often needs to collaborate with other parties to offer a sufficient selection of both required and elective courses. For example, the Swedish Graduate Programme in Economics (SWEGPEC) network and the Stockholm region's network offer doctoral students in small environments a relatively broad selection of required and elective courses.<sup>35</sup> The National Council for Third-cycle Education in Literary Studies (NRFL) arranges courses in literary history once annually, where responsibility is shared among HEIs and the courses cover different periods. The courses alternate self-study with meetings that include overnight stays. The assessors for the general literary studies evaluation say that as a platform, NRFL could also be a basis for more collaborations within the subject.<sup>36</sup> As previously mentioned, another solution practiced at several HEIs are *research schools*, which are noted in the evaluations for psychology, design, energy systems, architecture and computer science.

Even with regard to course offerings, many HEIs have creative solutions for addressing the challenge of a small number of doctoral students. The psychology evaluation addresses several examples of how HEIs handle the problem. One solution may be having *joint courses* for different departments within the faculty or between different HEIs. Yet another is *independent study courses*, but here there is also a risk that

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<sup>32</sup> Pedagogy.

<sup>33</sup> General literary studies.

<sup>34</sup> General literary studies.

<sup>35</sup> Economics.

<sup>36</sup> General literary studies.

scholarly and critical discussions during research seminars do not happen (psychology). Some HEIs have also solved the problem by *reducing the number of credits* in favour of dissertation projects. Some programmes offer *joint courses for master and doctoral students*, which can help reach a critical mass, but may also entail a lack of progress in learning for doctoral students.<sup>37</sup> The latter can be solved with an expanded examination requirement for the higher education level.

#### *Student completion rates*

Student completion rates among small doctoral student groups were discussed in the economics evaluation. The assessment panel noted a pattern in the time it takes for doctoral students to complete their studies. Student completion statistics show that the average length of full-time study is less than 4 years for programmes with few doctoral students, while those in larger environments spend over 4 years, and at some HEIs, sometimes up to 5 or 6 years. The panel does not exclude the possibility that differences in course requirements may be one cause.<sup>38</sup>

#### **Doctoral student perspective**

The role of doctoral students in developing their own programme and influencing their psychosocial and physical environments may also be affected if the number of doctoral students is too small. In pedagogy, it has been observed that small environments make it difficult to achieve doctoral student representation in different bodies and platforms at the HEI, where there are few doctoral students to take on these formal assignments.<sup>39</sup> If doctoral students take their courses at other HEIs, it may also be difficult to obtain their opinions of courses.<sup>40</sup> Another challenge of smaller environments is that anonymity in various follow-ups of programmes cannot always be guaranteed.<sup>41</sup>

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<sup>37</sup> Such as psychology, energy systems and computer science.

<sup>38</sup> Economics.

<sup>39</sup> Pedagogy.

<sup>40</sup> Pedagogy.

<sup>41</sup> Economics.

# Summary

Third-cycle programmes should be conducted at a high scholarly or artistic level. This includes doctoral students having access to a thriving academic environment with both senior researchers and other doctoral students who can contribute their various perspectives and specialisations.

The background of this report is that over 80 per cent of the programmes that were given the assessment *under review* in the first and second evaluation rounds had ten doctoral students or fewer. The trouble with third-cycle programme environments with few doctoral students is that they often have few supervisors, excessively small-scale seminar programmes and a limited course offering.

As for *supervisor resources*, the easiest way to deal with having too few supervisors is new recruitment, which is also important for HEIs' longer-term staffing strategy. Creating good conditions for existing staff to gain qualifications is another way to correct the problem. Otherwise, hiring external supervisors is one alternative that several HEIs use. This approach can work well in some cases as a more short-term solution, but the HEI must find a balance to prevent too much of the programme from relying on external expertise. Doctoral students must also have the chance to meet with their supervisors regularly.

Collaboration and coordination are key concepts that appear regularly in the evaluations of programmes with (too) few doctoral students. A *critical mass* is important for all research settings. Doctoral students require access to an active research setting with structured forms of scholarly exchange. In an environment with few doctoral students and supervisors, everyone must actively participate in the higher seminars, including senior researchers. This study has identified several different collaboration and coordination activities which the HEIs have developed to address this problem. In several programmes, for example, the HEIs have tried to strengthen the third-cycle programme environment by collaborating with the same subject at another HEI, or with adjacent subjects at the same HEI. However, the latter option needs to be balanced with safeguarding the identity and independence of subject.

A *course offering* that is too small is another problem in third-cycle subjects with too few doctoral students. This study has identified different solutions for giving doctoral students a solid scholarly foundation based on various types of courses. In some cases, doctoral students have received financial aid to take courses at other HEIs. In several cases, the course offering has also been strengthened and expanded to create a critical mass through different forms of

collaboration, such as networks or research schools. However, when collaborating with other HEIs, the HEI needs to be aware that it is also responsible for ensuring the quality of doctoral students' education with regard to courses offered by other schools. There are several examples where joint courses have been arranged with doctoral students in adjacent subjects, for example in methodology courses. In addition, courses in the subject have sometimes been expanded to include students at the second-cycle level. In this case it is important for the HEI to give consideration to doctoral students' progression in their learning, for example by assigning them a more advanced examination task. Another solution for addressing small course offerings has been to offer more independent study courses. But this solution needs to be offset with various opportunities to access a critical mass for discussion. In some cases, HEIs have also chosen to reduce the number of credits in favour of dissertation projects in general. Before doing so, the HEI needs to ensure that this will not restrict important factors such as doctoral student access to breadth and depth in disciplinary foundation and methodology.

Finally, raising the profile within the subject has been suggested as a potential way to handle a declining number of doctoral students. Narrower and more niche specialisations in the subject may make the programme attractive and competitive in the long term. But this may lead to a loss of subject breadth and freedom of choice in specialisations.

The study has shown that most HEIs have small third-cycle programme environments, but also that many invest significant strategic work on giving doctoral students a high-quality education, despite a small number of students. In many cases, these efforts have been successful. But the study shows that stable financing of third-cycle programmes is an important complement to the dedication shown by staff in providing good conditions for doctoral students.

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Swedish Higher Education Authority and Statistics Sweden, *Swedish Standard Classification of research topics 2011. Updated August 2016* (2016).

Swedish Higher Education Authority, *Review for development. 95 evaluated third-cycle programmes 2017–2018* (2019)

Swedish Higher Education Authority, *Programme evaluations at the third-cycle level* (2016–2019) within the research subjects:

Architecture	Reg. No. 411-00465-16
Ethics and history of religions	Reg. No. 411-00450-16
Art history	Reg. No. 411-00423-16
Energy Systems	Reg. No. 411-00432-16
Textile, Rubber and Polymeric Materials	Reg. No. 411-00431-16
Psychology and applied psychology	Reg. No. 411-00401-16
History	Reg. No. 411-00394-16
Economics	Reg. No. 411-00391-16
Veterinary Science	Reg. No. 411-00382-16
Pedagogy	(Reg. No. 411-00367-16)
Computer science	Reg. No. 411-00357-16
Design	Reg. No. 411-00072-18
General Literary studies	(Reg. No. 411-00084-18)
Music	Reg. No. 411-00073-18
Production engineering, human work science and ergonomics	Reg. No. 411-00087-18

## Annex 1

The third-cycle subjects included in the evaluations conducted in 2017–2019 included the following research subjects<sup>42</sup>:

10201 Computer Science  
20307 Production engineering, human work science and ergonomics  
20504 Textile, Rubber and Polymeric Materials (TGP)  
20702 Energy Systems  
40304 Other Veterinary Science  
50101 Psychology  
50102 Applied Psychology  
50201 Economics  
50301 Pedagogy  
60101 History  
60203 General Literary studies  
60302 Ethics  
60304 History of Religions  
60402 Music  
60405 Architecture  
60406 Design  
60407 Art History

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<sup>42</sup> Swedish Standard Classification of research topics 2011. Updated August 2016 (UKÄ 2016).

## Annex 2

The HEIs included in the evaluations are:

Blekinge Institute of Technology (BTH)  
Chalmers University of Technology (CTH)  
University of Gothenburg (GU)  
Halmstad University (HH)  
Stockholm School of Economics (HHS)  
University of Borås (HB)  
University of Gävle (HiG)  
University West (HV)  
Karlstad University (KAU)  
KTH Royal Institute of Technology (KTH)  
Linköping University (LiU)  
Linnaeus University (LNU)  
Luleå University of Technology (LTU)  
Lund University (LU)  
Malmö University (MaU)  
Mid Sweden University (MiU)  
Södertörn University (SH)  
Swedish University of Agricultural Sciences (SLU)  
Jönköping University (HJ)  
Stockholm University (SU)  
Umeå University (UmU)  
Uppsala University (UU)  
Örebro University (ÖU)

However, the evaluations of programmes from Blekinge Institute of Technology, University West and the Stockholm School of Economics were not included in the data for this report. This is because these institutions only had programmes in the evaluated third-cycle subjects with more than ten doctoral students.

The Swedish Higher Education Authority (Universitetskanslersämbetet – UKÄ) is to contribute to strengthening Swedish higher education and Sweden as a knowledge society. We review the quality of higher education programmes, we analyse and follow up trends within higher education and we monitor the rights of students.

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