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PhD Training and the Knowledge-Based Society

An Evaluation of Doctoral Education in Finland

FINNISH HIGHER EDUCATION
EVALUATION COUNCIL
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Foreword

This evaluation of the doctoral education in Finland takes place at a very crucial stage of the development of our national higher education system and of the national innovation policy as well. Both the Ministry of Education and the Academy of Finland have already paid a great deal of attention to charting and solving the possible problems that our PhD training is facing. The first Graduate Schools in Finland were established in 1995, and have been an apparent success since then, but nothing is a 'success' as such forever.

The Bologna process and the Bergen communiqué 2005 of Ministers also call for stronger emphasis on the so-called third cycle, that is doctoral education. In Finland, the national policy, particularly in the current decade, has been to increase the number of new doctors; now we are facing a situation where most of the new doctors have to enter jobs outside the traditional fields, that is in universities and research institutes. But it is also a challenge to industry as well as to public and private organisations at large, to take full use of this highly trained workforce.

The objective of the overall evaluation was to produce evidence-based view of the present state of the doctoral education in Finland, with the aim of pointing out its strengths but also its challenges. The starting point was that this evaluation could recognise the good practices implemented in doctoral education, and that it also could produce recommendations to guide continuing quality assessment and improvements in the overall system. We note with satisfaction that so many Finnish universities and especially their Graduate Schools were willing to participate in this evaluation; we can expect that they would also draw direct and immediate benefits for themselves through this exercise.

This is the first time the Higher Education Evaluation Council is taking an assessment of the doctoral education in Finnish universities. It has been a challenging task, and we are happy that such a distinguished group of international and national experts have agreed to collaborate in this job.

Our thanks go first to the Steering Group, headed by Prof., Vice Rector Hannele Niemi, and then of course to the External Evaluation Team who have done an excellent job. And of course, the people and university staff involved in the self-assessment exercises and in interviews, the PhD students and representatives of the business sector and other organisations deserve our deep gratitude for the completion of this evaluation.

And lastly, our special thanks must be given to Prof. David D. Dill and Prof. Sanjit K. Mitra, the chair and vice-chair, respectively, of the External Evaluation Team for work that will certainly help the Finnish Higher Education sector at large be better prepared to face the challenges of the future.

Ossi V. Lindqvist, Prof.
Chairman of the Finnish Higher Education Evaluation Council

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Introduction

FINHEEC

Various decrees and decisions pertaining to the development of institutions of higher education function as the guidelines of FINHEEC. The duties and policies of FINHEEC are governed by the Decree on the Higher Education Evaluation Council and its amendment (1320/1995 and 465/1998):

The aim of the Finnish Higher Education Evaluation Council, operating under the Ministry of Education, is to

1. assist institutions of higher education and the Ministry of Education in issues relating to evaluation;
2. evaluate the accreditation and establishment of polytechnics;
3. organize evaluations on the operations and policies of institutions of higher education;
4. initiate evaluations of higher education and promote its development;
5. engage in international cooperation in evaluation;
6. promote research on evaluation of higher education; and
7. evaluate and accept professional courses offered by higher education institutions, enter courses into a register as stipulated in Article 14 of the Decree on the Higher Education Degree System and maintain such a register.

The aim of FINHEEC is the long-term development of higher education through evaluations. For this reason, FINHEEC:

- supports higher education institutions while they design their own quality assurance and evaluation systems;
- produces national data enabling international comparison of higher education institutions for policy makers, students, trade and industry; and
- ascertains the legal protection of students through accreditation as regards lifelong learning, network teaching between higher education institutions, and international student exchange in particular.

The Action plan of FINHEEC for the years 2003–2007 includes the evaluation of research education. The development of the European Higher Education area has partly motivated these endeavors. The Berlin Communiqué (2003) includes references to research/doctoral education. The Bergen Com-

muniqué of the Conference of European Ministers Responsible for Higher Education emphasized in May 2005:

> *We underline the importance of higher education in further enhancing research and the importance of research in underpinning higher education for the economic and cultural development of our societies and for social cohesion. We note that the efforts to introduce structural change and improve the quality of teaching should not detract from the effort to strengthen research and innovation. We therefore emphasize the importance of research and research training in maintaining and improving the quality of and enhancing the competitiveness and attractiveness of the EHEA.*

The evaluation project

Three different endeavors concerning research education have been underway at the same time. In addition to the FINHEEC evaluation of doctoral education, there are a Researcher Education Development Work Group and a Work group for Researcher Careers. Each of these efforts will lead to a report in the beginning of the year 2006.

The FINHEEC evaluation will contribute to the knowledge needed in making future plans. The international aspects of this evaluation proved of utmost importance and value as did the independent role of the external evaluation team. The international experience with doctoral education in different countries provided a good mirror and reflection for Finnish consideration.

This thematic evaluation has been implemented following a three steps model – self-evaluation, external evaluation and public reporting – instead of the common four steps procedure where site visits provide information about the teaching and supervision as well as study and administration environments. This latter step was lacking and the team therefore reached their conclusions based on the documents and interviews.

The report

There are two parts to the report. The first part provides background information on the Finnish higher education and research education environment. It is mainly descriptive and is based on the work of the steering group and earlier committees and reports. The project manager of the evaluation has been responsible for this section.

The most important part of the report is the evaluation itself. It was a collaborative product of the external evaluation team. Professor **David. D. Dill** as a chair of the team has been the editor of this part of the report. Each of the team members wrote a personal evaluation after the visit to Finland in September 2005. These individual evaluations were edited into a draft report by the chair and returned to the team for comments and corrections. After three rounds the report achieved a consensus. The procedure followed was democratic and in keeping with the contribution and independence of the team. All the team members have given their approval to the final report.

The report will be published 31st January 2006 in Helsinki and professor David D. Dill will present the results of the evaluation to the Finnish audience.

1 Evaluation of doctoral education in Finland[1]

Actualisation of the evaluation

The formation of the two-tier degree system in the area of European education area implies a present need also to develop doctoral and researcher education. Reference is already made to this in the communiqué of the meeting of ministers held in Berlin in 2003, where it is stated that researcher education will become a core element in the formation of the European education and research field. The need for development work on national level connected to the European development (system, efficacy, administration, networking) further proves that this is the time for an evaluation. The Academy of Finland (Publications of the Academy of Finland 5/2003) has made an evaluation of doctors' employment, work placements and the need for them.

The action plan of the Finnish Higher Education Evaluation Council for the period 2004–2007 states

> *Attention is drawn to the absence of a strategy for researcher education and researcher careers in the international evaluation of the Academy of Finland (OPM 2004:16). The project will commence in 2004. Negotiations will be held with the Academy of Finland regarding the scope and targeting of the evaluation. (Action plan of the Finnish Higher Education Evaluation Council 2004–2007.*

A proposal for an evaluation of doctoral education was contained in the Action Plan of the Finnish Higher Education Evaluation Council for the year 2005. On November 2004 the Finnish Higher Education Evaluation Council appointed Professor, Vice Rector **Hannele Niemi**, University of Helsinki, to chair the steering group of the evaluation. The task of the steering group was to draw up a project plan for the implementation of the evaluation. Among other things the extent of the evaluation, the targets and the evaluation process and schedule were stipulated in the project plan.

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[1] In Finnish concerning doctoral education are used concepts as follows: *tohtorikoulutus/doctoral education, but tohtorintutkinto/tohtorin tutkinto/doctoral degree/doctor's degree and tutkijankoulutus/research(er) education and tutkijakoulu/Graduate School (GS). Graduate School in Finland means postgraduate studies. Combination Graduate School is often used, when it is funded by the Ministry of Education. Doctoral School is used when the main funding instrument is other than MofEd. Nowadays, however, most Doctoral Schools are using a form Graduate School in spite of the funding instrument. Doctoral training/education is a general upper concept covering curriculum and studies, doctoral program is close to Graduate School in Finnish context.*

2 Mission and aims of the evaluation

The *mission* of the evaluation is to develop the doctoral education of the universities by creating recommendations at national level and possibly also at the level of the field of science and to direct continuing quality assessment and improvement of education. The evaluation will cover all doctoral education paths - not only the graduate schools but also conventional doctoral education in the universities. The wish was expressed that the universities would present for evaluation both graduate schools, doctoral programs and conventional doctoral education.

The *main objective* of the evaluation is to produce on the basis of data collected a comprehensive evidence-based picture of the present state of doctoral education in Finland, to point out the strengths of the education and also the development challenges, to evince means of developing the education in relation to society, working life and the challenges posed by the process of studying, likewise to draw attention to the national and international cooperation of those arranging the education. Attention will moreover be paid in the evaluation to the profiling of education and the division of labor.

Due to the international nature of the evaluation it will be for the evaluation team to take the international development into account and produce its evaluation in the international context. The reporting on the evaluation will include special mention of good practices.

Target and core areas of the evaluation

Target of the evaluation

The target of the evaluation was specified as the universities' doctoral education.

Core areas of evaluation

- Tasks and objectives of the education
- Content and structure of the education
- Acceptance for education
- Organization, teaching and supervision
- National and international cooperation

- Profiling of the education units
- Relationship between the education and working life
- Evaluation of the quality of the education, feedback systems and quality development
- Future prospects for the education – quantitative and qualitative challenges.

The content and structures of the education will be evaluated in the light of their missions and objectives. Structural questions in the education concern among other things the development challenges of the third cycles of the Bologna Process and international demands.

Profiling of the education units will refer among other things to the division of labor among them, regional mission and other selected profiling. Cooperation subsumes cooperation within the unit and between units in the home university and also between universities in Finland and on the international front. The evaluation will pay attention to the mechanisms for cooperation between education and working life. Quality management or quality assurance of the education refers to the nature of its inbuilt feedback and remedial mechanisms ensuring good quality through which the need for change in the education is assessed, rendered visible and corrected.

Future prospects of the education refers to the evaluation of the organizers' views with regard to need for change in the content and structure of the education, likewise quantitative education needs in the national and international contexts.

3 Project organization and responsibilities in evaluation

The responsibility for the evaluation project was divided between the Finnish Higher Education Evaluation Council, the evaluation steering group, the external evaluation group, the project manager and the secretary general.

The steering group

The evaluation steering group represents the party instigating the project. Its main functions were

- to determine and approve the content and temporal aims of the project
- to prepare the project plan for approval by the Finnish Higher Education Evaluation Council
- to propose the composition of the external evaluation group.

At a meeting held on 8 November 2004 the Finnish Higher Education Evaluation Council appointed Professor, Vice Rector **Hannele Niemi** from University of Helsinki chairperson of the steering group. In addition to the representative of the Finnish Higher Education Evaluation Council, the project steering group has also included representation from the universities, working life and the student unions.

On 15 November 2004 a letter was sent to the universities informing them of the forthcoming evaluation and requesting them to nominate two persons each to serve in the steering group in such a way that one person represented the personnel of the university in question and the other the interest groups of that university. Nominations were requested by 30 November 2004. Nominations were received from 18 universities. Of these nominees 18 were from the universities' personnel and 7 from the universities' interest groups. The National Union of Students in Finland made its own separate nomination. The proposals for membership of the steering group took into account the individuals' competence, language and gender, likewise the nominee's university's prospects such as size, regional location and fields of science. The representatives of working life were selected from among the universities' interest groups.

On 14 December 2004 the Finnish Higher Education Evaluation Council appointed the other members of the steering group:

- Docent **Jouko Aho**, University of Jyväskylä
- Professor **Marcus Castrén**, Sibelius Academy
- Dr. **Maj-Britt Hedvall**, Swedish School of Economics
- Professor **Pentti Kalliokoski**, Vice Rector, University of Kuopio
- Professor **Marjatta Leirisalo-Repo**, Senior physician, Reumatology Clinic, Helsinki University Hospital
- Director **Yrjö Neuvo**, D. Tech, Nokia Oyj
- Director **Leila Risteli**, Ll. D. M.A. University of Oulu Research and Innovation Services
- **Walter Rydman**, MA, representative of the National Union of Students, postgraduate of the University of Helsinki, Department of Physics.

The Finnish Higher Education Evaluation Council

- determined which fields of education were to be evaluated and set up the steering group for the evaluation project
- appointed the external evaluation group on the basis of nominations from the steering group
- determined the allocation of funds at its disposal to the evaluation.

The project manager was responsible for the schedule of the project, for monitoring the costs and use of outcomes, for implementation, supervision and reporting.

External evaluation internationally

The members of the external evaluation group and their reserve members were appointed by the Finnish Higher Education Evaluation Council on the basis of nominations made by the evaluation steering group. The nominees represent the universities, working life and students.

The external evaluation group was independently responsible for the evaluation vis à vis itself and the project manager. Each member of the group examined the evaluation material, prepared advance questions and produced written feedback on target areas agreed in advance. The evaluation group prepared the common parts of the evaluation in internal collaboration also collaborating with the project manager.

4 Principles and methods for the implementation of the evaluation

Implementation principles of the evaluation

The implementation of the evaluation project was upholded the *principles approved by the Finnish Higher Education Evaluation Council*. These were that the evaluation should be *independent, expert, sensitive to react, international, interactive, open and effective* (Finnish Higher Education Evaluation Council action plan 2004 – 2007,7).

Evaluation method and main stages of the evaluation

The evaluation method took shape from the discussions held in the steering group. The guiding principle for the method was identifying good practices. The results of the evaluation were based on peer and expert evaluations.

The main phases of the evaluation were the collection of documentary material, the self-evaluation of those arranging the education, external evaluation and the report published on the evaluation, likewise the publication seminar. A follow-up of the evaluation has generally been implemented as a separate phase in evaluations by the Finnish Higher Education Evaluation Council. This is estimated to be done in 2008/2009.

5 Stages of project implementation and schedule

The main phases of the project are

PLANNING – STEERING GROUP (1.–4.)

1. Planning evaluation (December 2004 – April 2005)
2. Survey for vice rectors (February – March 2005)
3. Survey for students (April 2005 – May 2005)
4. Self-evaluation (April 2005 – June 2005)

EXTERNAL EVALUATION – EVALUATION GROUP (5.)

5.1. Evaluation interviews with those in education and other parties (September 2005)
5.2. Reporting (October 2005 – December 2005)
5.3. Editing, layout and printing (December 2005 – January 2006)
5.4. Publication (January 2006)

FOLLOW-UP OF EVALUATION – SEPARATE DECISION BY FINHEEC

(6.) Separate project (e.g. in 2008/2009)

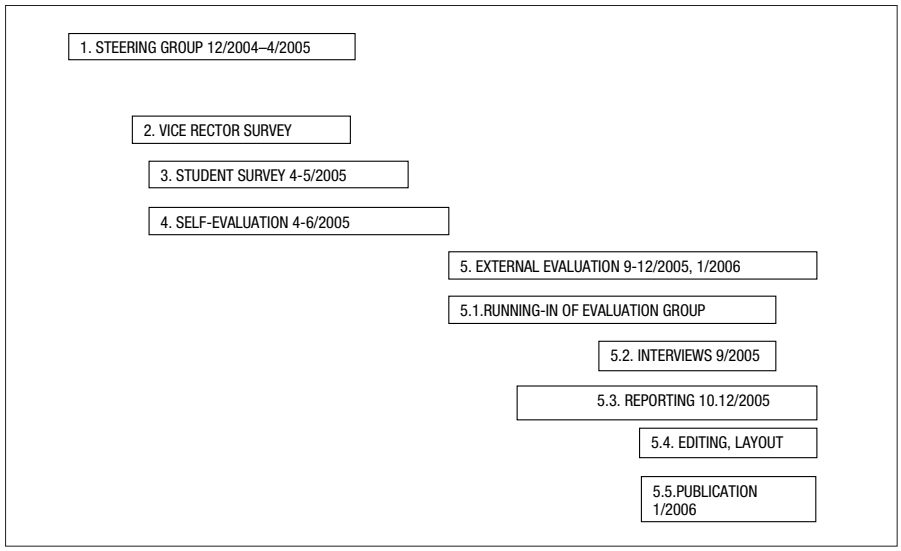

Figure 1. Temporal placement of evaluation phases

1. The work of the steering group

The work of the steering group began in December 2004 and ended in April 2005. The main task of the steering group was to draw up the project plan. The Project Plan presented the objectives, targets and tasks of the evaluation. The steering group presented the members of the evaluation group to the Finnish Higher Education Evaluation Council. The steering group decided independently on other tasks. The task of the steering group will end with the approval of the project plan. Thereafter the external evaluation group will act independently in cooperation with the project manager.

When the steering group discussed about the relevant aims and objectives of the evaluation it interviewed Director **Sakari Karjalainen** and Counselor of Education **Marja Pulkkinen** Science Policy Division in the Ministry of Education, Director **Markku Mattila**, University Division in the Ministry of Education and Director of Culture and Society Research Unit **Liisa Savunen**, Academy of Finland. Researcher **Helena Aittola** from University of Jyväskylä was individually interviewed.

2. Survey for vice rectors

A questionnaire was sent to the vice rectors in charge of doctoral education and the findings were gathered in themes and placed at the disposal of the evaluation group. The questionnaire was sent in February and feedback requested within approximately one month the questionnaire was sent to the contact persons nominated by the respective universities.

Questions:

> *Regarding productivity and quality, what are the most pressing development needs of the doctoral education at your university in the various branches of science or fields of education, likewise in those groups which transcend disciplinary boundaries?*
> *Respondents are requested to briefly review the following five aspects:*
> *a. recruitment and selection of doctoral students*
> *b. supervision, progress and completion of studies*
> *c. work placement of graduating doctors*
> *d. funding of doctoral education*
> *e. other aspects considered important.*

Summary of the responses was available to the evaluation team.

3. Questionnaire for students

A questionnaire to students was implemented together with the Science Policy Division of the Ministry of Education Finland and the Academy of Finland. The questionnaire was based on the Swedish *Doktorandspegeln,* questionnaire, which the evaluation steering group has adapted to the needs of the project. Coordinator of the Academy of Finland, MA **Kirsi Hiltunen** was responsible for the adaptation of the questionnaire.

The questionnaire for students was to be implemented nationwide on the net, April–May 2005 (open for three weeks). Respondents were reached via the universities' electronic mailing lists. The professors/departments/faculties/graduate schools at the universities concerned were responsible for information dissemination and for locating the respondents. Respondents were provided with one user ID. Direct distributions of the material were placed at the disposal of the evaluation group in September 2005. It was hoped that the questionnaire for students would shed light on sufficient student perspectives.

The net questionnaire has been commissioned of a commercial company which was able to produce direct distributions for the responses graphically on-line and were available to international *Doktorandspegeln* project for purposes of further analysis.

Researcher, MS **Pia Vuolanto**, University of Tampere was responsible for the analysis of qualitative data and writing summary of the responses for the use of the external evaluation team.

In all, respondents were 3892 of which 1182[2] students expressed their experiences about doctoral education by answering to the open-ended question "If there are other aspects of doctoral education or if you have specific positive or negative experiences that you would like to tell us about please use the space below" at the end of the survey. Of these, 706 (60%) were women and 477 (40%) men, which corresponds quite well with the numbers of the whole survey (56% women and 44% men). Also, 1074 (91%) were Finnish by nationality and 108 (9%) were foreign (in whole survey, 92% Finnish and 8% foreign).

A more thorough international comparative analysis on the extensive student survey (3892) will be produced by the Swedish National Agency for

[2] In addition to this, there were 63 answers to the open-ended question that had for some reason not been finished. Thus, for them, no interpretation or only part of the interpretation could be made. In such cases, where the interpretation could be made partly, it was made very carefully taking into account the fact that the person might have been meaning to add something to the expressions, but for some reason had not been able to do so.

Higher Education in 2006. The material will also be utilised by the Mirror for Postgraduate Students project coordinated by the same agency, charting the views of doctoral students in Finland, Sweden, Ireland and Catalonia about the postgraduate education they have received and juxtaposing the results with the educational environments and circumstances in which the students in these countries study.

The evaluation team had in use the frequency distributions of the questionnaire statistics.

4. Self-evaluation

The self-evaluation was scheduled for April–June 2005. The universities were requested in February 2005 to ascertain the willingness of units/faculties/departments/programs to engage in evaluation. Feedback was requested by the beginning of March. At a meeting on 4 April 2005 the steering group decided on which units to include.

Description of the commission

A request was sent to the contact persons in the universities to nominate the units for participation. Such a unit might be a faculty, department, doctoral program, graduate school, or other organizer of doctoral education (mode, implementation or mode of organization).

It was hoped that the units proposed would represent innovative and exemplary organization of doctoral education which is productive and effective. A brief justification for the proposal was requested. Because the evaluation will cover not only the graduate schools but also conventional doctoral education in the universities, the wish was expressed that the universities would present for evaluation both graduate schools, doctoral programs and conventional doctoral education. A total of 40 proposals was received, of which 25 were selected, an optimally comprehensive selection in which the various branches of science were represented (May/2005). However, conventional doctoral education was not at all proposed by the universities. After all a comprehensive combination of various fields and modes of education was selected.

The organizers of education were being requested to address the following issues (A–D) in a national and an international context. Concrete descriptions of good practices in the implementation of the education (E–I) are being requested, likewise the functionality and development challenges of the solutions evinced.

BRIEF DESCRIPTION AND EVALUATION

A. Aims of the education, tasks and innovativeness in its implementation
B. Content of the education, structures and present operating environment
C. Profiling of the education unit
D. Future prospects of the education, quantitative and qualitative needs and funding

GOOD PRACTICES, ASSESSMENT OF THE FUNCTIONALITY AND DEVELOPMENT CHALLENGES

E. Recruitment for the education, applications and acceptances
F. Organization of the education, teaching and supervision
G. National and international cooperation
H. Relationship between the education and working life
I. Evaluation of the quality of the education, feedback systems and quality development.

Those participating in the evaluation have been requested to publish the self-evaluation on their www pages not later than the end of August 2005. FINHEEC arranged for links from its own evaluation pages to the self-evaluations, which were to be conducted through the medium of English.

5. External evaluation

The evaluation steering group made a proposal (4 March 2005) to the Finnish Higher Education Evaluation Council regarding the external evaluation group (7 April 2005). In the proposal there were sufficient representation of the various fields of science and both national and international expertise, likewise the perspective of the students and the potential employers of doctors. A large enough evaluation group was needed to be appointed so that there was no need to look for replacements if some members will be obliged to withdraw.

Nominations were requested from the National Union of Students together with the Association of Researchers and Teachers. The external evaluation was done through the medium of English, and will scrutinize Finnish doctoral education in the national, European and international contexts.

The external evaluation was scheduled for the period September–December 2005; training for the evaluation group, processing of the evaluation material for September 2005.

Evaluation interviews took place in September 2005 (Weeks 38/39) in Helsinki. The interview groups were interdisciplinary and were composed of people with different capacities in education, working life and student roles.

- Professor **David D. Dill**, University of North Carolina-Chapel Hill, USA (**Chair**)
- Professor **Hans Siggaard Jensen**, The Danish University of Education, Denmark
- Professor **Erno Lehtinen,** University of Turku, Finland
- Professor **Sanjit K. Mitra**, University of California-Davis, USA (**Vice Chair**)
- Professor **Tomi Mäkelä**, Professor **Tomi Mäkelä**, Otto-von-Guericke-University of Magdeburg, Germany
- Coordinator **Anna Parpala**, University of Helsinki, Finland (PhD student)
- Researcher **Terhi Nokkala**, University of Tampere, Finland (PhD student, deputy member)[3]
- Chief Policy Advisor **Hannele Pohjola**, Confederation of Finnish Industries, EK, Finland
- Professor **Mary A. Ritter**, Imperial College of London, UK.

Reporting was accomplished collectively by the evaluation team. Checking of interim versions was scheduled for the period November–December 2005. Layout and printing took place between December 2005 and January 2006.

In the course of the evaluation project and in the final reporting use will be made of documentary material and other current material pertaining to doctoral education. The material produced by the external evaluation has constituted the main part of the final report. When the report is complete a publication seminar will be arranged in January 2006 to which the representatives of the universities, the student organizations and working life will be invited, also representatives of other interest groups.

In the course of 2008/2009 the Finnish Higher Education Evaluation Council will arrange for follow-up to the evaluation in the form, for example, of a *follow-up seminar* at which the effects of the evaluation on the development of the education will be assessed.

[3] In September 2005 FINHEEC nominated researcher Terhi Nokkala as a deputy for coordinator Anna Parpala because the previous deputy, researcher **Mira Huusko**, University of Jyväskylä cancelled participation.

6 Development projects in doctoral and research education

The Ministry of Education Finland has set up two work groups to develop doctoral education: The work group for the development of researcher education and The work group for researcher careers. [4] The work of the research career work group will be taken into account in the evaluation project. For that purpose the secretaries of the projects have been interviewed in the planning phase of the evaluation project.

[4] **The work group for the development of researcher education**

The mission of the work group for the development of research education which began its work in 2002 (OPM 113:00/2002) is 1) to monitor the need for doctors in the respective fields and the development of employment of researchers and to develop doctoral education in such a way as to respond to the need in society for doctors and to take note of the so-called small and developing research fields; 2) to ascertain the development needs of the graduate schools and assess the level of their operation, likewise the functionality of the graduate school system; 3) to assess the changes of the graduate schools of operating effectively in international graduate school networks and as a part of the European research area; 4) to ascertain how it is possible to retain the interest of young people in science and a researcher's profession and make recruitment more efficient so as to ensure a sufficient amount of personnel for scientific research and 5) to make the proposals for measures and development pertaining to these tasks.

The work group for researcher careers

The task assigned to this group by the Ministry of Education Finland (OPM 114:00/2004) is to prepare a proposal for a strategy of 1) how a professional researcher's career should develop and what kinds of strategic solutions Finland can apply to ensure broad and diverse expertise in both private and public sectors and how funding parties can participate in financing and developing the system; 2) how to make a career in research more attractive, how to promote women's research careers and gender equality in research careers and also now to take better note of internationalisation in the various stages of a research career.

7 Finnish education system and postgraduate education

The Finnish education system consists of pre-school education, comprehensive school, post-comprehensive general and vocational education, higher education and adult education.

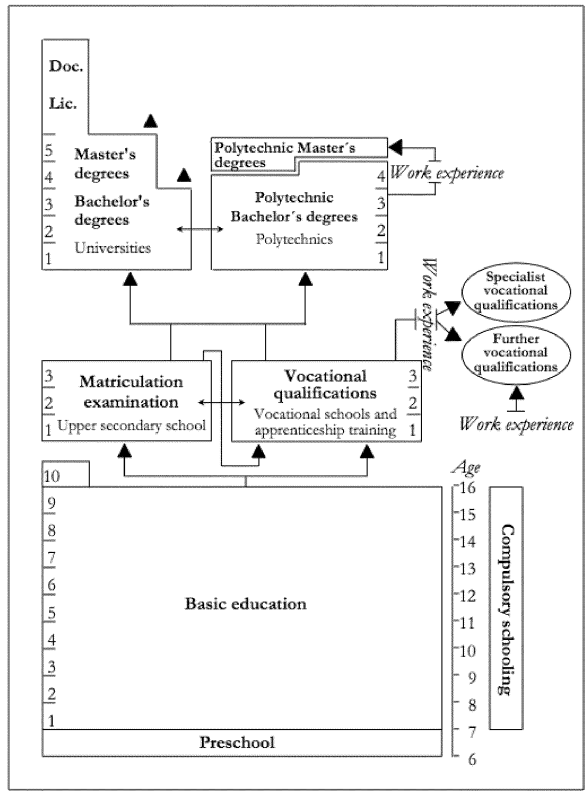

Figure 2. The Finnish education system, in which doctoral education is positioned in the phase after the university master's and licentiate's degrees

The Finnish higher education system is made up of two parallel sectors: universities and polytechnics. The universities rely on the connection between research and teaching. Their basic purpose is to perform scientific research and to provide higher education connected with it. Students at universities may take a lower (Bachelor's) or higher (Master's) academic degree and also academic further education, consisting of licentiate and doctoral degree. Universities also arrange further education and open university teaching.

There are 20 universities in Finland, ten of which are multifaculty institutions and ten specialist institutions. Of the specialist institutions three are universities of technology, three are schools of economics and business administration, and the remaining four are art academies. In addition, university-level education is provided at one military academy under the Ministry of Defense. All universities engage in both education and research and have the right to award doctorates. The first university degree, which roughly corresponds to a Bachelor's, can generally be attained in three years of full-time study and the higher, Master's degree in five years, i.e. additional two years after the Bachelor's degree. There is also an optional pre-doctoral postgraduate degree of licentiate, which can be completed in two years of full-time study after the Master's degree. Full-time studies for a doctorate take approximately four years following the Master's degree.

The polytechnics (29) are usually regional higher education institutions which provide instruction in subjects from several sectors, and which emphasize a connection with working life. The bachelor's and master's degrees they provide are higher education degrees with a professional emphasis.

7.1 Legal provisions on postgraduate education

The governmental decree on university degrees (19 August 2004) provides for scientific and artistic postgraduate education. The decree has come into effect as of 1 August 2005. According to 21 § of the decree:

> *"The aim of postgraduate education is that students*
> *1) become thoroughly familiar with their own field of study and its societal significance and acquire the capability to apply scientific research methods independently and critically and to create new scientific knowledge*
> *2) become familiar with the development of their own field, its basic problems and research methods and*
> *3) acquire such a knowledge of general scientific theory and of other fields of science connected to their own that enables them to follow developments."*

The aim of postgraduate education in the field of design, in addition to those referred to in sub-paragraph 1, may also be that students achieve the competence to independently create methods for realising artistic work or products or services that meet strict artistic criteria.

The aim of postgraduate education in the fields of visual arts, theatre and dance, in addition to or instead of those referred to in sub-paragraph 1, may also be that students achieve the competence to independently create meth-

ods for realising artistic work or products or services that meet strict artistic criteria.

The Degree Statute 22 § stipulates as follows with regard to the completion of the doctoral degree:

> *"In order to complete the doctoral degree a student accepted for postgraduate education shall*
> *1) complete the studies required for postgraduate education;*
> *2) demonstrate the ability for independent critical thought; and*
> *3) prepare a doctoral dissertation and defend it in public.*
>
> *In the field of pictorial art, music industrial design and theatre and dance a student accepted for postgraduate education may, instead of preparing a doctoral dissertation, provide public demonstrations of skill and learning as prescribed by the university.*
>
> *A series of scientific publications or manuscripts accepted for publication accompanied by a summary or other work which fulfils corresponding criteria as deemed sufficient by the university may also be accepted as a doctoral dissertation. Publications may also include co-authored works is the independent contribution of the author in question is demonstrated therein."*

7.2 Avenues to the PhDs in Finland

Masters (2nd cycle) degree grants formal eligibility for doctoral studies. Universities are responsible for the admission into third cycle studies. Doctoral studies typically take at least four years of full-time studies, which includes a publicly defended doctoral dissertation. Traditionally most doctoral studies have been undertaken as independent study, but the proportion of organized courses has been increased steadily. A graduate school system was created in 1995. It has been expanded rapidly, and currently ca. 4500 doctoral students study in graduate schools. This number constitutes a majority of those doctoral students who are pursuing their degree actively.

Last year a total of 1 400 doctoral degrees were awarded by Finnish universities. Most of the doctorates were awarded in the fields of sciences, medicine and technology. In addition, Finnish universities can still confer licentiate degrees, which are optional predoctoral degrees taking ca. two years of study after the master's degree. In some fields, however, the licentiate degree is deemed sufficient qualification for a post and a higher salary. The number and proportion of licentiates is, however, decreasing. (National Report of Finland 2004–2005.)

The number of doctoral students is relatively high in Finland owing to the low threshold for entering postgraduate studies. The number of doctoral

students gives a flawed picture of active students intensively pursuing their postgraduate studies. Those completing their doctorate part-time may either be proceeding according to quite a leisurely schedule determined by themselves or may actively participate in courses and doctoral seminars alongside full-time students.

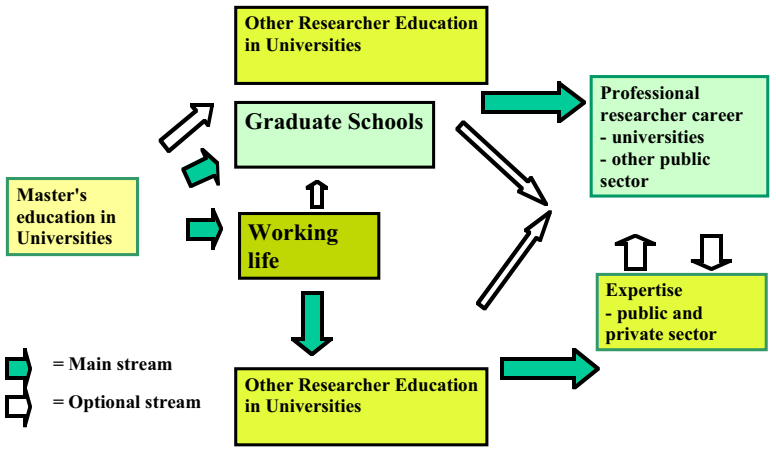

Figure 3. Paths to doctoral education – presentation by the Ministry of Education, Science Policy Division

Funding

Full-time students acquire funding from a number of sources. Part-time students mainly finance their studies by themselves or sometimes with short-term grants, which provide an opportunity to take study leave from their job.

According to the Academy of Finland report (5/03), Doctoral students usually get their funding from various different sources. An interview study by Statistics Finland showed that of those graduated doctoral degree in 2000, 41 per cent of PhD graduates had held a university position, 23 per cent had received funding from a research institute and 21 per cent had received project funding through the Academy of Finland. One-third of the interviewees had at some stage of their studies leading to the doctorate occupied a graduate school place with funding from the Ministry of Education, a university or the Academy of Finland. Industry had funded 10 per cent of all PhD graduates. Close on 10 per cent of all PhD graduates had received funding through the EU or an international exchange program. (PhDs in Finland 5/03, 14.)

Private foundations have represented a significant source of funding. Almost 70 per cent of PhDs in 2000 had received scholarships at some stage of their studies. Three-quarters had also received funding from sources other than those identified above (e.g. ministries, inheritance, support from family, unemployment allowance). (PhDs in Finland 5/03, 14.)

7.3 Trends in Finnish science policy

In the report by the Ministry of Education entitled "Developing Postgraduate Education from the 1950s to the Era of the Graduate Schools" it is stated that issues pertaining to postgraduate education have been intimately associated with the Finnish science policy debate ever since the end of the 1950s. The growing need for the universities and labor markets to recruit postgraduates was acknowledged. The overall development of the university institution between the 1950s and 1970s attracted most of the attention and consumed most of the resources. Such measures included among other things ensuring the resources and other operating prerequisites of the universities, founding new universities, administrative reforms, increasing student intake and developing degree structure. However, questions concerning the further development of the universities and wider issues of higher education policy were always accompanied by discussion on reorganizing postgraduate education and making it more efficient. (Husso 2005,7.)

It is further noted in the report that solutions to the problems in postgraduate education were constantly sought. Significant changes included among others the reform of the national scientific committees in 1961 and the establishment in 1970 of the Academy of Finland in its present form. Strengthening postgraduate education was an integral part of the development measures for both of these. In a way the founding of the graduate schools on a decision by the Ministry of Education was both the endpoint of that decades-long discussion and also the beginning of a new one. (Husso 2005,7.) Thus the issues raised in the evaluation carried out by the Finnish Higher Education Evaluation Council (FINHEEC) are not new initiatives, but a natural corollary to the earlier needed discussion and development. Essential was the situation at hand using a prestigious group of international and domestic experts. There was a desire to place the evaluation in the international context and obtain an international perspective on the further development of doctoral education. The various channels in doctoral education lead to a professional researcher, but also to other expert functions in the public sector and entrepreneurial life. Working life imposes expectations on those taking doctoral degrees. It was the task of the evaluation to do its part to ascertain how doctoral education is able to respond to those challenges.

The year under review was also the beginning of the seventh national application procedure for graduate schools. The Ministry of Education invited applications for 420 graduate school places and four research coordinator posts, which will become vacant at the end of 2005. Internationalization, improved researcher mobility and contacts with working life, in addition to quality, were the main selection criteria.

National investment to research

In 2000, Finland's R&D spending as a proportion of GDP was the second highest within the OECD group. The figure has shown consistent growth for some time; in the late 1990s the annual increase was the highest among all EU countries. In 1995, R&D spending accounted for 2.35 per cent of GDP, rising to 3.3 per cent in 2001. (PhDs in Finland 5/03, 8.)

Most of the growth is attributable to the private sector and specifically to the electro-technical industry. The contribution of the public sector also increased in the late 1990s. Current figures indicate that in the past few years, this trend has come to a halt: since 1999, public sector investment in research has no longer been growing in Finland. In the private sector, however, R&D spending continues to grow. In 2001, the public sector accounted for 26.2 per cent of the R&D budget, while the figure for the private sector stood at 70.3 per cent – higher than the average for both the OECD (63.9%) and the EU (56.3%). Finland is the only EU member where business and industry accounted for a larger proportion of R&D than in the United States, and only slightly less than in Japan. (PhDs in Finland 5/03, 8.)

At the Barcelona summit in March 2002, the EU countries agreed to set the target of raising R&D investment in all Member States to three per cent GDP by the year 2010. The target was formulated against the backdrop of the Lisbon objective (March *2000)* to make the European Union by 2010 *"the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion"*. To date only two countries – Finland and Sweden – have exceeded the three per cent target level; the average for the EU in *2002* stood at 1.93 per cent. (PhDs in Finland 5/03, 8.)

The sharp increase in Finland's R&D investment is partly explained by a government spending program that in 1997–1999 brought an extra 250 million euros to public sector research investment compared to the original figure in the 1997 state budget. The program was aimed at supporting the national innovation system and in this *way* at boosting the national economy, business and industry and employment in general. At the time the program was launched, the target was set that public research investment should stand at 2.9 per cent of GDP by 1999. That target was reached and exceeded in 1998. (PhDs in Finland 5/03, 8.)

One-fifth or 20 per cent of the monies from the additional government funds went directly to universities, which also saw an increase in external funding. This was mainly in the form of fixed-term research project funding by the Academy of Finland and the National Technology Agency TEKES. In the evaluation of the government spending program, Prihti et al. (2000) con-

cluded that the Increase in public spending had had a positive impact on private research investment as well. In addition, the program created new jobs for highly educated groups, but not for people with less education. (PhDs in Finland 5/03, 8.)

Research atmosphere

Combined with economic and structural investments in research, the pro-research climate in society led to a sharp increase in the numbers working in research and development in the 1990s. Over the ten-year period from 1991 through to 2001, the numbers employed in research and development increased by more than 50 per cent from 46,181 to 69,788. At the same time the research staff in the university sector almost doubled in size. Over half of all the people working in research were engaged in business and industry. The private sector's relative share of R&D staff remained unchanged over this period, but the number of R&D staff in companies went up by 53 per cent. In 2001, women accounted for less than one-third of the total research personnel: they numbered 22,580. In the public sector and in the university sector, women accounted for over 40 per cent of the research staff, in business and industry for no more than one-fifth. (PhDs in Finland 5/03, 8–9.)

Number of doctoral degrees

There was an increase in the 1990s in the number of doctoral degrees taken in all the Nordic countries: In Finland an average of 10 per cent per year, in Denmark 9, in Sweden and Norway 7. In 1989 the number of new doctorates awarded stood at 402, by 2002 it had soared to 1,224. Women now account for a much larger share of PhD graduates than ten years ago. In 2002, women accounted for almost 46 per cent of all PhD graduates. The number of degrees completed by women increased by 300 per cent from 1989 to 2001, for men the increase was 150 per cent. (PhDs in Finland 5/03, 10.) The number of doctorates has continued to grow yearly. In 2004, the increase was 11% higher than the year before. A total of 1,399 doctorates were completed in 2004 compared with 1,257 in 2003. Licentiates numbered 606 in 2003 and 558 in 2004.

During the period from 1989 to 2002, a total of 11,577 persons earned a doctorate; at the same time 142,119 higher academic degrees were completed. This increase in the number of degrees ties in with the various university and science policy reforms carried out in the 1990s, most notably the increase in public research spending, the introduction of management by results in universities and the launch of the graduate school system. (PhDs in Finland 5/03, 10.)

According to the information supplied by the universities doctoral students total some 22,960 (2003). Doctoral degrees completed in the period 2001–2003 were on average 5% below the target figures. The target figures are agreed in negotiations between the Ministry of Education, Finland and the universities.

The largest numbers of doctoral degrees were taken in medicine and natural sciences. The target figures for the period 2004–2006 have been raised in engineering, social sciences, educational sciences and the humanities among others.

Table 1. Doctoral degrees by field of study 2001 – 2004 and targets for 2004 – 2006

	Target/ year 2001–03	Completed 2001	Completed 2002	Completed 2003	Completed Average 2001–03	Completed 2004	Target/ year 2004–06
Theology	16	16	24	17	19	22	20
Humanities	112	114	96	106	105	119	129
Art and design	7	6	3	6	5	9	10
Music	6	6	8	9	8	5	9
Theatre and dance	2	4	3	2	3	0	4
Educational sciences	57	65	69	76	70	79	70
Sport sciences	7	4	8	7	6	3	7
Social sciences	94	86	94	90	90	101	109
Psychology	21	14	14	18	15	22	22
Health sciences	24	28	40	36	35	45	36
Law	17	14	16	16	15	23	20
Economics	68	69	58	67	65	82	85
Natural Sciences	320	222	284	252	253	306	331
Agriculture and forestry	42	47	44	44	45	38	52
Engineering	235	205	204	226	212	256	270
Medicine	230	270	227	238	245	245	229
Dentistry	18	14	11	15	13	15	18
Veterinary medicine	7	6	6	12	8	11	9
Pharmacy	16	15	14	20	16	18	18
Fine arts	1	1	1	1	1	0	2
Total	**1.300**	**1.206**	**1.224**	**1.257**	**1.229**	**1.399**	**1.450**

Source: Ministry of Education, Finland KOTA database and agreements between the Ministry of Education and the universities (2004). The classification is based on the Degree Statute. Targets are agreed on for three-year periods.

The following table presents the total numbers for university postgraduate education 1991–2004.

Table 2. Postgraduate education in the universities 1991–2004

	1991	1995	2000	2001	2002	2003	2004
Higher University degrees	8.410	9.819	11.515	11.581	12.075	12.411	12.588
Total no. of postgraduates	11.839	15.927	20.537	21.008	21.937	22.960	*22.105
Licentiate's degrees	604	793	748	695	654	606	558
Doctoral degrees	524	765	1.156	1.206	1.224	1.257	1.399

*The date of the statistics has been changed in the year 2004 (20.09.2004) compared to the year 2003 (31.12.2003).

Source: Ministry of Education, Finland KOTA database 2004

Table 3 presents the numbers of foreign students by university according to the KOTA database. The increase in the number of doctoral degrees between 1995 and 2003 was some 64 per cent.

Table 3. Foreign students in doctoral education

	Foreign students 2003	Foreign students 2004	All pg-students 2003	All pg-students 2004	Foreign students, %-share 2003	Foreign students, %-share 2004
University of Helsinki	408	441	5.778	5.488	7,1	8,0
University of Jyväskylä	65	64	1.715	1.616	3,8	4,0
University of Oulu	109	117	1.920	1.783	5,7	6,6
University of Joensuu	48	42	723	763	6,6	5,5
University of Kuopio	48	39	763	647	6,3	6,0
University of Turku	95	107	2.111	2.038	4,5	5,3
University of Tampere	105	101	1.914	1.779	5,5	5,7
Åbo Academy University	128	132	885	844	14,5	15,6
University of Vaasa	23	16	413	422	5,6	3,8
University of Lapland	9	27	349	378	2,6	7,1
Helsinki University of Technology	229	239	2.743	2.762	8,3	8,7
Tampere University of Technology	114	115	1.858	1.838	6,1	6,3
Lappeenranta University of Techn.	26	33	565	556	4,6	5,9
Helsinki School of Economics	14	14	425	393	3,3	3,6
Swedish School of Economics	24	40	196	179	12,2	22,3
Turku School of Economics	6	6	259	252	2,3	2,4
University of Art and Design Hki	17	27	169	185	10,1	14,6
Sibelius Academy	16	14	128	133	12,5	10,5
Theatre Academy of Finland	4	5	35	35	11,4	14,3
Academy of Fine Arts	1	0	11	14	9,1	0
Total amount	**1.489**	**1.579**	**22.960**	**22.105**	**-**	**-**
Average					*6,5*	*7,1*

Source: Ministry of Education, Finland KOTA database 2004

In 2003 the share of foreign postgraduates of all students was on average 6.5 per cent. Calculated in percentages this share was greatest in Åbo Akademi University, the Sibelius Academy and the Swedish School of Economics. Foreigners in the Theatre Academy of Finland and the university of Art and Design Helsinki amounted to more than 10 per cent. In 2004 the percentage was highest in Swedish School of Economics being 22,3 per cent.

Age of the PhD graduates

The age range of people taking their PhD each year is wide indeed. In 2000, for instance, 16.5 per cent of PhD graduates were under 30, while graduates aged 30–34 accounted for more than one-quarter of the total. The oldest age group of PhD graduates aged over 45 accounted for 18.5 per cent. (PhDs in Finland 5/03, 15.)

Figures compiled by Statistics Finland on educational institutions indicate that in 2001, the average age of PhD graduates from universities was 36.3 years. The figure varies by field of study: in the natural sciences the doctorate was completed at age 35–36, in the social sciences and the humanities on average at over 40. However, within these disciplines there are considerable differences between individual fields of study: for instance, the average age of PhD graduates in economics and business administration was 35.4 years, in education 44.2 years. (PhDs in Finland 5/03, 15.)

7.4 Employment and placement of PhDs

Employment of PhDs

The number of people with a PhD as a proportion of R&D staff increased during the 1990s, but in relative terms there have been no major changes since 1993. At that point the number of people with a PhD as a proportion of R&D staff rose from 8.8 per cent in 1991 to 10.5 per cent. In 2001, a total of 7,441 research jobs were occupied by people with a PhD. People with training ranging from basic education to at maximum a higher academic degree continue to account for the bulk of all research and development work. (PhDs in Finland 5/03, 9.)

In 2001, over 60 per cent of R&D *staff* who had a PhD worked in universities. The number of R&D staff with a PhD outside the university sector was 2,854, or twice the annual number of doctorates completed. Both the absolute number of people with a PhD and their proportion of R&D staff in private sector companies has increased. In 1991 business companies had 452

PhDs on their payrolls, representing 11 per cent of all PhDs in R&D. The figures in 2001 were 1,030 and 14%, respectively. (PhDs in Finland 5/03, 10.)

According to the European Commission's Key Figures 2002, Finland had the highest proportion of researchers per thousand labor force in the OECD (13.1 in 2000), followed by Japan, Sweden and the United *States.* The average proportion for EU countries was 5.4. Since 1995 the figures have shown the strongest growth in Greece, Finland, Ireland and Spain: in all these countries the growth rates have gone up by more than 10 per cent, while the EU average is around three per cent. The number of women as a proportion of researchers ranges from 19 and 43 per cent; the figure in Finland is 29 per cent. (PhDs in Finland 5/03, 10.)

In 2000, the number of new doctorates completed per thousand of the population aged between 25 and 34 in Finland was the second highest in the European Union. Sweden's ratio per 1,000 population aged 25–34 was 1.2, Finland's 1.1, and the EU average was 0.56. From 1999 to 2000, the number of doctorates showed the largest increase in Portugal (14%), followed by Finland (9.76%) and Greece (9.09%). In all EU countries the average increase in the number of doctorates awarded was 1.5 per cent. (PhDs in Finland 5/03, 10.)

Statistics Finland's employment statistics show that in 1987–1999, the unemployment rate among PhDs was markedly lower than in the whole population. PhD unemployment increased during the economic recession of the 1990s, peaking in 1997. The unemployment rate seems to correlate directly with level of education, and in an international comparison Finland has one of the lowest figures for PhD unemployment (around 1.5% in 2000). (PhDs in Finland 5/03, 16.)

PhDs also seem to differ from other educational level groups in terms of their labor market behavior. The labor markets of PhDs are less dependent on business cycles and fluctuations than is the case for the rest of the workforce. This is due in part to the fact that the majority of PhDs work in the public sector. (PhDs in Finland 5/03, 16.)

According to Statistics Finland's interview study, 95.3 per cent of PhDs who graduated in 2000 were employed two years later. Among those in gainful employment, 91.2 per cent were wage earners, 5.2 per cent were researchers with a grant and 3.7 per cent entrepreneurs or self-employed. (PhDs in Finland 5/03, 18.)

Although unemployment among PhDs graduating in 2000 was low, it seems that many doctorates have had to content themselves with fixed-term employment. Among PhDs who graduated in 2000, 60 per cent had a permanent job contract, while 40 per cent were in non-permanent jobs. In the

public sector permanent and non-permanent contracts were almost equally common. Fixed-term contracts were most typical among PhDs working in universities, less so among people in the employ of private companies. The private sector accounted for 25.5 per cent of all job contracts, but 95 per cent of all contracts in the private sector were permanent, The numbers describing the proportion of people with permanent and non-permanent contracts are explained by the fact that most of the PhDs engaged in the public sector were hired as researchers at universities, where research-related job contracts often are made on a temporary basis because the funding available is also for a fixed term. (PhDs in Finland 5/03, 18.)

Most PhDs have found employment that is compatible with their qualifications. When PhDs who had graduated in 2000 were asked whether they thought their current job was compatible with their training, almost 95 per cent said their current, job was at least reasonably compatible with their training and almost 66 per cent (said their job was very compatible with their qualifications. Men (55%) slightly outnumbered women (45%) among those PhDs who felt their current job was highly compatible with their qualifications. People working in the public sector reported somewhat more often than those engaged in the private sector that their job was highly compatible with their level of education. (PhDs in Finland 5/03, 19.)

Placement of PhDs

Long-term follow-up data indicate that PhD placement tends to concentrate in the public rather than the private sector. According to unpublished data compiled by the Academy of Finland (Husso 2002), 80 per cent of all these employed PhDs in 1999 (n=10,968) whose sector of employment is known, worked in central or local government, 4 per cent in the private non-profit sector and over 15 per cent in private business and industry. Over 70 per cent of the PhDs in central government worked in universities, while almost 80 per cent of those in local government! worked in the health care sector. (PhDs in Finland 5/03, 19.)

Two in three doctorates in the private sector were employed in services. In industrial manufacturing, the major employers of PhDs are high tech branches (e.g. pharmaceuticals, television and radio transmitters, electronic circuits), whereas the top service sector branches are represented by health care and business services. Industrial manufacturing mainly employed people (PhDs in Finland 5/03, 19.)

7.5 Graduate schools

The Finnish system of graduate schools was established in 1995. It has gradually been expanded and the number of schools is now double what it originally was. The graduate schools have rendered postgraduate education systematic and increased its efficiency.

At the beginning of 2003 there were 114 graduate schools funded by the Ministry of Education, Finland, with 1,426 researcher students funded by the Ministry and 23 coordinators. All in all, over 4,000 postgraduates are working full-time on their doctoral dissertations. From the beginning of 2006 there will be 124 graduate schools with 1,458 student posts.

In recent years there has been a conscious effort to try and reduce the amount of time required by completion of the doctorate. When the graduate school system was created, one of the specific objectives was to reduce the amount of time that people spend researching their thesis and in this way to lower the average age of newly graduated PhDs. In 2000, 60 per cent of new PhD graduates took less than four years in full-time work to complete the degree, 20 per cent spent four-five years and 20 per cent at least five years. Students in education and in health and social services spent the least time completing the doctorate measured in terms of full-time work. The picture is different when we take into account the amount of time taken to complete the PhD on both a full-time and a part-time basis. In this case more than 12 per cent of PhD graduates took less than four years to complete the doctorate, almost 17 per cent spent less than five years and 70 per cent more than five years researching their PhD. Women took slightly more time to complete their doctorate than men did. The fields where PhD graduates took the most time to complete their doctorate were agriculture and forestry, the humanities and arts as well as the health and social services field, where 75–82 per cent of PhDs took more than five years to complete their studies. (PhDs in Finland 5/03, 15.)

It would seem that PhD graduates from graduate schools complete their studies at a younger age than do graduates from outside the graduate school system. According to a survey conducted among graduate schools in 2000, a total of more than 900 PhDs graduated during the first four-year term. Around 30 per cent of PhDs graduating from graduate schools took the doctorate before age 30. The average age of graduating PhDs was 32.4 years, for women 33.5 years and for men 31.7 years. The average age at which graduate school students are awarded their PhD is probably influenced by the predominance of the natural sciences as well as engineering and technology in these schools. In addition, recruitment into graduate schools usually takes

place relatively soon after completion of the first degree. (PhDs in Finland 5/03, 15.)

In 2003, 13 graduate schools were active in the field of biosciences and the environment, with a total of 217 postgraduate student places (15.2%); the figures for culture are society were 40 graduate schools and 346 student places (24.3%); for medicine and health sciences 16 graduate schools and 245 student places (17.2%); and for natural sciences and engineering 45 graduate schools and 618 postgraduate student places (43.3%). Most graduate schools are network schools under one department or several departments/universities. Network schools are either multidisciplinary or they specialize in one discipline. All in all some 320 postgraduate student places were aimed at information industry branches, and roughly the same number at biotechnology branches. (PhDs in Finland 5/03, 14.)

Networking

Most of the graduate schools are network-type joint projects among several universities, where an atmosphere of innovation conducive to research and a learning environment which inspires researcher education is formed by the senior and junior researchers working in the research groups and the postgraduates. It is the task of the graduate schools to provide systematic teaching and supervision for participating postgraduates. The target is to complete the doctoral dissertation within four years. Studying in the graduate schools is full-time and a salary is paid.

The role of the Academy of Finland and graduate school funding

The role of the Academy of Finland in the selection process based on the scientific quality evaluation of the graduate schools and in funding courses at the schools is pivotal. The Ministry of Education Finland has allocated the graduate schools annual funding of some 36 million Euro, and the Academy of Finland has funded courses, coordination and internationalization with over 4 million Euro. Moreover, on research projects funded by the Academy of Finland some of the funding has been allocated to researcher education.

The Ministry of Education Finland have decided to set up four-year graduate schools and to extend these as of 1 January 2003 (19 June 2002 (12/500/2002). The Ministry of Education Finland allocated 36.5 million Euro to the universities to start graduate schools and to continue and expand the activities of existing graduate schools. The funds have been at the universities' disposal since 1 January 2003. The allocation provided for the setting up of 20 new four-year graduate schools and for the continuation and expansion

of the activities of the 94 graduate schools established earlier. The official decision included provision for salaries for 1,426 research students. Of these salaries some 320 are earmarked for the fields of the knowledge industry, and, due to a reallocation, the same number were earmarked for the field of biotechnology.

The funding enabled the recruitment of 23 scientific coordinators for the graduate schools. At the beginning of 2003 there was a total of 114 graduate schools. Most of these are network-type joint projects among several universities and research institutes, the responsibility for their coordination resting with 15 universities. Since the year 2006 there will be 124 graduate schools with 23 coordinators. All the universities are involved in the graduate school system.

Allocations of funding have been made to the universities carrying the responsibility for the graduate schools. The director responsible for the project in collaboration with the steering group of the graduate school allocates the student places to the universities and departments participating in the school. Places for students in postgraduate schools are filled on the basis of competence demonstrated in an open application procedure.

Table 4. Graduate Schools, students, coordinators and funding for 2003 and 2006 by coordinating university – Funding increase from 36.5 million to 39.9 million Euro

Graduate school	Grad. schools		Students		Coord's		Funds	
	2003	2006	2003	2006	2003	2006	2003	2006
Univ. of Helsinki	24	30	319	346	8	7	8.258.352,9	9.538.944
Helsinki Sch. of Econ.	2	2	35	35	1	1	910.303,6	975.742
Univ. of Joensuu	7	8	120	124	4	4	3.140.742,3	3473.808
Univ. of Jyväskylä	7	8	53	66	1	1	1.360.729,5	1.807.152
Univ. of Kuopio	7	8	63	67	0	0	1.576.489,8	1.796.940
Lappeenranta Univ. of Technology	2	2	24	22	0	0	600.567,5	590.040
Univ. of Lapland	3	3	25	23	0	0	625.591,2	616.860
Univ. of Oulu	7	6	92	87	2	2	2.371.127,9	2.407.404
Sibelius Academy	2	2	12	12	0	0	300.283,7	321.840
Univ. of Tampere	10	11	91	112	0	1	2.277.151,9	3.040.872
Helsinki Univ. of Technology	16	17	238	221	2	2	6.024.580,5	6.001.284
Tampere Univ. of Technology	7	5	88	71	1	1	2.236.557,1	1.941.252
Turku School of Econ.	0	1	0	4	0	0		107.280
Univ. of Turku	13	14	151	14	2	2	3.847.523,1	4.177.524
Åbo Akademi Univ.	6	6	109	109	2	2	2.796.529,9	2.997.4444
Univ. of Art and Design	1	1	6	6	0	0	50.141,8	160.920
Total	**114**	**124**	**1.426**	**1.458**	**23**	**23**	**36.476.672,7**	**39.955.296**

The funds intended to pay for the salaries amount to about 2,000 Euro per month, the salary for coordinators being about 3,000 Euro per month. These funds are intended to cover the costs accruing to the university for the employment (salary + compulsory costs). If, because of competence of other reason, the university wishes to pay a higher salary, it is for the university to meet the difference and the accompanying costs from its own funds. An appointment at a higher salary may include the obligation to teach not more than 56 hours in an academic year.

The graduate school system is based on cooperation between the universities and reciprocity in operations. The universities are required to take care of the basic preconditions of the graduate schools and the general costs from their own operating allocations in a manner to be agreed between them. It is possible to apply for extra funds from the Academy of Finland with which to arrange courses for the graduate schools and support their activities.

The decision on the graduate schools is based on the quality assessment of graduate school applications by the Academy of Finland (4 June 2002) and on the presentations made by the graduate schools monitoring group (11 June 2002).

Graduate School statistics

During the evaluation, the question was raised as to what extent are graduate schools able to cover the overall targets set by universities for different fields of study. There is no statistical data available on this.

It would also be of interest to know who the students are who attend graduate school courses and take part in their supervision and what kind of added value do graduate schools generate for outside postgraduate studies.

All graduate schools received a statistical questionnaire to be submitted by 18 November 2005. Because of the application period for graduate schools, the questionnaire was ill-timed and only half of the graduate schools returned it in a form that could be statistically recorded. As many of the recipients only returned the questionnaire after mid-December, the evaluation group could not avail itself of the compiled statistics.

The statistics will, however, benefit those maintained by the Ministry of Education and the collected data will be amended with data currently missing.

Based on the responses received so far, it seems evident that graduate schools provide substantial added value to outside doctoral studies. Very many doctoral students outside graduate schools benefit from their offering, which means the best practices employed by graduate schools have a wider impact on doctoral education.

David. D. Dill (ed.), chapters 8–12

8 Executive summary

Major recommendations

1. Continue, but Revise, the GS System

- The GS system strengthens the Finnish DES and should be continued.
- Criterion for the funding of new schools by the Ministry of Education should be reviewed and possibly revised
- The process for awarding new GSs, or renewing support for existing GSs, should include a site visit by individuals with experience in highly regarded GSs.
- Primary criterion for the award of a GS should be the existence of a strong program of research.
- A second criterion should be an effective process for assuring quality in doctoral education within the GS.
- A third criterion should be evidence of effective organization and leadership.
- A fourth criterion might be involvement in regional/international networks.
- It is important to create a position of GS leader, which is not only a "coordinator" or a figure-head, but has the authority and prestige attractive to able researchers.
- In renewing current GSs the variety of GS structures and functions should be rationalized to ensure coordinated provision of the key doctoral training elements.

2. Encourage the Development of University-Wide Means of Assuring Quality in Doctoral Education within Each University

- The quality of the overall DES will depend upon the development within each university of some collective mechanism or structure for assuring the quality of all doctoral programs. The GSs should be clearly integrated into this structure and there should be appropriate student representation.
- Examples of the types of policies and activities that might fall within the authority of this collective structure include:

- Criteria and process for approval of new doctoral programs.
- Doctoral admissions processes, policies, and criteria.
- Policies and practices governing award of university-based doctoral fellowships and doctoral research support.
- Policies governing the supervision, academic progress, and research experience of doctoral students.
- Policies governing reviews and defense of doctoral theses.
- Provision/support of courses/experiences common to all doctoral degree programs (e.g., courses in pedagogy, leadership, communication, grant writing, and other professional development).
- Systematic evaluation of all doctoral programs on a regular cycle, etc.

3. Develop Code of Conduct; International Benchmarking

- While greater specification of central government rules and regulations governing doctoral education is not the best means for improving the DES, there are government-supported actions that could help improve the system.
- One example might be for the Finnish universities in cooperation with FINHEEC to develop and disseminate throughout the university sector a National Code of Conduct for doctoral research programs as a means of encouraging the adoption of discovered good practices.
- The government can also include research doctoral programs as part of its university performance contracts to ensure value for invested resources.
- The government can develop and maintain data that "bench marks" the performance of the Finnish DES against other similar countries and systems.

4. Maximize Four-Year Funding; Create National Fellowships

- Increasing the number of four-year fellowships available to doctoral students in the DES would likely improve the quality and productivity of the overall system. There are several possible means of achieving this goal including greater cooperation among the universities, the Academy of Finland, the Ministry of Education and private foundations.

5. Address the "Passive Participation" Problem

- The development of many new two-year masters degrees in the university sector as well as the possible development of two year professional masters in the polytechnic sector may reduce the number of "silent students" enrolling in PhD programs.

- Encouraging the provision of better doctoral program information for prospective students would be of assistance.
- However, to the extent that the problem of "passive participation" remains in the university sector and taxes the efficiency and effectiveness of the overall DES, additional reforms may need to be considered. Policies other countries are utilizing to address similar problems include:
- The introduction of tuition fees as a means of better linking student demand with university capacity.
- The development of new professional doctorates as a means of better meeting the educational needs of the "knowledge-based society." The development of high quality, relevant, professional doctorates in appropriate fields – specifically designed for part-time students – might better meet the needs of many "silent" doctoral students than does the current practice of part-time student enrolment in traditional research doctoral programs.
- All doctoral students might be expected to meet a residency requirement in which they must be enrolled essentially full-time for some stated period.
- Universities in a number of countries have attempted to establish some form of a time limit on doctoral enrollment.

6. Encourage Further Internationalization of the DES

- A stated goal of doctoral reform is to make Finnish doctoral education more internationally competitive both in terms of its academic standards and in its capacity to attract resources and able individuals from other countries. Several additional steps might be taken to better attain this goal:
  - First, evidence of active involvement in relevant established Nordic and EU doctoral school networks should be included as one of the criteria for the establishment and renewal of GSs funded by the Education Ministry.
  - Second, internationally available test scores should be considered for inclusion as one of the criteria for the admission of foreign doctoral students.
  - Third, the Education Ministry should consider establishing a highly visible and attractive program of International Visiting Professorships.

8.1 Charge to team

The objective of the overall evaluation was to produce an evidence-based picture of the present state of doctoral education in Finland that would point out the strengths of the education and development challenges. The external evaluation team was specifically asked to provide a qualitative evaluation of the content and structures of doctoral education, including mention of good practice, with recommendations to guide continuing quality assessment and improvement in the overall system.

8.2 Materials used in the evaluation

The international team was provided with extensive documentation on Finnish doctoral education including related evaluations and studies, recent surveys of the views of Finnish doctoral students and of the University Vice Rectors involved with research, and information on developments in doctoral education in the EU (Appendix 2). In addition the team was presented with the written self-evaluations of 25 Graduate Schools in Finnish Universities (Appendix 2 and 3). Between September 22 and 26, 2005 the team met in Helsinki with and interviewed 77 faculty members, doctoral students, and other representatives from the 25 listed Graduate Schools as well as with the Directors of the University Division and Division of Science Policy in the Ministry of Education (Appendix 4). Based upon these materials and interviews, the team has put together the following evaluation report.

8.3 Limitations of the evaluation

While the team was asked to evaluate the overall system of doctoral education in Finland, it is possible that the design of the review affected the accuracy of the team's perceptions of the Finnish system. For example, while there are 22,764 (2003) postgraduate students enrolled in Finnish higher education, only 1,458 of these student places are funded by the 124 Graduate Schools supported by the Ministry of Education (2006). An estimated additional 2,500 or so students are pursuing their doctoral education at these Graduate Schools with funding from other sources. Our interviews did not include a sample of the many faculty members and/or doctoral students who are unaffiliated with a Graduate School, although 9 of the 25 units reviewed were university-funded rather than Ministry-supported GSs (see Appendix 3). Second, while the units included in the review represented less than 20% of

the Graduate Schools currently funded by the Ministry, the sample was apparently not selected randomly, but represented units that were nominated by their university to participate in the evaluation.

Despite these limitations, the evaluation team believes that it achieved some degree of insight into the strengths and weaknesses of the overall Finnish doctoral education system. First, as noted above, FINHEEC provided the team with extensive documentation on Finnish doctoral education and related studies, including recent surveys of Finnish doctoral students and of the Vice Rectors involved with research. In addition, our requests for supplementary information were promptly and professionally answered. Second, the Graduate School self-evaluations submitted to us were written with some degree of candor and objectivity, which we confirmed in our discussions with representatives of the relevant units. Third, while the schools reviewed were self selected, there was observable variation among them in their organization and practices, which we believe likely reflects variations among most Graduate Schools in Finland. Finally, while we met only with faculty members and doctoral students involved in Graduate Schools, we had an opportunity to discuss with these experienced and knowledgeable representatives the issues and problems confronting faculty members and doctoral students more generally in the Finnish system. We believe these discussions as well as the open and candid discussions we held with representatives of the Education Ministry provided us with valid insights into the strengths and weaknesses of the overall system.

In sum, while there were some limitations as noted above, the team concluded that the evaluation process provided us with an opportunity to make applicable observations and recommendations on the overall Finnish doctoral education system.

9 Overview of the Finnish Doctoral Education System (DES)

The Finnish Doctoral Education System (DES) consists of twenty universities and the National Defense College. The DES appears to be steered primarily by a few fairly formal central government regulations, delegated responsibility and autonomy to the universities to design and implement their own doctoral education rules and policies, and a number of mechanisms for funding doctoral study and research. These funding mechanisms include the Graduate Schools (GS) administered by the Ministry of Education, research grants administered by the Academy of Finland, student doctoral grants provided by independent foundations, as well as the basic fund allocations by the Education Ministry to the universities in support of academic degrees and research, which included funding for a number of "assistants" who are full-time doctoral students with some duties in department administration and teaching. We discovered no generalizable rules governing the internal allocation of university funds to doctoral education; academic policy in this regard appears to be a strategic decision for each university.

The DES has been shaped by a number of values that appear distinctive to Finland. First is the relative *freedom* accorded to the doctoral students by the existing system with its tradition of free tuition, and student financial support provided by private foundations and/or the Academy of Finland. Second is the *student diversity* in terms of the ages of doctoral students (variation between 23 and 65 was observed) as well as the strong support for, or tolerance of, "part-time" doctoral students who are financing their own studies. Third is the belief in *equality of research standards* among the universities. Fourth are the *dissertation-centered model of doctoral education* and the lack of mandatory course-based teaching of research skills. Each of these traditional values appears to be under debate as Finland implements the GS system and wrestles with how best to attain international standards in doctoral education as well as provide the doctoral graduates necessary for the sustenance of a developed society and economy.

Overall, about 22,000 students are enrolled in doctoral programs in Finnish universities. Approximately 4,000 of these students are active in GSs funded by the Ministry, with another 18,000 doctoral students outside these schools. Some of these remaining doctoral students could be absorbed into

the GS structure if additional fields were added to the existing schools and/or if additional student support were made available. However, an unknown but likely large number of these latter students are part-time students who may not actively participate in doctoral programs. There is much variability in the extent to which these students attend the available GS courses, both academic and transferable skills. Furthermore, these part-time students do not appear to benefit from GS innovations in supervision such as annual Evaluation Board meetings and feedback, pastoral care, representation on decision-making groups/committees, etc.

As a consequence, there appear to be important differences between the experiences of full-time doctoral students (e.g., GS students, as well as students working in university research projects and in university departments) and part-time students in Finnish doctoral education. These differences pose two types of problems. The first problem is related to organizing effective doctoral training for these two different groups, who have different opportunities to participate in course-based studies. The second problem relates to the inability of universities to require reasonable student participation and progress in doctoral studies. The first problem is a challenge to the design of training programs within the universities, whereas the second problem – due to the traditional liberal model of no time limits or progress requirements in doctoral education – is a challenge to the whole system.

The Finnish DES therefore appears to be a 2-tier system in many, though not all, institutions. But this also creates a complex governance system, because a GS in a field is not the central agent responsible for doctoral education and training in the subject.

10 Finnish graduate school (GS) system

10.1 Academic focus of GSs

The introduction of Graduate Schools (GS) was an important innovation in Finnish higher education. Considerable flexibility of structure and focus was permitted in the development of these schools, allowing a healthy degree of bold experimentation.

Two main models of Graduate School have emerged: the "inter-university/subject focused" and the "intra-university/interdisciplinary," although there are variations on these basic themes. The "inter-university/subject focused" model serves to bring together students and academic staff working on different aspects of a single discipline or field across the country, and appears to work best when focused on established areas of research excellence. The major training focus of these graduate schools is subject related, although in some there is an element of transferable skills training. Two examples of this in the arts and humanities were the *National Graduate School in Language Studies (LANGNET)* and the *Finnish Graduate School of History*. An example in the social sciences is the *Graduate School in Human Rights Research*. In the sciences, an example is *The Graduate School in Chemical Engineering (GSCE)*, which links 27 laboratories in 4 Universities. An extension of this model, typical in the biosciences, is where multiple such clusters then interact regionally (e.g. *BIOCITY TURKU*), or nationally as in *FinBioNet* (a network formed by Finnish graduate schools in modern biosciences).

The "intra-university/interdisciplinary" model serves to bring together students from different disciplines within a single institution. The major training focus of these graduate schools is in transferable skills. Examples are: the *Centre for Research Education at the University of Lapland*, and *The Doctoral Studies Program in Management and Organization at HANKEN*.

An "intermediate" model, seen for example at the Universities of Turku and Tampere, encourages more limited interdisciplinarity (i.e. within a broad discipline/group of related disciplines such as the biosciences) within a single institution, and is possible where there is a critical mass of research/staff in a geographical area. These tend to deliver both subject specific and transferable skills training. Examples are *Turku Graduate School in Biosciences (TuBS/PGS)*,

the *International PhD Program in Pulp and Paper Science and Technology, PaPSaT*, and the *Tampere Graduate Centre for Social Sciences (TAMCESS)*.

It seems from the sample of GS we had the opportunity to interview that the coverage of fields is more or less by chance. Some fields have their own national GS others do not. While the focus of many GS is "interdisciplinary", it is not always clear what this means. Does "interdisciplinarity" refer to the nature of the knowledge addressed by the GS, to the use of particular research methods, or to important practical problems the GS attempts to address? The GS structure should certainly encourage important emerging interdisciplinary fields, as well as university cooperation in areas of doctoral study where collaboration will enhance existing strengths. However if "interdisciplinarity" is a primary criterion for the award of competitively-allocated GS funding, there is also the possible danger of over–investing in inter-disciplinary research or national networks for small subject fields. As a consequence there may be under-investment in established disciplinary fields or in individual institutions with potential for international stature.

In selecting GSs for national support the existence of an established strength in research would appear to be the critical criterion Some of research areas reviewed seem to reflect a form of national coordination, whereas other areas seem to be doing more or less the same things in the various universities. When GSs are connected to strong research areas with access to alternatives sources of financial support it appears they work most effectively. Examples would be *PaPSaT* and *Graduate School in Electronics, Telecommunications and Automation (GETA)*.

The Academy of Finland has separately identified centers of research excellence.[5] We were unable to determine if each of these centers is actively involved in a nationally funded GS.

10.2 GS admissions process

The development and maintenance of a high quality PhD program is dependent on the admission of able and motivated post-graduate students. Competition for funded GS places generally appears to be good, with applicant to admissions ratios averaging about 5/1, although in some specialized fields the ratio appears closer to 1/1.

[5] *Scientific Research in Finland: A Review of its Quality and Impact in the Early 2000s*, Academy of Finland, 2003.

The quality of information available to applicants about doctoral study appears to vary among the GS. Some GS (e.g., *PaPSaT; GETA*) have very effective descriptive brochures outlining the nature of the doctoral student experience and the expectations of the GS. Interviewed students reported that these materials were very helpful in making more realistic decisions about pursuing doctoral study. On the other hand, some GSs appeared to rely primarily upon informal contact among Masters degree students and professors for the recruitment of doctoral students. This informal process is apt to be particularly ineffective in recruiting international students.

Based on our interviews with representatives of GS, it also appears that the admission requirements vary from GS to GS. In almost all cases, the applicant with a Master's degree applies for admission by submitting a CV, an academic plan, and a research plan. Based on the information supplied by the applicant, a professor in the GS agrees to supervise the research of the applicant. In some cases these academic and research plans are then reviewed by the Steering Committee of the GS whose recommendation is then used to decide whether to admit or reject the applicant. In some Graduate Schools, one or two reference letters from former professors of the applicant are also used in the selection process. In a number of instances, on-campus interviews of top applicants are carried out before the final selection, although this is by no means universal.

While there was general agreement that the student's research plan should be a major criterion for admission, only a few GSs appeared to have clearly stated and transparent criteria governing the admission process (e.g. *Graduate School of Circumpolar Wellbeing, Health and Adaptation; The Doctoral Studies Program in Management and Organization at HANKEN*). The public availability of this type of information can help provide potential students a more realistic assessment of doctoral study and is particularly important for the recruitment of international students. Among the 25 GSs reviewed, only one (*GSCE*) mentioned using the student's previous grades or marks as one of the criteria for selecting students for doctoral study.[6] Only *The Doctoral Studies Program in Management and Organization at HANKEN* mentioned using internationally available test cores in the selection of doctoral students. While standardized language, ability, or achievement tests may not be highly regarded in Finnish doctoral education, the recruitment of larger numbers of international doctoral students will require the development of fair and reliable methods for evaluating applicants. Finally, a standard application form has

[6] This GSCE criterion is described as: "The grade of the diploma work + the mean grade for all courses absolved + the duration of studies."

been developed by some GSs (*LANGNET*), a good practice that might also be considered at the university and/or national level.

The application process consisting of submission of academic and research plans, recommendation letters from professors, followed by an on-campus interview likely assures the admission of well-qualified PhD students from Finnish universities. However, this approach has weaknesses for the selection of applicants from foreign countries, particularly non-European countries, as it is difficult to interview these applicants.

There are also some drawbacks to asking an applicant to provide an academic and doctoral research plan. We suspect that some applicants with a Master's degree, because of limited time spent on their Master's thesis research, may not have a broad picture of the research areas that are important and most likely their research plans are simple extensions of their Master's thesis research. Another drawback is that there may be no faculty supervisor in the GS whose research interests and experiences match the research area of interest of the applicant. In our interviews, a student who had no supervision for almost two years described such a situation and also the GS did not have the proper equipment for the research envisioned by this applicant. Moreover, in the case of an applicant from a foreign country, it is difficult to know whether the applicant or someone else wrote the academic and research plans. In addition, if the applicant also has a research publication record, it will require considerable effort by the professor(s) evaluating the application to find out about the originality of the papers. We are aware of conference publications by foreign students, which are exact copies of original papers published by others earlier.

In sum, the GS admissions process could likely benefit from more systematic means of marketing doctoral programs, recruiting students, and evaluating the future potential of doctoral applicants.

10.3 Doctoral student funding

As noted, the Finnish DES provides free access for students, although as in other countries maintenance and opportunity costs for doctoral-level students are likely to have a negative influence on the enrollment of the best students as well as on the student success rate. Not surprisingly, students and faculty members interviewed said that the most important element of the GS program was the financial support it provided to doctoral students. Newer doctoral students emphasized the positive influence of the GS grant on their decision to enroll. Advanced and graduated doctoral students particularly

stressed the significance of receiving a four-year grant for their success and strongly supported the creation of greater numbers of such grants.

Doctoral student funding is provided not only by GSs, but also via research projects administered by the Academy of Finland, and by student grants or fellowships provided by private foundations. We were told that contribution to doctoral training (i.e., the funding of research assistants) is an explicit evaluation criterion of the Academy's research project funding. Academy of Finland research priorities, however, may not perfectly align with societal needs for doctoral education. Furthermore, researchers' requirements for postdoctoral assistants, equipment, and other research needs may crowd out requests for doctoral research assistants.

In addition, numerous students receive some doctoral funding from private foundations that are quite prevalent in Finland. However, these latter grants are often for relatively short periods of time and the selection of the doctoral students is made by the foundations on their own criteria rather than by the universities.

It is likely that the availability of additional government support for four-year doctoral student grants would strengthen the DES, but it is also likely that the existing decentralized system of doctoral student support could be made more efficient and effective by better coordination among the various funding agencies.

10.4 GS program design

There appear to be three main components to doctoral education in the Finnish GS: training in subject-related content and research techniques; training in transferable skills (e.g., pedagogical training and professional writing) and career development; and the research project. There was quite a bit of variation in the design of the doctoral programs within the GS, some of which can be attributed to disciplinary differences, although there were examples of good program designs in all subjects that could be more widely emulated.

Some GS, for example, provided subject and research-related courses that were specifically designed for students in the School and which students were required to take. Other GS identified relevant courses nationally and internationally and guided students in their course selections; still others left the selection of courses to negotiation between the student and her/his advisor or to student choice alone. This latter design may still provide an effective doctoral education, but it is highly dependent upon the quality and reliability of student guidance and supervision.

In addition, a lack of core course requirements for students in a GS may blur the academic standards of the doctoral degree. As a recent Academy of Finland (2005) report noted with regard the national GS in Business Studies:[7]

> *… The possibility to go and attend a KATAJA course appears to be, in many places, more* ad hoc *than systematic. It depends very much in particular on the characteristics of each department and on their respective resources, but also on the personal feelings and pedagogical approaches of each supervisor. In the end this has the problematic consequence that PhDs in the same field or subfield may not have followed the same courses and may not even have a solid common base. This translates into heterogeneity in profiles and a blurring, once again, of the understanding of what a PhD degree is in any particular field or subfield. The fact that, in a number of situations, the persons who will be supervising graduate students are not involved in the teaching of core or specialty courses to those students is also an issue. To create a research-oriented culture, it is important that students realize that their supervisors are mastering the frontiers of the intellectual debates in the field; the teaching of a course or specialty seminar can creates such an opportunity (pp. 24–25).*

Transferable skills training and career development is a key adjunct to research and academic training. Provision in this area is very variable within GS, and there was little evidence that the universities *per se* provided this training outside the GS structures. Some GSs offer an excellent transferable skills portfolio (*Biocenter Graduate School*; *Graduate School of Culture and Interaction*; *The Doctoral Studies Program in Management and Organization at HANKEN; The Centre for Research Education at the University of Lapland*; *TAMCESS)*. Among those GS that provide this training there appeared to be a high degree of overlap in content (e.g., pedagogical skills), suggesting that common courses might be made available more efficiently to all doctoral students by the parent university. If each university were expected to provide training in transferable skills and career development for all doctoral students, this would in turn free up GS time and resources for investment in training in subject-related content and research techniques as well as in improving the supervision of research projects.

As in most other countries, the research project component of the GS doctoral education tends to be more effectively designed in the basic sciences, where students are often assigned to their research project upon admission and work in close contact with related researchers on an ongoing basis. However, even in the social sciences and humanities, several GSs had designed pro-

[7] *Research in Business Disciplines in Finland: Evaluation Report*, Academy of Finland, 2005.

grams that students reported as enhancing their research development and progress toward completing the degree.

Because decisions on mandatory elements of doctoral study programs are generally the responsibility of faculties rather than the GSs, the education effectiveness of GSs is likely to be affected by the quality of coordination between the GS and the faculties. Some doctoral students noted in our interviews that the weak nature of this coordination caused them frustration and extra work. We will address this point in the section on GS governance below.

10.5 GS supervision

One of the clear results in the student survey is that there is a great need to develop supervision practices in the overall Finnish DES. In our discussions with GS representatives we discovered few that have developed a comprehensive, well organized supervision system for doctoral students.

In most cases only full professors can act as supervisors; however, in several of the GSs we reviewed more junior academic staff can also fulfill this role. This latter arrangement should be encouraged to the extent possible as it exposes students to researchers who are using the newest research methods and reduces the supervisory load (often described as excessive by interviewed member of the academic staff) that currently falls on individual professors.

There appear to be few guidelines for or scrutiny of supervisory practice in the GS. The Rule Book of *LANGNET* articulates general principals for the organization of supervision. One GS uses e.g. annual development discussions between the supervisors and the head of the department (*The Doctoral Studies Program in Management and Organization at HANKEN)*. Some GSs are developing advice and training for supervisors (*GSCE; Centre for Research Education at the University of Lapland). LANGNET's* coordinator is collecting annual reports from the supervisors and doctoral students. Some coordinators also give personal feedback for the supervisors. Some of the GSs have recognized the need to develop the supervision and are planning to arrange training for supervisors (*Graduate School of Circumpolar Wellbeing, Health and Adaption; CSCE*), but this still appears to be in the planning stage.

However, since responsibility for supervisors/supervision lies with the faculties or departments therein, the GS have little or no power to rectify supervisory problems or deal with a failing supervisor. There also appears to be considerable variability between universities and between faculties within a single university concerning who takes responsibility for the quality of supervision, and what if anything is done. In almost all interviews there ap-

peared to be no answer to the question "if you identify a case of bad supervision what can you do about it?"

In this regard a particularly fine example of good practice was that implemented by *GETA*. The incoming student signs an agreement in which the academic and research plans are described. The agreement is then countersigned by his/her faculty supervisor. At the end of each year, the student submits a progress report, which is reviewed by the Steering Committee of GETA. If his/her progress is found to be unsatisfactory, then both the student and the faculty supervisor are required to explain the reasons behind the unsatisfactory progress of the student. The Steering Committee then takes appropriate action to correct the situation.

Some students within the GS have an Evaluation Board/supervisory team which may include, in addition to the main supervisor, internal and/or external advisors (*TuBS/PGS; Biocenter Graduate School*; *Helsinki Graduate School in Biotechnology and Molecular Biology*; *Graduate School of Circumpolar Wellbeing, Health and Adaptation*). The GSs from the University of Oulu *(Biocenter Graduate School*; *Infotech Oulu Graduate School; Graduate School of Circumpolar Wellbeing, Health and Adaption*; *Graduate School of Culture and Interaction*; *Clinical and epidemiological Graduate School of Oulu)* protect students' rights to have good supervision by arranging evaluation boards for every doctoral student. The board consists of a supervisor and 1–2 senior scientists and it not only does the annual follow-up for the student's research but also gathers the feedback from the student and uses it for developing the supervision. This policy of a team of supervisors was highly valued by students, but was not only uncommon within the GS reviewed, but was clearly unavailable outside the GS structure.

10.6 Quality assurance

In the Finnish DES, quality assurance remains the primary responsibility of the supervisor and relevant faculty and the process is focused on the evaluation of the dissertation. The final doctoral dissertation takes one of two forms. In one form, the dissertation consists of a collection of papers published by the student, with an introductory chapter explaining her/his main research contribution. In the second form, the complete dissertation is written.

The general process for review and defense of the dissertation is set by law and further defined by official university and faculty policies, which are reported to be comparable across institutions. Nevertheless, there were differences voiced by the members of our international team with direct experience in the Finnish doctoral review and defense process as well as by those

interviewed as to the specific procedures followed in this process. Given the number of universities, faculties, and doctoral programs as well as the strong tradition of faculty and professorial autonomy in Finland, it would not be surprising to discover some variation exists in the process among programs and universities.

In its ideal form the doctoral review and defense process is conducted as follows. The completed dissertation manuscript is reviewed prior to publication by a faculty-appointed team that includes outside reviewers, copies of the published dissertation are made available to members of the relevant faculty and to others prior to the defense, and the published dissertation is defended in a public meeting involving faculty-appointed "opponents" from other universities, who are also expected to submit a written evaluation of the dissertation. Anyone who has concerns about the quality of the dissertation can also express her or his critical comments during the public defense. As described this ideal process is at least as rigorous if not more rigorous than the quality assurance process for dissertations in other countries.

However, if the ideal form is not enforced, weaknesses may creep into the process. For example, not all the appointed reviewers of the dissertation may be expert in the field, dissertation supervisors may recommend to the faculty reviewers and/or opponents who are former students who may be reluctant to comment on the poor quality of the dissertation, the supervisor's recommendations may not be seriously questioned by the Faculty Board, the presence of the student's family members and friends at the public defense and/or the attention of the public media to the research may inhibit opponents from pointing out the deficiencies in the dissertation, attention in the media etc.

The crucial point is that there appears to be no systematic evaluation by the universities of this review and defense quality assurance process, no university monitoring of the selection of reviewers or "opponents" by the relevant faculties, nor assessment of the written feedback on the quality of doctoral dissertations by the external opponents (cf. the use of external examiners in the UK system). For the review and defense process as outlined to effectively assure the quality of doctoral dissertations in Finland, it would appear important that the universities have the capacity to monitor adherence to the ideal process, evaluate the strengths and weaknesses of the existing system, and encourage improvements in the process as appropriate.

As mentioned earlier, in one form, the dissertation is composed of journal and conference papers published by the student. Unfortunately, in many fields it takes 2 to 3 years to get a paper published in top ranking journals.

Many conferences also accept papers based on reviews of the abstract or a short summary of the papers. In such cases, it is difficult to judge whether the conference paper is of high quality or not. Moreover, there has been an explosion in the number of conferences in certain fields with very high paper acceptance rates to ensure the conferences do not lose money. In addition, there has been a rapid growth of journals published by book publishers with very limited circulation (usually less than 150) to mostly libraries. The reviewing standards of some of these journals are questionable.

Because the Finnish process for quality assurance in doctoral education places greatest responsibility on the doctoral supervisor, academic department, and/or faculty board (see related comments to follow on Governance), few Directors or Coordinators of GSs took an active role in quality assurance. This was particularly the case for national GSs, where the coordinator had relatively little contact with the supervisors and/or faculty boards from the participating universities. Evidence of more assertive attempts at quality assurance were reported by some coordinators of "intra-university/interdisciplinary" and "intermediate" GS. Because these coordinators could interact with or attend the departmental committees and/or faculty boards formally responsible for academic quality assurance, they were more able to have some influence on the behavior of supervisors, monitor the progress of students, and suggest the appointment of qualified opponents (i.e., external examiners).

Overall, based upon our interviews with GSs there appeared to be only modest scrutiny of doctoral programs – curriculum, quality of supervision, dissertation review and defense process, student progress – as well as little evidence of remedial actions that were taken within the GSs. Indeed, few GSs had external advisory boards or other advisory or evaluative mechanisms. If a responsibility for evaluation of the GS itself exists, it appeared to fall to the GS steering group. Some GSs had a system of annual meetings where each student involved presented and the status was discussed. Evaluations of courses took place in some cases but not in all. There was no evidence of site-visits of the GS by representatives of central funding bodies (Ministry of Education or Academy of Finland) such as is the case in the EU system of Marie Curie Training sites, where both the academic performance and the financial performance has been monitored by site-visits, reports and evaluations.

10.7 Relationship between GS and working life

In some obvious cases there is a clear connection between a GS, a research area, and an important sector of industry or society. Examples include *PaPSaT*, *GETA*, *Tampere University of Technology Graduate School* (*TUT GS*) and *Graduate School in Human Rights Research*. The *PaPSaT* program is well integrated with the relevant companies both in Finland and internationally, *TUT GS* has developed effective relationships between the university and relevant industry, and *GETA* has especially effective cooperation with Nokia. The *Graduate School in Human Rights Research* provides an interesting example of how the GSs' connections can provide students the opportunity to participate in and study important international-level processes such as the Finnish delegation in the UN Commission on Human Rights.

In general, however, the relationship between the GSs and working life seems to be mainly reflected in the courses on practical skills and in the use of visiting lecturers from business and industry in some courses. As noted above, the training in transferable skills is highly variable. Some GS provide good career development advice/training, empowering students to plan their future (*Centre for Research Education at the University of Lapland*) while others provide little or none at all. Very few GSs formally involve external partners; the most obvious example is inclusion of representatives from business and industry on GS advisory boards (*Graduate School in Human Rights Research*). There is also little evidence that most GSs seek information on the opportunities or demands for PhDs outside the university sector or that they conduct surveys of PhDs already in working life.

10.8 National/international cooperation in GS

There were a number of good examples of national cooperation in which the GS students can choose different courses from different universities. For example the *Turku Centre for Computer Science* emphasizes that GS's students can freely choose suitable courses from all participating departments. *GSCE* had an effective network of laboratories at four Finnish universities. All the labs were providing courses and all enrolled students can participate in these courses.

In general Finnish research appears to be well embedded in the international research system. There is a clear presence of Finland in many important research areas. However, few of the GS seem to have a specific internationalization strategy. The international cooperation is mainly based on foreign lecturers, student participation in international conferences, and student

exchanges. Some GS are participating in Nordic (e.g. NorFA) or EU doctoral education networks. There are also some international joint research programs (*e.g. Infotech Oulu Graduate School; The Doctoral Studies Program in Management and Organization at HANKEN*).

The GSs with outstanding national/international cooperation are those that have faculty members who have already established cooperation and collaboration with faculty members from other universities in Finland and foreign countries and/or where the GS is focused on a Centre for Research Excellence.

10.9 GS governance

Governance of GS varied considerably, depending in part upon the model on which they are based. Many GS appeared to be governed by a Board comprising members of academic staff. However, the selection of these board members (e.g. were they representing their University/Faculty/Department, how were they selected?) was not discussed. Some, but not all, GS Boards included student representatives; where this occurred it was greatly appreciated by both staff and students (*TAMCESS; Biocenter Graduate School*; *The Centre for Research Education at the University of Lapland*) and should be encouraged for all structures dealing with doctoral training.

The reporting lines between GS and university (i.e., the relationship between a GS, the involved departments, and faculties) in most cases did not formally exist beyond the fact that there might be some cross-membership. It was therefore unclear as to how any decision taken by the GS Board (e.g. introduction of supervisor training, development of new courses etc) could be implemented via the Faculty/University. The GS appeared to have little "muscle" and formal ability to influence the quality of doctoral education although in some cases – such as *GETA*, *PaPSaT*, and the *A.I. Virtanen Institute Graduate School* – strong GS leaders appeared to have assumed power and responsibility, sometimes without formally being assigned it. Overall, the most effective structures were seen where the GS was focused on a single university (*A.I. Virtanen Institute Graduate School*; *TAMCESS; TuBS/PGS*).

In addition, as best we could infer from the available documents and interviews, the structure and processes governing doctoral training within the universities themselves appeared to be unclear in some cases.

Finnish doctoral education appears to be a complex organizational matter that involves a student, a supervisor, a funding agency, a department, typically a degree-granting faculty, a GS, and a university. The relationship among all these bodies needs to be made clearer. Sometimes the GS appears to be

just a channel for funding, in other cases a GS is clearly the locus of the actual training and research. If the purpose of a GS is to make possible improvements in the quality of doctoral education by making the process and the outcome better, then a GS should also have the means to do so. To date it seems the GS may have suffered by being so temporary an organization – a project – rather than a permanent feature of Finnish doctoral education. Evaluations of the function of GS are going on in several of the countries that have introduced subject-specific GS's – e.g., the Netherlands, Sweden, Denmark, Germany – and relative to the more general aims and policies for doctoral education it has to be decided whether doctoral education for a large part should be organized in more permanent GSs.

To secure national and international cooperation in doctoral education it appears that a system of GSs is a good thing. However, it is important to recognize first that successful GSs require appropriate authority and second that a GS system can not alone solve the problems of improving the quality of doctoral education. There need to be an institution-wide and a national system of quality assurance as well. It seems that GSs with a committed and strong leader do better. It thus seems important to create a position of GS leader, which is not only a "coordinator" or a figure-head. It also seems that if the leader is a respected researcher the situation is better. Thus it has to be attractive for good researchers to involve themselves with doctoral education. There should be resources specifically allocated to the GS leader position and such service should be a part of the qualification criteria for full professorships.

10.10 Observed best practices

We have indicated throughout the preceding sections examples of good practice observed in our review of the GSs. In addition, the following general points were noted among the GSs reviewed for this evaluation.

There seemed to be a clear correlation between GSs that possessed information brochures, course catalogues, recruitment material, reports/proceedings from annual conferences, and informative websites and our impressions of high general quality and productivity. Of course we do not mean to suggest a direct causal connection between information and quality, but there are likely common underlying factors such as a strong and well-established research capability, experienced leadership, and related resources. In addition, given the doctoral training function of the GS it is essential to develop an effective information and communication strategy in order to attract able students and additional support.

It also appeared that GSs with a committed and strong leader worked more effectively.

GSs with a clear purpose and explicit "vision, mission and identity" (to talk in management/business terms) were better functioning that those without. It did appear possible for a GS to be a vehicle for building up new research forms or environments (e.g., area studies). But such attempts need to be carefully focused, well managed, and very explicit about what is attempted. They also require the support of the involved universities, faculties, and departments. If that is the case, one can use the establishment of a GS as a policy instrument for the creation of new research forms and areas as in interdisciplinary fields.

Finally, with regard the overall DES, there have been several important national reviews carried out by the Academy of Finland and FINHEEC: "PhDs in Finland: Employment, Placement and Demand;" the "Student Survey;" and the "Vice-Rector Survey." These have been far-reaching and very informative.

11 The problem of "passive participation"

A distinctive issue in the overall Finnish DES, noted in a number of the evaluations and documents submitted to us[8] as well as by the participants in our interviews, is the problem of the "silent student," "dead souls," or "passive participation." These terms appear to be applied to those students, either part-time or full-time, who retain their student status but make no measurable progress in their doctoral studies.

The tradition of comparatively open access to doctoral study in Finland has created a situation in which substantial numbers of doctoral students are enrolled, but not all are actively pursuing degrees. Many of these students may in fact be employed full-time or are carrying out other responsibilities, a situation which was historically feasible due to the traditional practice of independent study/research characteristic of the mentor/apprentice approach to doctoral education in northern Europe. Under current regulations these students may continue as enrolled students for life, even if they are making little or no progress towards completing their degree. A number of the self evaluations and faculty members interviewed suggested this open-ended enrollment practice was a major problem for the overall DES. For example:

Cessation of Studies. There is a need to develop a national framework enabling a university to interrupt the studies of a student that lacks the ability or the motivation to complete their studies. Today the universities have no possibility to interrupt the studies since, according to Finnish legislation, it is impossible to remove a person's right to study once it has been granted. The universities can further develop their admissions procedure and improve the information given to students about the content and aims of doctoral studies, the areas of specialization of the university as well as the different careers paths open to them after graduation. Nevertheless, some students without the necessary qualifications and/or motivation will always be admitted. In comparison to BSc and MSc-level studies, doctoral education requires more financial and human resources per student, and a miscalculation in the recruitment is therefore costly for the university (p. 3).[9]

[8] See, for example, the several comments on this problem in the survey of the University Vice Rectors.

[9] From, *Evaluation of Doctoral Education: Management and Organization at the Swedish School of Economics and Business Administration (HANKEN)*.

The true nature and costs to the system of this "passive participation" are not well documented. If some of the "silent students" are full-time and/or fully supported students, then their lack of involvement could also be a symptom of poorly designed doctoral programs, with inadequate requirements and/or supervision. If, on the other hand, there are large numbers of part-time students who remain enrolled, but do not actively participate in their doctoral programs, and if they can legally seek supervision on their own volition at any time, then there is the real possibility that they may tax the energies of doctoral supervisors and lower the quality of supervision for all.

We suspect that despite the desire of some in the universities to curtail the continued enrolment of "silent" doctoral students as a means of improving the overall DES, there will be strong public resistance to altering students' right to study. Nonetheless, as we perceive it the current DES does not well serve all students, including part-time students, and the latter group will be further disadvantaged as additional reforms are introduced in an effort to strengthen the system. That is, an observable trend in international doctoral reform appears to be a shift from research training toward doctoral education in which traditional research doctoral programs now include more structured courses, are more carefully supervised, and become more demanding of student time.[10] Therefore the traditional practice of pursuing doctoral education in a part-time, intermittent, and largely independent fashion will become less feasible in all doctoral fields, a situation that already largely pertains in the basic sciences. We therefore believe that in fairness to all students, including part-time students, some relevant changes in university policy may need to be considered and we discuss some possible alternatives below.

[10] For a discussion of international doctoral reforms, see J. Sadlak, *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*, UNESCO/CEPES, 2004.

12 Recommendations

12.1 Continue, but revise, the GS system

We believe the GS system strengthens the Finnish DES and should be continued. However, we also believe the criterion for the funding of new schools by the Ministry of Education should be reviewed and possibly revised and that the process for awarding new GSs, or renewing support for existing GSs, should include a site visit by individuals with experience in highly regarded GSs. GSs might be established within a single discipline or in an interdisciplinary field. However, we would recommend that the primary criterion for the award of a GS should be the existence of a strong program of research. Along these lines, we would assume that GSs either already exist or will soon be established in association with each of the Centers of Excellence identified by the Academy of Finland. A second criterion should be an effective process for assuring quality in doctoral education within the GS. A third criterion should be evidence of effective organization and leadership. A fourth criterion might be involvement in regional/international networks (see Recommendation 6.6 below).

It is important to create a position of GS leader, which is not only a "coordinator" or a figure-head, but has the authority and prestige attractive to able researchers. There should be resources specifically allocated to such positions and service as a GS coordinator might receive consideration for promotion to full professor.

In renewing current GSs we would recommend that the variety of GS structures and functions should be rationalized to ensure coordinated provision of the key doctoral training elements: research and research techniques, subject-related academic training, and transferable skills training. This may see the development of two main types of GS structure: the "inter-university/subject focused" and "intra-university/interdisciplinary". The intra-university GS would focus on QA and delivery of transferable skills training. Where an institution is small, this GS could involve more than one institution in the same close geographical area. The inter-university GS would provide the key academic networks for subject-related academic training, and national and international research interaction. The complexity of the latter would depend upon the size/volume of the research area. For example, a single national network appears to be sufficient for history and language studies, while in the biosciences an interlocking hierarchy of GS is more appropriate (e.g. ranging

from institutional, such as those within Turku, to the regional BioCity to the national FinBioNet). In this way all students, both within and outside the GS, would benefit from QA and transferable skills training, while those in GS schools would have the additional advantage of national/international academic networks focused on research excellence.

12.2 Encourage the development of university-wide means of assuring quality in doctoral education within each university

While we believe as outlined above that marginal improvements in doctoral education can be achieved by further refinement of the GSs, ultimately the quality of the overall DES will depend upon the development within each university of clear decision-making structures and processes to cover all aspects of doctoral training and quality assurance. The GSs should be clearly integrated into this structure and there should be appropriate student representation.

From a US perspective the use of the term "graduate schools" as applied in Finland is a misnomer. The GSs in Finland are not graduate schools in the US meaning of the term, but rather collaborative doctoral programs. As conceived in the US a graduate school is not a mechanism for delivering a particular doctoral degree, but rather a collective mechanism of the university for assuring the quality of research and training in all doctoral degrees. Because of the tradition of the "mentor-apprentice" system of doctoral education, as well as the academic authority vested in the individual professor and the department or faculty, this type of formal university-wide structure for and governance of doctoral education does not appear to be characteristic of Finnish universities.

One means of illustrating this point in Finnish terms would be to encourage universities to develop a "Graduate Faculty." This faculty would be composed of all academic staff deemed eligible to supervise or participate in the supervision (e.g., serve as a member of an evaluation board or supervisory team) of a doctoral student.[11] The graduate faculty could have its own leader/coordinator (e.g., a "Dean") as well as appropriate supporting staff and resources. The graduate faculty would need to define and develop relevant policies and arrange for the provision of appropriate support for all doctoral

[11] As previously noted, we would recommend broadening the definition of those who could serve as supervisors and/or members of a supervisory team.

programs provided by the university. Examples of the types of policies and activities that might fall within the authority of the graduate faculty include:

- Criteria and process for approval of new doctoral programs.
- Doctoral admissions processes, policies, and criteria.
- Policies and practices governing award of university-based doctoral fellowships and doctoral research support.
- Policies governing the supervision, academic progress, and research experience of doctoral students.
- Policies governing reviews and defense of doctoral theses.
- Provision/support of courses/experiences common to all doctoral degree programs (e.g., courses in pedagogy, leadership, communication, grant writing, and other professional development).
- Systematic evaluation of all doctoral programs on a regular cycle, etc.

Whether the development of a graduate faculty such as that outlined above or some other model would be appropriate for Finnish universities should be decided by each university. Universities in a number of EU countries such as Denmark, the Netherlands, Switzerland, and the UK have developed effective structures and processes for assuring the quality of all their doctoral degrees. There is unlikely one best model. However, the development of some equivalent collective mechanism or structure within Finnish universities would appear to be the single most influential action that could address some of the issues identified in this report as well as improve the overall quality of the DES.

The development of such mechanisms could be facilitated by the Ministry of Education and FINHEEC. The Ministry might provide "capacity-building" grants to universities that desire to develop such collective mechanisms for assuring the quality of doctoral degrees. These grants might be awarded on the basis of peer-reviewed proposals. The grants could be used to cover the costs of consultants (e.g., former or current graduate deans from countries/universities that have experience with such mechanisms), meetings, retreats, the establishment of administrative offices, etc.

Finally, FINHEEC is currently developing a system of academic audits designed to evaluate the quality assurance processes of Finnish universities. Typically the first round of such audits focuses on the quality assurance processes associated with first-level degrees (cf. the experience with the academic audit processes in the UK, Sweden, Hong Kong, etc.). By signaling now its intent to evaluate in a future cycle the processes for assuring quality in doctoral education, FINHEEC would provide both the time and the incentive for the universities to develop the types of collective structures and processes outlined in this section.

12.3 Develop code of conduct; international benchmarking

The Finnish DES includes a great deal of autonomy not only for individual universities, but also for faculties and/or departments, which are designated as the primary mechanism for assuring academic standards in the system. Although we have perceived a number of weaknesses in the current system, we do not believe that a greater specification of central government rules and regulations governing doctoral education is the appropriate solution. We do feel, however, that there are government-supported actions that could help improve the system.

One example might be for the Finnish universities in cooperation with FINHEEC to develop and disseminate throughout the university sector a National Code of Conduct for doctoral research programs. Such a Code would define best practices identified through this evaluation, other evaluations carried out on Finnish research and doctoral education, as well as from relevant reports on improving doctoral education promulgated among the Nordic countries.[12] This code could include aspects such as: student recruitment, student selection and admission, supervision, training, student progress, feedback and review, quality of research, etc. Public codes of conduct have served as an important component of academic quality assurance in the UK.[13] Such a code could provide a useful means of disseminating among the universities processes and practices that have been discovered to demonstrably improve doctoral education in Finland. Universities should be accountable for the quality of their doctoral training and such a code can help guide future audits and/or evaluations of the universities, faculties and departments.

While we do not advocate greater dictation of the rules and policies governing doctoral education by the central government, we do encourage the government to monitor the performance of the DES to ensure value for invested resources. Therefore, the improvement of doctoral education should be part of the universities' performance contracts. We would also recommend "benchmarking" the Finnish DES against other similar countries and systems.[14]

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[12] *Nordic Rresearch Training: Common Objectives for International Quality*, Nordic University Association (NUS) and the Nordic Academy of Advanced Studies (NorFA, now Nordforsk), 2003: http://www.nifustep.no/norbal_1/nor/startside

[13] *Code of Practice for Postgraduate Research Programs*, QAA, September, 2004: http://www.qaa.ac.uk/academicinfrastructure/codeOfPractice/section1/postgrad2004.pdf

[14] See for example data available through NORBAL: http://www.nifustep.no/norbal_1/nor/startside

12.4 Maximize four-year funding; create national fellowships

Increasing the number of four-year fellowships available to doctoral students in the DES would likely improve the quality and productivity of the overall system. There are several means of achieving this goal.

First, the universities, Academy of Finland, and the Ministry of Education should collectively review existing funding policies to see if there are any possible reforms that would increase the number of four-year fellowships available from existing financial resources.

Second, the Academy of Finland might create a new program of prestigious, four-year, national, doctoral fellowships. The fellowships could be focused on research excellence and might be targeted to critical fields. The fellowships should be awarded on a competitive basis and should be open to accepted doctoral students in relevant fields from any university in Finland.

Third, government incentives should be developed to entice the private foundations to increase the amount of financial support for four-year doctoral fellowships. One means of doing this would be for the Ministry to announce a program of providing a matching two-year grant for any two-year doctoral fellowship that a private foundation will award to a university, providing the university is able to select the student recipient.

12.5 Address the "passive participation" problem

As noted above the extent and seriousness of the problem of large numbers of "silent students" in the DES is difficult to assess. It is possible that the contemplated reforms in the Finnish higher education system in response to the Bologna Accord may help address this problem. That is, the development of many new two-year masters degrees in the university sector as well as the possible development of two year professional masters in the polytechnic sector may reduce the number of "silent students" enrolling in PhD programs.

As previously noted in our discussion of "observed best practices," we also believe that encouraging the provision of better doctoral program information would be of assistance. More candid documents for potential doctoral students, which describe the characteristics of current doctoral education, the increasing demands upon student time, the nature of doctoral research, the collective nature and requirements of doctoral schools, etc. may help to provide a more realistic picture of the expectations of doctoral work among future student applicants. In and of itself this information may lessen the num-

ber of doctoral students who apply and/or the number who do not actively participate in doctoral education.

It is also possible that if, as we recommend above, the universities assume more active responsibility for improving the supervision, academic progress, and research experience of doctoral students in all programs, then the observed incidence of passive participation among full-time and part time students may decline.

However, to the extent that the problem of "passive participation" remains in the university sector and taxes the efficiency and effectiveness of the overall DES, additional reforms may need to be considered. We recognize, given the values and traditions of Finnish higher education, that some of the policies and practices listed below will be particularly contentious. Indeed, not all the members of our evaluation team agree on the appropriateness or applicability of some of these policies for the Finnish system. Nonetheless, we have been explicitly asked to contribute an international perspective to the Finnish discussion of doctoral education and therefore we list below in alphabetical order some of the policies other countries are adopting to address similar problems.

- Fees: A number of countries are now introducing tuition fees as a means of better linking student demand with university capacity. For example, Austria, which had a tradition of open access to doctoral studies and no time limits on doctoral student enrollment, has recently adopted a policy of tuition fees for doctoral students. This policy is reported to have significantly decreased the number of inactive doctoral students, because they were unwilling to pay the fees required to continue their *pro forma* registrations.[15] Similarly, some US states with low tuition fees in their public university systems have considered substantially increasing tuition fees for students who remain enrolled for many years, but fail to make measurable progress in completing their degrees.

- Professional Doctorates: Little was said during our evaluation visit about "professional doctorates" in Finland, perhaps because the licentiate degree as well as the tradition of part-time doctoral students has fulfilled this need in the past. However, within the European community (see especially the UK), the debate about doctoral reforms has led to the development of new professional doctorates both as a means of meeting

[15] H. Pechar and J. Thomas, "Austria." In J. Sadlak (ed.), Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects, pp.13–35, UNESCO/CEPES, 2004.

the educational needs of the "knowledge-based society" and as a way of better connecting doctoral education to "working life."[16] By professional doctorates we mean doctoral degrees such as the Doctor of Education (EdD), Doctor of Business Administration (DBA), Doctor of Psychology (DPsych), and other professional degree programs that are more closely linked with professional development and practice than with careers in academic scholarship and/or theoretical research.

As in other countries, it is possible that the development of high quality, relevant, professional doctorates in appropriate fields – which are specifically designed for part-time students – could better meet the needs of many "silent" doctoral students than does the current practice of part-time student enrolment in traditional research doctoral programs.

- Residency requirements: Doctoral policies in some countries often recognize that successful completion of a PhD degree will require that all students engage in a period of intensive study. Therefore all doctoral students may be expected to meet a residency requirement in which they must be enrolled essentially full-time for some stated period. This requires even part-time students to design a program in which they can free themselves up from other responsibilities for a definable period of time so that they may fully engage in their doctoral studies.

- Time Limits: Universities in a number of countries (e.g., Denmark, France, the Netherlands, Norway, UK, US) have attempted to establish some form of a time limit on doctoral enrollment. For example, UK Research Councils require doctoral submission rates of 70% within four years for full-time students and within seven years for part-time students. Failure to reach doctoral targets can lead to a loss of future doctoral funding to the university. France makes a similar distinction between full-time and part-time doctoral students, applying a time limit of three years to doctoral studies, but permitting students gainfully employed in work different from the research being undertaken up to six years to complete a degree. Many US universities have adopted a "seven-year" rule for all doctoral students. In Denmark, France, the UK, and the US doctoral students who cannot complete a degree within the recommended time limits may petition for an extension of time with the support of their thesis

[16] See, for example, J. Sadlak, *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*, UNESCO/CEPES, 2004.

supervisors. In many US universities eligibility for an extension is usually dependent upon a formal review, which examines student progress to the degree, the status of the research project, and the likelihood of completing the degree within a definable period.

12.6 Encourage further internationalization of the DES

A stated goal of doctoral reform is to make Finnish doctoral education more internationally competitive both in terms of its academic standards and in its capacity to attract resources and able individuals from other countries.[17] The review of the GS self-evaluations revealed that a number, but not all, of these schools were well connected to other universities outside Finland and were attracting both foreign students and visiting researchers. Several additional steps might be taken to better attain this goal.

First, evidence of active involvement in relevant established Nordic and EU doctoral school networks[18] should be included as one of the criteria for the establishment and renewal of GSs funded by the Education Ministry.

Second, internationally available test scores should be considered for inclusion as one of the criteria for the admission of foreign doctoral students. The recommended expansion of four-year doctoral research grants (Recommendation 6.4) will also assist in the recruitment of able international students.

Third, the Education Ministry should consider establishing a highly visible and attractive program of International Visiting Professorships that would provide up to a year of support for foreign researchers to be in residency at Finnish centers of research excellence. These professorships should be awarded on a competitive basis among the universities based upon a formal proposal.

[17] *Mobile Minds: Survey of Foreign PhD Students and Researchers in Finland*, Academy of Finland, 2005.

[18] As of 2005, the Nordic Research Board (NordForsk) supports 72 active networks, covering all scientific disciplines: http://www.nordforsk.org/meny.cfm?m=137

References

Action Plan FINHEEC 2004-2007. Finnish Higher Education Evaluation Council.

Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers. (2005/251/EC).

The European Higher Education Area – Achieving the Goals. Communiqué of the Conference of European Ministers Responsible for Higher Education. Bergen 19–20 May, 2005.

Evaluation of Doctoral Education: Management and Organization at the Swedish School of Economics and Business Administration (HANKEN).

A Framework for Qualifications of the European Higher Education Area. Bologna Working Group on Qualifications Frameworks. Ministry of Science, Technology and Innovation, Copenhagen 2005.

Pechar, H and Thomas, J. 2004. "Austria." In J. Sadlak (ed.), *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*, pp.13–35, UNESCO/CEPES, 2004.

Husso, K. 2002. *Tohtoreiden työllistyminen, sijoittuminen ja liikkuvuus työmarkkinoilla.* Esitelmäpaperi Suomen Akatemian ja opetusministeriön järjestämään "Tutkijanuran haasteita ja mahdollisuuksia" -seminaariin. Suomen Akatemia, Helsinki 22.11.2002.

Husso, K. 2005. *Tohtorit, tiedepolitiikka ja työmarkkinat. Tutkijankoulutus Suomessa 1950-luvulta tutkijakoulujen aikaan.* Opetusministeriön julkaisuja 2005: 21.

Mobile Minds: Survey of Foreign PhD Students and Researchers in Finland, Academy of Finland, 2005.

PhDs in Finland: Employment, Placement and Demand. Publications of the Academy of Finland 5/2003.

Prihti, A. [et. al.] *Assessment of the additional appropriation for research.* SITRA, 2000. Sitra report series.

Research in Business Disciplines in Finland: Evaluation Report, Academy of Finland, 2005.

Sadlak, J. 2004. *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*, UNESCO/CEPES, 2004.

Scientific Research in Finland: A Review of its Quality and Impact in the Early 2000s, Academy of Finland, 2003.

WWW-references

Code of Practice for Postgraduate Research Programs, QAA, September, 2004: http://www.qaa.ac.uk/academicinfrastructure/codeOfPractice/section1/postgrad2004.pdf

National Report of Finland 2004–2005. http://www.bologna-bergen2005.no/EN/national_impl/00_Nat-rep-05/National_Reports-Finland_050110.pdf

Nordic Research Board (NordForsk) supports 72 active networks, covering all scientific disciplines: http://www.nordforsk.org/meny.cfm?m=137

Nordic Rresearch Training: Common Objectives for International Quality, Nordic University Association (NUS) and the Nordic Academy of Advanced Studies (NorFA, now Nordforsk), 2003: http://www.nifustep.no/norbal__1/nor/startside

APPENDIX 1:
Background readings for the steering group

In the selection of methods and relevant evaluation themes the following publications were consulted:

Readings for the steering group (Mainly in Finnish)

3.1 Altbach. P. G. 2004. Doctoral Education. Present Realities and Future Trends. College and University Journal. Vol. 80 NO.2. Fall 2004.

3.2 Karjalainen, S. 2004. Laatu ei ole huonontunut, mutta vaatimukset ovat kiristyneet. Kauppalehti – mielipide 7.9.2004, 18.

3.3 Karjalainen, S. 2004. Tohtorikoulutuksen väylät. OPM tiedepolitiikan yksikkö. Kaavio.

3.4 Kolmos, A. 2004. Training of your young researchers and core competencies. PP-presentation. Aalborg, Denmark 2004.

3.5 Makarow, M. 2004. Opetusministeriön ja yliopistojen johdon seminaari. Kommenttipuheenvuoro tutkimuksen laadusta. PP-esitys. Kuopio 2004.

3.6 Mikkonen, A. 2004. Tohtori-Suomi ampuu haulikolla. Älä roiski tutkimuspyhättöjäsi joka niemeen ja notkoon, tohtori-Suomi! Talouselämä 42/2004: 46–55.

3.7 Määrä ei korvaa laatua. Tohtoreita tulee kuin liukuhihnalta, mutta yrityksiä ne eivät kiinnosta. Tutkijankoulutusta on uudistettava. Pääkirjoitus. Kauppalehti. 27.8.2004.

3.8 Raivio, K. 2004. Tutkijankoulutus hakoteillä? Pääkirjoitus. Yliopistolehti 9/2004.

3.9 Seitsemäs valtakunnallinen tutkijakouluhaku. 22.10.2004. 146/528/2004.

3.10 Tohtoreille tarvetta ja töitä tulevaisuudessakin. Opetusministeriön verkkolehti - Etusivu 5.6.2003.

4.1 Poropudas, O. (toim.) 2004. Koulutus, tutkimus ja työllisyys. Valtion tiede- ja teknologianeuvosteolle laadittu seurantaraportti. Opetusministeriön julkaisuja 2004: 17.

4.2 Rantanen, J. 2004. Yliopistojen ja ammattikorkeakoulujen tutkimuksen rakenneselvitys. Opetusministeriön julkaisuja 2004:36

4.3 Tutkijakoulujen toiminta. Tarkastuskertomus 56/2003. Valtiontalouden tarkastusvirasto.

4.4 Tutkijakoulut. 2000. Toiminta, tulokset, tehokkuus. Opetusministeriön koulutus- ja tiedepolitiikan osasto.

Working readings

Aho, J. & Sakari, J.-P. (2002). Tohtorit työelämässä. Selvitys vuosina 1999–2001 Oulun yliopistosta valmistuneiden tohtoreiden sijoittumisesta työelämään. Työelämätietoa 2/2002, Oulu.

Ammatillinen koulutus 2010. Työvoiman tarve vuonna 2010 ja ammatillisen koulutuksen mitoitus. Opetushallitus. Helsinki. 1999.

Arasmo, A. (1998). Tohtoridoktriinilla tietoyhteiskuntaan. Turun yliopiston koulutussosiologian tutkimuskeskuksen raportti 44, Turku.

Auriol Laudeline, Sexton Jerry. Human Resources in Science and Technology: Measurement Issues and International Mobility. In: International Mobility of the Highly Skilled. OECD 2002. 13–38.

Barros, L. (1980). Selvitys jatkotutkintojen määrästä 1970-luvulla ja tarpeesta 1980-luvulla. Suomen Akatemian julkaisuja 14/80, Helsinki.
Biotechnology in Finland. Impact of Public Research Funding and Strategies for the Future (2002). Publications of the Academy of Finland 11/02, Helsinki.
Draft Final Project Report. Paris, 20–21 January 2003. Management of Human Resources. Report of the Sub-Group. 25–26.3.2003.
Employer Survey 2000. In: International Mobility of the Highly Skilled. OECD 2002.133–150.
EU (2002). More Research for Europe. Towards 3 % of GDP. Communication from the Commission, Brussels 11.9.2002. COM(2002) 499 final.
EU (2003). The role of the universities in the Europe of knowledge. Communication from the Commission. Brussels, CEC. COM (2003) 58 final.
EU (2003). Third European Report on Science & Technology Indicators 2003. Towards a Knowledge-based Economy. European Commision, Directorate-General for Research – Knowledge-based economy and society.
Guellec Dominique and Cervantes Mario. International Mobility of Highly Skilled Workers: From Statistical Analysis to Policy Formulation. In: International Mobility of the Highly Skilled. OECD 2002. 71–98.
Hämäläinen, U. (2003). Ylikoulutusta korkeakoulutettujen työmarkkinoilla? Palkansaajientutkimuslaitoksen tutkimuksia 87, Helsinki.
Human Resources in RTD (including attractiveness of S&T professions). Benchmarking
Husso, K. (2002). Tohtoreiden työllistyminen, sijoittuminen ja liikkuvuus työmarkkinoilla. Esitelmäpaperi Suomen Akatemian ja opetusministeriön järjestämään "Tutkijanuran haasteita ja mahdollisuuksia" -seminaariin. Suomen Akatemia, Helsinki 22.11.2002.
Key Figures 2002. Towards a European Research Area. Science, Technology and Innovation. European Commission.
Kota-tietokanta. http://www.csc.fi/kota/aihelista1.html
Koulutus ja tutkimus vuosina 1999–2004. Kehittämissuunnitelma 29.12.1999. Opetusministeriö, Helsinki.
National R&D Policies. Strata-Etan expert working group. June 2002.
OECD 2002. OECD Science, Technology and Industry Outlook 2002.
OECD 2003. OECD. Ad hoc Working Group "Steering and Funding of Research Institutions".
OECD Science, Technology and Industry Outlook. 2002.
Oppilaitostilastot 2002 (2003). Tilastokeskus Koulutus 2002:8, Helsinki.37
Osaaminen, innovaatiot ja kansainvälistyminen (2002). Valtion tiede- ja teknologianeuvosto, Helsinki.
Osaamistarveluotain. Rekrytointi jatkuu – riittääkö työvoima? (2002) Teollisuuden ja Työnantajain Keskusliitto, Koulutuspolitiikka.
Pimiä, M. (1989). *Tutkijankoulutuksen tarvearvio vuoteen 2000*. Suomen Akatemian julkaisuja 6/89, Helsinki.
Poropudas Olli. Tohtorit ja työmarkkinat. Muistio 22.8.2003.
Pulkkinen, M. (2001). *Helsingin yliopistossa tutkinnon suorittaneiden sijoittuminen työelämään syksyllä 2000*. Helsingin yliopiston rekrytointipalvelut, Helsinki.
Räty, T. (1983). Supply of and demand of PH.D's in universities. *Science Policy in Finland – Studies and Documents*. Publications of the Academy of Finland 6/1983, 13–28.
Ruse 1997. Kivinen Osmo, Lehti Hannu, Metsä-Tokila Timo. Tohtoroitumisen ilot ja kirot. Koulutussosiologian tutkimuskeskuksen raportteja 40. Turku. 1997.

Suomen Akatemia. Tohtoreiden työllistyminen, sijoittuminen ja tarve. Suomen Akatemian julkaisuja 4/03. 2003.
Tauriainen, J. (2002). *Selvitys Jyväskylän yliopistosta ajalla 1.1.1996–31.12.2000 valmistuneiden tohtorien sijoittumisesta työelämään*. Jyväskylän yliopisto: tutkimus- ja kehityspalvelut, Jyväskylä.
Tiainen, P. (2001). Työpaikkoja avautuu suurten ikäluokkien poistuessa eläkkeelle. Arvio 2010-luvun puoliväliin. *Työpoliittinen Aikakauskirja N:o 1*, s. 25–38.
TT:n tulevaisuusluotain. Osaamisintensiivinen Suomi 2012. Loppuraportti. (2003). Teollisuuden ja Työnantajain Keskusliitto, Koulutuspolitiikka.
TT:n tulevaisuusluotain. Osaamisintensiivinen Suomi 2012. Väliraportti (2002). Teollisuuden ja Työnantajain Keskusliitto, Koulutuspolitiikka.
Tutkijakoulut 2000. Toiminta, tulokset ja tehokkuus. Opetusministeriö. Koulutus- ja tiedepolitiikan osasto, Helsinki.
Tutkijanuran kehittämistyöryhmän muistio (1997). *Opetusministeriön työryhmien muistioita 5:1997*.
Tutkimus tohtoritarpeesta Suomessa 1997. Taloustutkimus Oy.
Tutkimus tohtoritarpeesta Suomessa 2002. Taloustutkimus Oy.
Työpoliittinen tutkimus. 184 Työministeriö. ESR. Helsinki. 1998.
Työvoima 2017. Paranevaan työllisyyteen ja hyvinvointiin uuden vuosisadan alkaessa. Väliraportti.
Työvoima 2020. Osaamisen ja täystyöllisyyden Suomi. Loppuraportti. Työpoliittinen tutkimus. 245. Työministeriö. Helsinki. 2003.
Työvoima 2020. Osaamisen ja täystyöllisyyden Suomi. Työministeriö 2002.
Välimaa, J. (1998; toim.). *Tohtori tuli taloon? Tutkimus tohtoreista ja pk-yrityksistä*. Jyväskylän yliopisto. Koulutuksen tutkimuslaitos, Jyväskylä
Valtion tiede- ja teknologianeuvosto. Osaaminen, innovaatiot ja kansainvälistyminen. Helsinki. 2003.
Varautuminen suurten ikäluokkien aiheuttamaan työmarkkinamuutokseen (2003). Työhallinnon julkaisu no 320. Työministeriö, Helsinki.
Virtaharju M. Korkeasti koulutetun väestön liikkuvuus. Tilastokeskus. Tiede, teknologia ja tutkimus 2002:1.
Winkelmann R. Why Do Firms RecruitInternationally? Results from the IZA International

Statistics

OECD. Education Statistics and Indicators.
Opetusministeriö. Amkota-tietokanta.
Opetusministeriö. Kota-tietokanta.
Tilastokeskus. Altika.
Tilastokeskus. Sijoittumispalvelu.
Tilastokeskus. Tutkimus- ja kehittämistoiminta.
Tilastokeskus. Työssäkäyntitilasto
Tilastokeskus. Työvoimatutkimus.
Tilastokeskus. Väestölaskennat.
Tilastokeskus. Väestötilasto.
Tutkimus- ja kehittämistoiminta 1991. Tilastokeskus, Tiede ja teknologia 1993:1.
Tutkimus- ja kehittämistoiminta 2001. http://www.stat.fi/tk/yr/ttt_k0.html. Tilastokeskus.
Työministeriö. Työnvälitystilasto.

APPENDIX 2: Documents which were available for the external evaluation team

1. Background readings

COMMISSION RECOMMENDATION of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers. Official Journal of the European Union L 75/67.

Doctoral studies and the Synergy between Education and Research. Sigi Gruber: Doctoral Studies and the Synergy between Higher Education and Research. Presentation in Bergen 5/2005.

Doctoral studies and the Synergy between Education and Research. Debra W. Stewart: The U.S. Ph.D. In a "Flat" World Challenge and Response to the Established Paradigm. Presentation in Bergen 5/2005.

Doctoral studies and the Synergy between Education and Research. Sybille Reichert: Doctoral Studies and the Synergy between Higher Education and Research. Presentation in Bergen 5/2005.

Finland's competence, openness and renewability. Summary of the final report of the 'Finland in the Global Economy' project. 1 December 2004. Prime Minister's office.

Management and Steering of Higher Education in Finland. Publications of the Ministry of Education, Finland 2004:20.

PhDs in Finland: Employment, Placement and Demand. Publications of the Academy of Finland 5/03.

Puustinen-Hopper, K. 2005. Mobile Minds. Survey of foreign PhD students and researchers in Finland. Publications of Academy of Finland 1/05.

Rantanen, J. 2004. Review of the structure of university and polytechnic research. One-person committee: Jorma Rantanen. Summary.

Research in Business Disciplines in Finland. Evaluation Report. 2005. Publications of the Academy of Finland 2/05.

Scientific research in Finland. 2003. A Review of Its Quality and Impact in the Early 2000s. Publications of the Academy of Finland 10/03.

Scientific research in Finland. 2003. Summary. Academy of Finland.

The European Higher Education Area – Achieving the Goals. Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen 19–20 May 2005.

Tutkijakoulujen toiminta. 2003 Tarkastuskertomus 56/2003. Valtiontalouden tarkastusvirasto. Abstract Dno: 284/54/02

Universities 2003. Annual Report. Ministry of Education, Finland.

Universities 2004. Annual Report. Ministry of Education publications 2005:13. Department for Education and Science Policy. 2005.

Documents about Bologna-Bergen process: http:www.bologna-bergen2005.no/

2. Project Plan, May 2005

3. Vice-rector survey, September2005

4. Student survey. Report on qualitative data, September 2005

Controversial Academic Freedom. Evaluation of doctoral education in Finland. Student survey: Report on qualitative data analysis done by researcher Pia Vuolanto. July 2005. FINHEEC and Tampere University Group of Science, Technology and Innovation Studies TaSTI.

5. Student survey. Quantitative data: frequency distributions

6. Self-evaluation reports were published in the web-pages

http://www.kka.fi/projektit etusivu.lasso?cont=projtiedote.lasso&id=895&nimi=Tohtorikoulutuksen%20arviointi%202004%20-%202005

Web-links which were available during the evaluation are underlined.

1. University of Helsinki

1.1 Helsinki Graduate School in Biotechnology and Molecular Biology
Self-evaluation report
1.2 Gender System Graduate School
Self-evaluation report
GENERAL INFORMATION
Gender System Graduate School
Students – only in Finnish
Dissertation Theses
1.3 The Finnish Graduate School for Russia and East-European Studies
Self-evaluation report

2. University of Joensuu

2.1 Inorganic Materials Chemistry Graduate Program – professor Tapani Pakkanen
Self-evaluation report
2.2 National Graduate School in Language Studies – LANGNET – professor Markku Filppula
Self-evaluation report
GENERAL INFORMATION
LANGNET Main page

3. University of Kuopio

3.1 A.I.Virtanen Institute Graduate School
Self-evaluation report
GENERAL INFORMATION
Main Page – NEWS – link to Self-evaluation pdf-file
3.2 Graduate school in Environmental Health – SYTYKE
Self-evaluation report

4. University of Lapland

4.1 The Centre for Research Education at the University of Lapland
Self-evaluation report

5. University of Oulu

5.1 Biocenter Graduate School
Self-evaluation report
5.2 Infotech Oulu Graduate School
Self-evaluation report
5.3 Graduate School of Circumpolar Wellbeing, Health and Adaption
Self-evaluation report
5.4 Graduate School of Culture and Interaction
Self-evaluation report
5.5 Clinical and epidemiological graduate school of Oulu
Self-evaluation report

6. Swedish School of Economics

6.1 The Doctoral Studies Program in Management and Organization at HANKEN
Self-evaluation report

7. University of Art and Design Helsinki

7.1 Interaction in Photography Art and Research
Self-evaluation report
7.2 User Centred Design Research
Self-evaluation report

8. Tampere University of Technology

8.1 Tampere University of Technology, Graduate School – TUT GS
Self-evaluation report

9. University of Tampere

9.1 Tampere Graduate Centre for Social Sciences – TAMCESS
Self-evaluation report
GENERAL INFORMATION
TAMCESS
9.2 Finnish Graduate School of History
Self-evaluation report

10. Helsinki University of Technology

10.1 Graduate School in Electronics, Telecommunications and Automation – GETA
Self-evaluation report
10.2 International Ph.D. Programme in Pulp and Paper Science and Technology, PaPSaT
Self-evaluation report
GENERAL INFORMATION
PaPSaT

11. University of Turku

11.1 Turku Postgraduate School of Health Sciences – PGS
Self-evaluation report

12. Åbo Akademi University

12.1 Graduate school in Human Rights Research
Self-evaluation report
GENERAL INFORMATION
Research training
12.2 Graduate School in Chemical Engineering
Self-evaluation report
12.3 Turku Centre for Computer Science
Self-evaluation report
GENERAL INFORMATION
TUCS Main page
TUCS Graduate School

APPENDIX 3:
Graduate schools that were interviewed in the evaluation (25)

Marked* graduate schools are funded by the Ministry of Education. After the agreement years, the funded student positions are mentioned in numbers.

1. University of Helsinki

1.1 *Helsinki Graduate School in Biotechnology and Molecular Biology
2003–2006: 28
2006–2009: 13
2003–2006: coordinator
1.2 *Gender System Graduate School
2003–2006: 6
1.3 *The Finnish Graduate School for Russia and East-European Studies
2003–2006: 2
2006–2009: 9
2003–2006: coordinator

2. University of Joensuu

2.1*Inorganic Materials Chemistry Graduate Program – professor Tapani Pakkanen
2003–2006: 17
2006–2009: 7
2003–2006: coordinator
2.2 *National Graduate School in Language Studies – LANGNET–
professor Markku Filppula
2003–2006: 30
2006–2009: 4
2003–2006: coordinator

3. University of Kuopio

3.1 *A.I.Virtanen Institute Graduate School
2003–2006: 18
3.2 *Graduate school in Environmental Health – SYTYKE
2006–2009: 5

4. University of Lapland

4.1 The Centre for Research Education at the University of Lapland

5. University of Oulu

5.1 *Biocenter Graduate School
2003–2006: 20
2006–2009: 10
2003–2006: coordinator

5.2 *Infotech Oulu Graduate School
2003–2006: 20
2006–2009: 10
2003–2006: coordinator
5.3 *Graduate School of Circumpolar Wellbeing, Health and Adaption
5.4 Graduate School of Culture and Interaction
5.5 Clinical and epidemiological graduate school of Oulu

6. Swedish School of Economics

6.1 The Doctoral Studies Program in Management and Organization at HANKEN

7. University of Art and Design Helsinki

7.1 Interaction in Photography Art and Research
7.2 User Centred Design Research

8. Tampere University of Technology

8.1 Tampere University of Technology, Graduate School – TUT GS

9. University of Tampere

9.1 Tampere Graduate Centre for Social Sciences – TAMCESS
9.2 *Finnish Graduate School of History
2003–2006: 8

10. Helsinki University of Technology

10.1 *Graduate School in Electronics, Telecommunications and Automation – GETA
2003–2006: 46
2006–2009: 25
2006–2090: coordinator
10.2 *International Ph.D. Programme in Pulp and Paper Science and Technology, PaPSaT
2003–2006: 15

11. University of Turku

11.1 Turku Postgraduate School of Health Sciences – PGS

12. Åbo Akademi University

12.1 *Graduate school in Human Rights Research
2006–2009: 7
12.2 *Graduate School in Chemical Engineering
2003–2006: 30
2006: coordinator
2.3 *Turku Centre for Computer Science
2003–2006: 13
2006–2009: 15

APPENDIX 4:
Interviews

The evaluation team worked on Friday and on Monday in two groups:

A. D.D. Dill, T. Mäkelä, A. Parpala and M. Ritter

B. S.K. Mitra, H.S. Jensen, E. Lehtinen and H. Pohjola

THURSDAY 22.9.	
1.1 Helsinki Graduate School in Biotechnology and Molecular Biology Professor Pekka Lappalainen Coordinator Erkki Raulo	Th 22.9.: 13:30–14:45
2.2 National Graduate School in Language Studies – LANGNET– professor Markku Filppula Professor Markku Filppula Professor Pirkko Nuolijärvi Doctoral student Irina Kauhanen	Th 22.9.: 13:30–14:45
12.3 Turku Centre for Computer Science Administrative Officer Venja Lehtikari Professor, Vice Director Tapio Salakoski	Th 22.9.: 13.30–14.45
5.1 Biocenter Graduate School Coordinator Pekka Kilpeläinen PhD Senior Technology Advisor Maritta Perälä-Heape, TEKES Doctoral student Marco Casteleijn	Th 22.9.: 15:00–16:15
5.2 Infotech Oulu Graduate School Dr. Tapio Repo, coordinator Doctoral student Markus Turtinen	Th 22.9.: 15:00–16:15
12.1 Graduate school in Human Rights Research Doctoral student Pamela Slotte	Th 22.9.: 15:00–16:15
5.4 Graduate School of Culture and Interaction Chair of GS Steering group Olavi K. Fält Professor Anthony Johnson Doctoral student Maarit Niemelä Ph.D. Inkeri Leiber, Oulu Polytechnic	Th 22.9.: 16:30–17:30

FRIDAY 23.9.	
1.3 The Finnish Graduate School for Russia and East-European Studies Coordinator Ira Jänis-Isokangas Docent Sari Autio-Sarasmo Docent Markku Kangaspuro Doctoral student Mikko Palonkorpi Doctoral student Hanna Smith	Fri 23.9.: 9:15–10:30
5.3 Graduate School of Circumpolar Wellbeing, Health and Adaption Research professor Juhani Hassi Coordinator Hannele Säkkinen Ph.Lic, Doctoral student Tiina Mäkinen Professor Maija Leinonen, KTL	Fri 23.9.: 9:15–10:30
10.2 International Ph.D. Programme in Pulp and Paper Science and Technology, PaPSaT Professor Hannu Paulapuro Coordinator Sari Kärkkäinen	Fri 23.9.: 10:45–12:00
11.1 Turku Postgraduate School of Health Sciences (PGS) Professor Olli Lassila MD, Director of Clinical Research Janne Komi, Hormos Medical Doctoral student, Lic. Med. Jenni Jalkanen	Fri 23.9.: 10:45–12:00
3.2 Graduate school in Environmental Health – SYTYKE Professor Jukka Juutilainen Doctoral student Hanna Miettinen Professor Kai Savolainen, Finnish Institution of Occupational Health	Fri 23.9.: 13:00–14:15
5.5 Clinical and epidemiological graduate school of Oulu Professor Matti Uhari Doctoral student Anina Raitio Professor Juha Tapanainen	Fri 23.9.: 13:00–14:15
9.1 Tampere Graduate Centre for Social Sciences TAMCESS Director of Education Marja Jukola–Ah- Doctoral student Tapio Häyhtiö Doctoral student Karina Horsti	Fri 23.9.: 14:30–15:45
12.1 Graduate school in Human Rights Research Director, Unit for Human Rights Policy Johanna Suurpää, Ministry for Foreign Affairs	Fri 23.9.: 14:30–15:45
3.1 A.I. Virtanen Institute Graduate School Dean, professor Jari Koistinaho Docent Riitta Keinänen Professor Asla Pitkänen Doctoral student Tarja Malm Ph.D. Research manager Juha Yrjänheikki, Cerebricon Oy	Fri 23.9.: 14:30–15:45
10.1 Graduate School in Electronics, Telecommunications and Automation – GETA Professor Iiro Hartimo Doctoral student Aleksi Penttinen Heikki Saikkonen, Nokia Oyj	Fri 23.9.: 14:30–15:45

MONDAY 26.9.	
1.2 Gender System Graduate School Dean Aili Nenola Doctoral student Maija Urponen	Mo 26.9.: 9:15–10:30
12.1 (23) Graduate school in Human Rights Research Professor Martin Scheinin	Mo 26.9.:9:15–10:30
9.2 Finnish Graduate School of History Professor Pertti Haapala Coordinator Tapio Salminen Doctoral student Jouko Nurmiainen	Mo 26.9.:9:15–10:30
7.1 Interaction in Photography Art and Research Professor Kristoffer Albrect Phil.Lic Asko Mäkelä, The Finnish Museum of Photography	Mo 26.9.:10:45–12:00
4.1. The Centre for Research Education at the University of Lapland Professor Suvi Ronkainen Doctoral student Heikki Huilaja	Mo 26.9.: 10:45–12:00
7.2 User Centred Design Research Professor Turkka Keinonen Doctoral student Sonja Iltanen Panu Korhonen, Nokia Oy	Mo 26.9.: 10:45–12:00
8.1 Tampere University of Technology, Graduate School – TUT GS Professor Kari T. Koskinen Professor Matti Wilenius Doctoral student, researcher Timo Leino Technology Manager Matti Kleimola, Wärtsilä Oyj	Mo 26.9.:1 0:45–12:00
6.1 The Doctoral Studies Program in Management and Organization at HANKEN Professor Ingmar Björkman Doctoral student Joanna Sinclair Managing Director Kaj Åkerberg, Mercuri International	Mo 26.9.: 14:30–16:00
12.2 Graduate School in Chemical Engineering Docent Bengt-Johan Skrifvars Doctoral student Mischa Teis Doctoral student Johan Werkelin	Mo 26.9.:1430–16:00
2.1 Inorganic Materials Chemistry Graduate Program – professor Tapani Pakkanen Professor Tapani Pakkanen Ph.D. Toni Kinnunen, Ecocat Oy Doctoral student Antti Karttunen	Mo 26.9.: 15:00–16:00
Director Sakari Karjalainen, Ministry of Education, Division of Science Policy Director Markku Mattila, Ministry of Education, Division of University Unit	Mo 26.9.: 16:30–17:00

APPENDIX 5:
Student questionnaire

Please fill in each question and subquestion before proceeding to the next one. Please choose only one option unless indicated otherwise.

At first, a few general questions about your background and doctoral studies.

University at which you are enrolled as a doctoral student

- ☐ Academy of Fine Arts
- ☐ Helsinki School of Economics
- ☐ Helsinki University of Technology
- ☐ Lappeenranta University of Technology
- ☐ Sibelius Academy
- ☐ Swedish School of Economics
- ☐ Tampere University of Technology
- ☐ Theatre Academy of Finland
- ☐ Turku School of Economics and Business Administration
- ☐ University of Art and Design Helsinki
- ☐ University of Helsinki
- ☐ University of Joensuu
- ☐ University of Jyväskylä
- ☐ University of Kuopio
- ☐ University of Lapland
- ☐ University of Oulu
- ☐ University of Tampere
- ☐ University of Turku
- ☐ University of Vaasa
- ☐ Åbo Akademi University
- ☐ other, what _____

To what subject field does your thesis belong?

- ☐ Agriculture and forestry
- ☐ Art and design
- ☐ Dentistry
- ☐ Economics and business administration
- ☐ Educational sciences
- ☐ Engineering and architecture
- ☐ Fine arts
- ☐ Health sciences
- ☐ Humanities
- ☐ Law
- ☐ Medicine
- ☐ Music
- ☐ Natural sciences
- ☐ Nursing sciences
- ☐ Pharmacy
- ☐ Psychology
- ☐ Social sciences
- ☐ Sport sciences
- ☐ Theatre and dance
- ☐ Theology
- ☐ Veterinary medicine
- ☐ other, what _____

1. When did you begin your doctoral studies? Please write down the year in four digits.

☐ less than a year ago ☐ year ☐☐☐☐

2. Were you enrolled as a doctoral student during the autumn term of 2004?

- ☐ yes
- ☐ no, I have been awarded a doctorate
- ☐ no, I have been awarded a licentiate degree
- ☐ no, I have given up doctoral studies
- ☐ no, I have taken time off for some other reason

3. Your gender

☐ female ☐ male

4. Your age ☐☐

5. Your nationality

- ☐ Finnish
- ☐ other, what _____

6. What category best describes your doctoral studies? (regardless of your funding)

- a doctoral student at a graduate school funded by the Ministry of Education ☐
- a doctoral student at a graduate school or doctoral program provided by your own university or some other institution ☐
- a doctoral student outside structured programs ☐

7. How actively did you pursue doctoral studies during the autumn term of 2004 (as a percentage of a full-time post)?

0-9% ☐ 10-40% ☐ 41-60% ☐ 61-80% ☐ 81-100% ☐

8. During the autumn term of 2004, how many hours each week did you devote to your doctoral studies on average? Include here hours spent on research and study related to doctor's degree.

< 5 ☐ 5-9 ☐ 10-19 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ ≥ 60 ☐

9. During the autumn term of 2004, how many hours did you work each week on average? Include here all hours related to BOTH your doctoral studies, administration, project work etc. within the university AND other work such as part- or full-time work elsewhere.

< 5 ☐ 5-9 ☐ 10-19 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ ≥ 60 ☐

10. By the end of the autumn term of 2004 how large a proportion of your doctoral studies would you estimate that you had completed?

20% ≥ ☐ 21-40% ☐ 41-60% ☐ 61-80% ☐ > 80% ☐

If you are a full-time doctoral student, please answer the following question. Otherwise, go directly to question 12.

11. During the autumn term 2004, to which of the following activities did you devote most of your daily working hours?

- for thesis work ☐
- for doctoral studies other than thesis work ☐
- for something else at your department (e.g. teaching) or administrative duties ☐
- divided evenly ☐
- don't know ☐

12. What was your primary reason for undertaking doctoral studies? Please choose only one option.

- interest in the subject ☐
- to prepare for a career in teaching or research at university ☐
- to prepare for a career in teaching or research at polytechnic ☐
- to prepare for a career in research outside higher education ☐
- to prepare for some other professional career ☐
- encouragement by your professor/ supervisor ☐
- natural continuation of your studies/ career ☐
- bad employment situation ☐
- other, what _____ ☐

13. What degree did you have when you began doctoral studies? Please write down also the year of graduation in four digits.

- bachelor's degree ☐
- master's degree ☐
- licentiate ☐
- licentiate in medicine, veterinary medicine or dentistry ☐
- other, what _____ ☐

year of graduation ☐☐☐☐

14. What did you do prior to the enrolment as a doctoral student? Please choose only one option.

- I was a student
- I had a post or worked in a research project at the university
- I worked in a research project funded by the Academy of Finland
- I worked in a research project funded by Tekes
- I worked at a research institute outside university
- I did some other work than research
  - in teaching
  - in industry or business
  - in public administration
  - by employing myself (e.g. in my own company)
- I was a trainee (e.g. in EU)
- I took care of my child/children at home
- I was unemployed
- I did something else, what

_____

If you are a doctoral student in medicine, veterinary medicine or dentistry, please go directly to question 16.

15. Are you going to take a licentiate degree?

yes ☐ no ☐ I already have it ☐ don't know ☐

16. In which year do you expect to submit your doctoral thesis? Please write down the year in four digits.

year ☐☐☐☐ don't know ☐

17. To what extent is the following true about the support, prior information and introduction you were given before your doctoral studies?

	very little/ not at all	not much	a great deal	to a very great extent
a) teachers in your undergraduate studies gave you support and encouraged you to go on with doctoral studies	☐	☐	☐	☐
b) the prior information about doctoral studies was satisfactory	☐	☐	☐	☐
c) the department's introduction for newly enrolled doctoral students was satisfactory	☐	☐	☐	☐
) you were adequately informed about your rights and obligationsas as doctoral student	☐	☐	☐	☐
e) the requirements for enrolment as a doctoral student were clear	☐	☐	☐	☐

Financing

18. Who has the main responsibility for finding funding for your doctoral studies?

- mainly myself
- mainly my supervisor
- my supervisor and myself together

19. What was your principal source of income during the autumn term of 2004? Please choose only one option.

- doctoral student place funded by the Ministry of Education (so called *tutkijaopiskelijapaikka*)
- a post at the university
- research funding by the Academy of Finland
- research funding by Tekes
- funding by a research institute outside university
- a scholarship by a university
- a scholarship by a foundation
- international scholarship (e.g. Fulbright)
- funding by industry or business
- EU-funding
- some other paid work of your own
- some other form of funding, what

_____

20. Were you satisfied with this source of income during the autumn term of 2004?

yes ☐ no ☐

21. Have you been satisfied with your source(s) of income in the course of your doctoral studies?

yes ☐ no ☐

If you have been satisfied with your source(s) of income in the course of your doctoral studies, please go directly to question 23.

22. If you haven't been satisfied with your source(s) of income in the course of your doctoral studies, is this due to...

You may choose more than one option.

low wage level ☐
fragmentary funding (rahoituksen pätkittäisyys) ☐
some other reason ☐
I haven't had funding ☐

23. In all, how many months of your doctoral studies have been and/or will be funded? With respect to the future, please count only those months you know for sure.

☐☐

Courses and thesis work

24. How many study weeks/credits are included in your doctoral degree for studies other than thesis work?

20 ≤ ☐ 21–40 ☐ 41–60 ☐ > 60 ☐
don't know ☐

25. To what extent have you participated in the courses, seminars or other activities organized by graduate school(s) in the course of your doctoral studies?

very little/ not at all	not very much	a great deal	to a very great extent
☐	☐	☐	☐

26. How well do the following statements describe the courses in your doctoral program?

	very little/ not at all	not much	a great deal	to a very great extent
a) the quality of the courses is consistently high	☐	☐	☐	☐
b) the balance between the study weeks/credits for course work and my thesis is a good one	☐	☐	☐	☐
c) the courses are relevant to the work I am doing on my thesis	☐	☐	☐	☐
d) the courses offered fit in with my wishes and needs	☐	☐	☐	☐
e) research ethics have been dealt with in courses and seminars	☐	☐	☐	☐

27. How did you select the subject of your thesis?

mainly on my own ☐
a proposal from my department or supervisor ☐
a proposal from outside university, e.g. from a company ☐
I have not yet selected a subject ☐

28. How are you working on your thesis?

mainly on my own ☐
as much on my own as in a research team ☐
mainly in a research team ☐

29. In what language are you writing your thesis? You may choose more than one option.

Finnish ☐ Swedish ☐ English ☐ other ☐

30. What type of thesis do you intend to submit?

monograph ☐ collection of articles ☐

Supervision

31. Do you have a principal supervisor?

yes, female ☐ yes, male ☐ no ☐

32. Do you have one or more assistant supervisors or members in your supervising group (in addition to your principal supervisor)?

yes, only female ☐
yes, only male ☐
yes, female and male ☐
no – go directly to question 34 ☐
In all, how many? ☐

33. Do your assistant supervisor(s) or members in your supervising group (other than your principal supervisor) come from You may choose more than one option.

your own department ☐
another department at your university ☐
another university or institution in Finland ☐
abroad ☐

34. Have you switched your supervisor(s)?

yes, at my own request ☐
yes, for some other reason ☐
no ☐

35. Who, in practice, provides most of your supervision?

principal supervisor ☐
assistant supervisor(s) or members in my supervising group ☐
someone else, who _____ ☐

36. Give an estimate of the number of hours of supervision you have been given during the autumn term of 2004.

0 ☐ 1–5 ☐ 6–10 ☐ 11–15 ☐ 16–20 ☐ > 20 ☐

37. To what extent has your supervisor(s):

	very little/ not at all	not much	a great deal	to a very great extent
a) displayed interest in your postgraduate studies	☐	☐	☐	☐
b) discussed methodological issues with you	☐	☐	☐	☐
c) discussed theory with you	☐	☐	☐	☐
d) provided constructive criticism of your research	☐	☐	☐	☐
e) discussed your plans for the future with you	☐	☐	☐	☐
f) discussed research ethics with you	☐	☐	☐	☐

38. Has there been any follow up of your individual study plan/research plan during 2004?

yes, I am satisfied with the follow up ☐
yes, but I am not satisfied with the follow up ☐
no ☐
I do not have an individual study/research plan ☐
don't know ☐

39. To what extent during 2004 in the course of your doctoral studies have you

	very little/ not at all	not much	a great deal	to a very great extent
a) worked as independently as you wanted to	☐	☐	☐	☐
b) been provided with as much supervision as you wanted	☐	☐	☐	☐
c) found yourself in a situation of dependence on your supervisor which made you feel uncomfortable	☐	☐	☐	☐
d) experienced shortcomings in your supervision that have hampered your research	☐	☐	☐	☐
e) seriously considered switching supervisors	☐	☐	☐	☐
f) had the opportunity to take part in general discussions about your subject area with your supervisor and other researchers	☐	☐	☐	☐

Research/study environment

40. Have you had access to a workplace of your own at your department, including computer, printing and copying facilities?

yes ☐ some of the time ☐ no ☐

41. To what extent during 2004 in the course of your doctoral studies have you

	very little/ not at all	not much	a great deal	to a very great extent
a) experienced your doctoral studies as positive and stimulating	☐	☐	☐	☐
b) experienced unacceptable pressure and stress	☐	☐	☐	☐
c) experienced the environment in your department as creative	☐	☐	☐	☐
d) felt that you were an accepted member of the research collective	☐	☐	☐	☐
e) had the feeling that you could exert influence in your department	☐	☐	☐	☐
f) felt that doctoral studies involve demands that are not proportionate to the length of the program	☐	☐	☐	☐

42. In the context of your doctoral studies, have you identified yourself as

a (doctoral) student ☐
an early stage researcher ☐
a professional researcher ☐
don't know ☐

43. Have you experienced discrimination because of your gender?

a) by other doctoral students

not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ to a very great extent

b) by teachers in the courses you have attended

not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ to a very great extent

c) by supervisors

not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ to a very great extent

d) by administrative staff

not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ to a very great extent

44. In the course of your doctoral studies have you spent some period of time studying at another institution?

a) in Finland ☐☐ months
b) abroad ☐☐ months
c) no

45. In the course of your doctoral studies have you done research in cooperation with other researchers or research groups?

a) in Finland

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

b) abroad

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

c) with companies or funding organizations

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

Professional development

46. During 2004 have you been involved in any of the following activities?

	yes	no
a) participation in one or more national conferences relevant to your postgraduate studies	☐	☐
b) participation in one or more international conferences relevant to your postgraduate studies	☐	☐
c) presentation of your research in a context which will make it more accessible for the general public	☐	☐
d) presentation of your research through publication or at conferences	☐	☐
e) submission of your research at some form of seminar at your department	☐	☐

47. To what extent have your doctoral studies involved

	very little/ not at all	not much	a great deal	to a very great extent
a) broadening your genera education	☐	☐	☐	☐
b) acquiring greater understanding of people from another cultural or ethnic background	☐	☐	☐	☐
c) reflection over your own values	☐	☐	☐	☐
d) involvement in the development of society	☐	☐	☐	☐
e) greater understanding of social and cultural differences based on gender	☐	☐	☐	☐
f) acquiring knowledge of scientific or scholarly methodology	☐	☐	☐	☐
g) acquiring knowledge of scientific theories	☐	☐	☐	☐
h) acquiring the ability to carry out your own research independently	☐	☐	☐	☐
i) acquiring knowledge about methods and theories usedin other fields	☐	☐	☐	☐
j) acquiring deeper insights into research ethics	☐	☐	☐	☐

48. To what extent have you acquired skills/competencies in the following fields in the course of your doctoral studies?

	very little/ not at all	not much	a great deal	to a very great extent
a) an increased ability to write in a clear and comprehensible way	☐	☐	☐	☐
b) greater ability to present your material orally in a clear and comprehensible way	☐	☐	☐	☐
c) ability to approach scientific questions systematically	☐	☐	☐	☐
d) ability to develop strategies by combining various perspectives	☐	☐	☐	☐
e) international cooperation	☐	☐	☐	☐
f) networking	☐	☐	☐	☐
g) language skills	☐	☐	☐	☐
h) teamwork	☐	☐	☐	☐
i) project work	☐	☐	☐	☐
j) leadership and managerial skills	☐	☐	☐	☐
k) public administration	☐	☐	☐	☐
l) elaborating innovative solutions	☐	☐	☐	☐
m) entrepreneurship	☐	☐	☐	☐

Finally, some questions about employability.

49. Do you want to have a career in research when you have your doctorate?

definitely not ☐ probably not ☐ probably ☐ definitely ☐

50. Do you want to have a professional career other than research when you have your doctorate?

a) in the field of teaching
definitely not ☐ probably not ☐ probably ☐ definitely ☐
b) in managerial or consulting positions in industry or business
definitely not ☐ probably not ☐ probably ☐ definitely ☐
c) in public administration or service
definitely not ☐ probably not ☐ probably ☐ definitely ☐
d) as an entrepreneur (employing yourself e.g. by establishing a company of your own)
definitely not ☐ probably not ☐ probably ☐ definitely ☐

51. Does your department provide support for a continued career in research?

yes ☐ no ☐ the question has not arisen ☐

52. Do you worry about being unemployed when your doctoral studies are completed?

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

53. Does your doctoral program, in your opinion, prepare you sufficiently

a) for an academic career in the scientific community

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

b) for a professional career in industry, business, administration etc.

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

c) for entrepreneurship

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

54. If you had to choose again would you still choose to begin doctoral studies?

definitely not ☐ probably not ☐ probably ☐ definitely ☐

55. What overall grade would you give your doctoral program or doctoral education provided by your university/ institution so far?

very bad ☐ bad ☐ good ☐ excellent ☐

If there are other aspects of doctoral education or if you have specific positive or negative experiences that you would like to tell us about please use the space below:

_____
_____
_____
_____
_____
_____

To what extent did you experience technical difficulties in filling in the questionnaire?

very little/ not at all	not much	a great deal	to a very great extent
☐	☐	☐	☐

International Mirror for Postgraduate Students

THANK YOU FOR PARTICIPATING!

TIIVISTELMÄ

Julkaisija
Korkeakoulujen arviointineuvosto

Julkaisun nimi
PhD Training and the Knowlege-Based Society: An Evaluation of Doctoral Education in Finland (Tohtorikoulutus ja tietointensiivinen yhteiskunta: Suomalaisen tohtorikoulutuksen arviointi)

Tekijät
David D. Dill, Sanjit K. Mitra, Hans Siggaard Jensen, Erno Lehtinen, Tomi Mäkelä, Anna Parpala, Hannele Pohjola, Mary A. Ritter & Seppo Saari

Tiivistelmä
Arvioinnin tavoitteena oli tuottaa näyttöperusteista tietoa tohtorikoulutuksen nykytilasta osoittamalla sen vahvuudet ja kehittämishaasteet. Arvioinnin lähtökohtana oli tohtorikoulutuksessa sovellettujen hyvien käytäntöjen tunnistaminen ja suositusten tuottaminen koulutuksen ja koko tohtorikoulutusjärjestelmän parantamiseksi. Arviointiin osallistui tohtorikouluja ja tutkijakouluja lähes kaikista yliopistoista. Arviointiryhmä koostui viidestä kansainvälisestä ja kolmesta kotimaisesta arvioitsijasta. Arviointiryhmällä oli käytettävissään tausta-aineistona vararehtorikysely, opiskelijakysely ja arviointiin osallistuvien koulutusten (25) itsearviointiraportit sekä muuta kirjallista aineistoa. Tohtorikoulutusjärjestelmästä oli taustaksi saatavilla useita Suomen Akatemian ja OPM:n tuottamia raportteja.

Arviointiryhmä haastatteli 77 henkilöä, jotka edustivat yliopistojen henkilökuntaa, opiskelijoita, työelämää ja opetusministeriötä.

Arvioinnissa tuli esille monia hyviä käytänteitä, joita tohtorikoulutuksessa on toteutettu.

Arvioinnin mukaan oli havaittavissa korkean laadun ja tuloksellisuuden selvä yhteys niissä tohtorikouluissa, joissa oli tarjolla selkeää informaatiota, kurssiaineistoja, rekrytointi-aineistoa, raportteja vuosittaisista konferensseista sekä informatiivisia webbisivuja. Niiden taustalla on todennäköisesti yhteisinä tekijöinä vahva ja vakavarainen tutkimuskapasiteetti, kokenut johtajuus ja toiminnan edellyttämät hyvät resurssit. Arvioinnissa ilmeni, että ne tohtorikoulutukset, joilla oli vahva johtaja, toimivat myös tehokkaasti. Ne tohtorikoulutukset, joilla oli selkeästi ilmaistu tarkoitus ja selvästi määritelty ”visio, missio ja identiteetti”, toimivat paremmin kuin ne, joilta nämä puuttuivat. Tohtorikoulutukset tuottivat selvästi uusia tutkimusmuotoja ja tutkimusympäristöjä (esim. aluetutkimus).

Arvioinnin pääsuositukset:

1. Jatkaa tutkijakoulujärjestelmää, mutta uusia sitä samalla
2. Kehittää yliopistonlaajuisten tohtorikoulutusten laadunvarmistusta kaikissa yliopistoissa
3. Kehittää yhteiset menettelyohjeet tohtorikoulutuksille; toteuttaa kansainvälistä vertaisarviointia
4. Maksimoida neljän vuoden rahoitus; luoda kansallisia tutkijantoimia
5. Tunnistaa passiivisten opiskelijoiden ongelmat ja korjata tilannetta
6. Lisätä tohtorikoulutusjärjestelmän kansainvälistymistä.

Avainsanat
Arviointi, evaluaatio, tohtorikoulutus, tutkijakoulu, graduate school, suomalainen yliopisto

SAMMANDRAG

Utgivare
Rådet för utvärdering av högskolorna

Publikation
PhD Training and the Knowlege-Based Society: An Evaluation of Doctoral Education in Finland (Doktorsutbildning och det informationsorienterade samhället: Utvärdering av doktorsutbildningen i Finland)

Författare
David D. Dill, Sanjit K. Mitra, Hans Siggaard Jensen, Erno Lehtinen, Tomi Mäkelä, Anna Parpala, Hannele Pohjola, Mary A. Ritter & Seppo Saari

Sammandrag
Syftet med utvärderingen var att producera en evidensbaserad översikt över nuläget inom doktorsutbildningen genom att visa på dess styrkor och utmaningarna för utvecklingen. Utgångspunkten för utvärderingen var att identifiera god praxis som tillämpas inom doktorsutbildningen och att utforma rekommendationer för att förbättra utbildningen och hela systemet för doktorsutbildning. I utvärderingen deltog doktorandskolor och forskarskolor från nästan samtliga universitet. Utvärderingsgruppen bestod av fem internationella och tre inhemska utvärderare. Som bakgrundsmaterial hade utvärderingsgruppen tillgång till en prorektorsenkät, en studerandeenkät och självvärderingsrapporter av de utbildningar (25) som deltog i utvärderingen samt övrigt skriftligt material. Ett flertal rapporter av Finlands Akademi och UVM var tillgängliga som bakgrundsmaterial om systemet för doktorsutbildning.

Utvärderingsgruppen intervjuade 77 personer som företrädde universitetsanställda, studerande, arbetslivet och undervisningsministeriet.

Utvärderingen visade på många former av god praxis som har genomförts inom doktorsutbildningen.

Enligt utvärderingen kunde det skönjas ett klart samband mellan hög kvalitet och resultatrikedom vid sådana doktorandskolor där det fanns tillgång till tydlig information, kursmaterial, rekryteringsmaterial, rapporter om årliga konferenser och informativa webbsidor. I bakgrunden finns det sannolikt gemensamma faktorer i form av en stark och stabil forskningskapacitet, en erfaren ledning och goda resurser för verksamheten. Av utvärderingen framgick det att doktorsutbildningar med en stark ledare var effektiva. De doktorsutbildningar som hade en klart uttalad målsättning och en tydligt angiven ”vision, mission och identitet” fungerade bättre än de utbildningar som saknade dessa. Doktorsutbildningarna producerade helt tydligt nya forskningsformer och forskningsmiljöer (t.ex. regionalforskning).

De viktigaste rekommendationerna:

1. Systemet med forskarskolor bör vidmakthållas, men samtidigt förnyas.
2. Utvecklingen av universitetsövergripande kvalitetssäkring av doktorsutbildningarna vid alla universitet bör stärkas.
3. Det behövs gemensamma metodanvisningar för doktorsutbildningarna; internationell benchmarking (jämförelse för att lära av andra).
4. Fyraårsfinansieringen bör maximeras; det behövs nationella forskarkontakter.
5. Problemen med passiva studerande bör identifieras och situationen bör rättas till.
6. Systemet för doktorsutbildning bör internationaliseras ytterligare.

Nyckelord
Utvärdering, evaluering, doktorsutbildning, forskarskola, graduate school, finländska universitet

ABSTRACT

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PhD Training and the Knowlege-Based Society: An Evaluation of Doctoral Education in Finland

Authors
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Abstract
The objective of this evaluation was to produce an evidence-based view of the present state of doctoral education in Finland, with the aim of pointing out its strengths as well as its challenges. The starting point was that the evaluation recognize the good practices implemented in doctoral education and produce recommendations to guide continuing quality assessment and improvements in the overall system. Most of the universities and their graduate schools or doctoral programs participated in the evaluation. Doctoral education in Finnish universities is evaluated for the first time by FINHEEC.

The external evaluation team consisted of five international and three Finnish experts. The team had as background information documents a) survey for vice rectors b) survey for students, c) self-evaluation reports (25) and other documents. With regard to the overall doctoral education system, there have been several important national reviews carried out by the Academy of Finland and the Ministry of Education.

The team interviewed 77 people representing university staff, students, working life and the Ministry of Education.

The evaluation has indicated many good practices observed in the review of Finnish Graduate Schools (GS).

There seemed to be a clear correlation between GSs possessing information brochures, course catalogues, recruitment material, reports/proceedings from annual conferences and informative web-sites of a high general quality and productivity. There are likely common underlying factors such as a strong and well-established research capability, experienced leadership and related resources. It also appeared that GSs with a committed and strong leader worked more effectively. GSs with a clear purpose and explicit "vision, mission and identity" functioned better that those without. It appeared possible for a GS to be a vehicle for building up new research forms or environments (e.g., area studies).

Major recommendations:

1. Continue, but revise, the GS system
2. Encourage the development of university-wide means of assuring quality in doctoral education within each university
3. Develop a code of conduct; international benchmarking
4. Maximize four-year funding; create national fellowships
5. Address the "passive participation" problem
6. Encourage further internationalization of the doctoral education system.

Keywords
Evaluation, doctoral training, doctoral education, graduate school, Finnish university

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1:2000 Lehtinen, E., Kess, P., Ståhle, P. & Urponen, K.: *Tampereen yliopiston opetuksen arviointi.* Helsinki: Edita.
2:2000 Cohen, B., Jung, K. & Valjakka, T.: *From Academy of Fine Arts to University. Same name, wider ambitions.* Helsinki: Edita.
3:2000 Goddard, J., Moses, I., Teichler, U., Virtanen, I. & West, P.: *External Engagement and Institutional Adjustment: An Evaluation of the University of Turku.* Helsinki: Edita.
4:2000 Almefelt, P., Kekäle, T., Malm, K., Miikkulainen, L. & Pehu-Voima, S.: *Audit of Quality Work. Swedish Polytechnic, Finland.* Helsinki: Edita.
5:2000 Harlio, R., Harvey, L., Mansikkamäki. J., Miikkulainen, L. & Pehu-Voima, S.: *Audit of Quality Work. Central Ostrobothnia Polytechnic.* Helsinki: Edita.
6:2000 Moitus, S. (toim.): *Yliopistokoulutuksen laatuyksiköt 2001–2003.* Helsinki: Edita.
7:2000 Liuhanen, A.-M. (toim.): *Neljä aikuiskoulutuksen laatuyliopistoa 2001–2003.* Helsinki: Edita.
8:2000 Hara, V. , Hyvönen, R. , Myers, D. & Kangasniemi, J. (Eds.): *Evaluation of Education for the Information Industry.* Helsinki: Edita.
9:2000 Jussila, J. & Saari, S. (Eds.): *Teacher Education as a Future-moulding Factor. International Evaluation of Teacher Education in Finnish Universities.* Helsinki: FINHEEC.
10:2000 Lämsä, A. & Saari, S. (toim.): *Portfoliosta koulutuksen kehittämiseen. Ammatillisen opettajankoulutuksen arviointi.* Helsinki: Edita.
11:2000 *Korkeakoulujen arviointineuvoston toimintasuunnitelma 2000–2003.* Helsinki: Edita.
12:2000 *Finnish Higher Education Evaluation Council Action Plan for 2000–2003.* Helsinki: Edita.
13:2000 Huttula, T. (toim.): *Ammattikorkeakoulujen koulutuksen laatuyksiköt 2000.* Helsinki: Edita.
14:2000 Gordon, C., Knodt, G., Lundin, R., Oger, O. & Shenton, G.: *Hanken in European Comparison. EQUIS Evaluation Report.* Helsinki: Edita.
15:2000 Almefelt, P., Kekäle, T., Malm, K., Miikkulainen, L. & Kangasniemi, J.: *Audit of Quality Work. Satakunta Polytechnic.* Helsinki: Edita.
16:2000 Kells, H.R., Lindqvist, O.V. & Premfors, R.: *Follow-up Evaluation of the University of Vaasa. Challenges of a small regional university.* Helsinki: Edita.
17:2000 Mansikkamäki, J., Kekäle, T., Miikkulainen, L. , Stone, J., Tolppi, V.-M. & Kangasniemi, J.: *Audit of Quality Work. Tampere Polytechnic.* Helsinki: Edita.
18:2000 Baran, H., Gladrow, W. , Klaudy, K. , Locher, J. P. , Toivakka, P. & Moitus, S.: *Evaluation of Education and Research in Slavonic and Baltic Studies.* Helsinki: Edita.
19:2000 Harlio, R. , Kekäle, T. , Miikkulainen, L. & Kangasniemi, J.: *Laatutyön auditointi. Kymenlaakson ammattikorkeakoulu.* Helsinki: Edita.
20:2000 Mansikkamäki, J., Kekäle, T., Kähkönen, J., Miikkulainen, L., Mäki, M. & Kangasniemi, J.: *Laatutyön auditointi. Pohjois-Savon ammattikorkeakoulu.* Helsinki: Edita.
21:2000 Almefelt, P., Kantola, J., Kekäle, T., Papp, I., Manninen, J. & Karppanen, T.: *Audit of Quality Work. South Carelia Polytechnic.* Helsinki: Edita.
1:2001 Valtonen, H.: *Oppimisen arviointi Sibelius-Akatemiassa.* Helsinki: Edita.
2:2001 Laine, I., Kilpinen, A., Lajunen, L., Pennanen, J., Stenius, M., Uronen, P. & Kekäle, T.: *Maanpuolustuskorkeakoulun arviointi.* Helsinki: Edita.
3:2001 Vähäpassi, A. (toim.): *Erikoistumisopintojen akkreditointi.* Helsinki: Edita.
4:2001 Baran, H., Gladrow, W. , Klaudy, K. , Locher, J. P. , Toivakka, P. & Moitus, S.: *Экспертиза образования и научно–исследовательской работы в области славистики и балтистики* (Ekspertiza obrazovanija i nauc´´no-issledovatelskoj raboty v oblasti slavistiki i baltistiki). Helsinki: Edita.
5:2001 Kinnunen, J.: *Korkeakoulujen alueellisen vaikuttavuuden arviointi. Kriteerejä vuorovaikutteisuuden arvottamiselle.* Helsinki: Edita.
6:2001 Löfström, E.: *Benchmarking korkeakoulujen kieltenopetuksen kehittämisessä.* Helsinki: Edita.
7:2001 Kaartinen-Koutaniemi, M.: *Korkeakouluopiskelijoiden harjoittelun kehittäminen. Helsingin yliopiston, Diakonia-ammattikorkeakoulun ja Lahden ammattikorkeakoulun benchmarking-projekti.* Helsinki: Edita.
8:2001 Huttula, T. (toim.): *Ammattikorkeakoulujen aluekehitysvaikutuksen huippuyksiköt 2001.* Helsinki: Edita.
9:2001 Welander, C. (red.): *Den synliga yrkeshögskolan. Ålands yrkeshögskola.* Helsingfors: Edita.
10:2001 Valtonen, H.: *Learning Assessment at the Sibelius Academy.* Helsinki: Edita.
11:2001 Ponkala, O. (toim.): *Terveysalan korkeakoulutuksen arvioinnin seuranta.* Helsinki: Edita.
12:2001 Miettinen, A. & Pajarre, E.: *Tuotantotalouden koulutuksen arvioinnin seuranta.* Helsinki: Edita.
13:2001 Moitus, S., Huttu, K., Isohanni, I., Lerkkanen, J., Mielityinen, I., Talvi, U., Uusi-Rauva, E. & Vuorinen, R.: *Opintojen ohjauksen arviointi korkeakouluissa.* Helsinki: Edita.
14:2001 Fonselius, J., Hakala, M.K. & Holm, K. : *Evaluation of Mechanical Engineering Education at Universities and Polytechnics.* Helsinki: Edita.
15:2001 Kekäle, T. (ed.): *A Human Vision with Higher Education Perspective. Institutional Evaluation of the Humanistic Polytechnic.* Helsinki: Edita.
1:2002 Kantola, I. (toim.): *Ammattikorkeakoulun jatkotutkinnon kokeilulupahakemusten arviointi.* Helsinki: Edita.
2:2002 Kallio, E.: Yksilöllisiä heijastuksia. *Toimiiko yliopisto-opetuksen paikallinen itsearviointi?* Helsinki: Edita.
3:2002 Raivola, R., Himberg, T., Lappalainen, A., Mustonen, K. & Varmola, T.: *Monta tietä maisteriksi. Yliopistojen maisteriohjelmien arviointi.* Helsinki: Edita.
4:2002 Nurmela-Antikainen, M., Ropo, E., Sava, I. & Skinnari, S.: *Kokonaisvaltainen opettajuus. Steinerpedagogisen opettajankoulutuksen arviointi.* Helsinki: Edita.
5:2002 Toikka, M. & Hakkarainen, S.: *Opintojen ohjauksen benchmarking tekniikan alan koulutusohjelmissa. Kymenlaakson, Mikkelin ja Pohjois-Savon ammattikorkeakoulut.* Helsinki: Edita.
6:2002 Kess, P., Hulkko, K., Jussila, M., Kallio, U., Larsen, S. , Pohjolainen, T. & Seppälä, K.: *Suomen avoin yliopisto. Avoimen yliopisto-opetuksen arviointiraportti.* Helsinki: Edita.
7:2002 Rantanen, T., Ellä, H., Engblom, L.-Å., Heinonen, J., Laaksovirta, T., Pohjanpalo, L., Rajamäki, T.& Woodman, J.: *Evaluation of Media and Communication Studies in Higher Education in Finland.* Helsinki: Edita.
8:2002 Katajamäki, H., Artima, E., Hannelin, M., Kinnunen, J., Lyytinen, H. K., Oikari, A. & Tenhunen, M.-L.: *Mahdollinen korkeakouluyhteisö. Lahden korkeakouluyksiköiden alueellisen vaikuttavuuden arviointi.* Helsinki: Edita.

9:2002 Kekäle, T. & Scheele, J.P: *With care. Institutional Evaluation of the Diaconia Polytechnic.* Helsinki: Edita.
10:2002 Härkönen, A., Juntunen, K. & Pyykkönen, E.-L. : *Kajaanin ammattikorkeakoulun yrityspalveluiden benchmarking.* Helsinki: Edita.
11:2002 Katajamäki, H. (toim.): *Ammattikorkeakoulut alueidensa kehittäjinä. Näkökulmia ammattikorkeakoulujen aluekehitystehtävän toteutukseen.* Helsinki: Edita.
12:2002 Huttula, T. (toim.): *Ammattikorkeakoulujen koulutuksen laatuyksiköt 2002–2003.* Helsinki: Edita.
13:2002 Hämäläinen, K. & Kaartinen-Koutaniemi, M. (toim.): *Benchmarking korkeakoulujen kehittämisvälineenä.* Helsinki: Edita.
14:2002 Ylipulli-Kairala, K. & Lohiniva, V. (eds.): *Development of Supervised Practice in Nurse Education. Oulu and Rovaniemi Polytechnics.* Helsinki: Edita.
15:2002 Löfström, E., Kantelinen, R., Johnson, E., Huhta, M., Luoma, M., Nikko, T., Korhonen, A., Penttilä, J., Jakobsson, M. & Miikkulainen, L.: *Ammattikorkeakoulun kieltenopetus tienhaarassa. Kieltenopetuksen arviointi Helsingin ja Keski-Pohjanmaan ammattikorkeakouluissa.* Helsinki: Edita.
16:2002 Davies, L., Hietala, H., Kolehmainen, S., Parjanen, M. & Welander, C.: *Audit of Quality Work. Vaasa Polytechnic.* Helsinki: Edita.
17:2002 Sajavaara, K., Hakkarainen, K. , Henttonen, A., Niinistö, K., Pakkanen, T. , Piilonen, A.-R. & Moitus, S.: *Yliopistojen opiskelijavalintojen arviointi.* Helsinki: Edita.
18:2002 Tuomi, O. & Pakkanen, P.: *Towards Excellence in Teaching. Evaluation of the Quality of Education and the Degree Programmes in the University of Helsinki.* Helsinki: Edita.
1:2003 Sarja, A., Atkin, B. & Holm, K.: *Evaluation of Civil Engineering Education at Universities and Polytechnics.* Helsinki: Edita.
2:2003 Ursin, J. (toim.): *Viisi aikuiskoulutuksen laatuyliopistoa 2004–2006.* Helsinki: Edita.
3:2003 Hietala, H., Hintsanen, V., Kekäle, T., Lehto, E., Manninen, H. & Meklin, P.: *Arktiset haasteet ja mahdollisuudet. Rovaniemen ammattikorkeakoulun kokonaisarviointi.* Helsinki: Edita.
4:2003 Varis, T. & Saari, S. (Eds.): *Knowledge Society in Progress – Evaluation of the Finnish Electronic Library – FinELib.* Helsinki: Edita.
5:2003 Parpala, A. & Seppälä, H. (toim.): *Yliopistokoulutuksen laatuyksiköt 2004–2006.* Helsinki: Edita.
6:2003 Kettunen, P., Carlsson, C., Hukka, M., Hyppänen, T., Lyytinen, K., Mehtälä, M., Rissanen, R., Suviranta, L. & Mustonen, K.: *Suomalaista kilpailukykyä liiketoimintaosaamisella. Kauppatieteiden ja liiketalouden korkeakoulutuksen arviointi.* Helsinki: Edita.
7:2003 Kauppi, A. & Huttula, T. (toim.): *Laatua ammattikorkeakouluihin.* Helsinki: Edita.
8:2003 Parjanen, M. : *Amerikkalaisen opiskelija-arvioinnin soveltaminen suomalaiseen yliopistoon.* Helsinki: Edita.
9:2003 Sarala, U. & Seppälä, H.: (toim.): *Hämeen ammattikorkeakoulun kokonaisarviointi.* Helsinki: Edita.
10:2003 Kelly, J., Bazsa, G. & Kladis, D.: *Follow-up review of the Helsinki University of Technology.* Helsinki: Edita.
11:2003 Goddard, J., Asheim, B., Cronberg, T. & Virtanen, I.: *Learning Regional Engagement. A Re-evaluation of the Third Role of Eastern Finland universities.*
12:2003 Impiö, I., Laiho, U.-M., Mäki, M., Salminen, H., Ruoho, K., Toikka, M. & Vartiainen, P.: *Ammattikorkeakoulut aluekehittäjinä. Ammattikorkeakoulujen aluekehitysvaikutuksen huippuyksiköt 2003–2004.* Helsinki: Edita.
13:2003 Cavallé, C., de Leersnyder, J.-M., Verhaegen, P. & Nataf, J.-G. : *Follow-up review of the Helsinki School of Economics. An EQUIS re-accreditation.* Helsinki: Edita.
14:2003 Kantola, I. (toim.): *Harjoittelun ja työelämäprojektien benchmarking.* Helsinki: Edita.
15:2003 Ala-Vähälä, T.: *Hollannin peili. Ammattikorkeakoulujen master-tutkinnot ja laadunvarmistus.* Helsinki: Edita.
16:2003 Goddard, J., Teichler, U., Virtanen, I., West, P. & Puukka, J.: *Progressing external engagement. A re-evaluation of the third role of the University of Turku.* Helsinki: Edita.
17:2003 Baran, H., Toivakka, P. & Järvinen, J.: *Slavistiikan ja baltologian koulutuksen ja tutkimuksen arvioinnin seuranta.* Helsinki: Edita.
1:2004 Kekäle, T., Heikkilä, J., Jaatinen, P., Myllys, H., Piilonen, A.-R., Savola, J., Tynjälä, P. & Holm, K.: *Ammattikorkeakoulujen jatkotutkintokokeilu. Käynnistysvaiheen arviointi.* Tampere: Tammer-Paino Oy.
2:2004 Ekholm, L., Stenius, M., Huldin, H., Julkunen, I., Parkkonen, J., Löfström, E., Metsä, K.: *NOVA ARCADA – Sammanhållning, decentralisering, gränsöverskridande. Helhetsutvärdering av Arcada – Nylands svenska yrkeshögskola 2003.* Tammerfors: Tammer-Paino Oy.
3:2004 Hautala, J.: *Tietoteollisuusalan koulutuksen arvioinnin seuranta.* Tampere: Tammer-Paino Oy.
4:2004 Rauhala, P., Karjalainen, A., Lämsä, A.-M., Valkonen, A., Vänskä, A. & Seppälä, H.: *Strategiasta koulutuksen laatuun. Turun ammattikorkeakoulun kokonaisarviointi.* Tampere: Tammer-Paino Oy.
5:2004 Murto, L., Rautniemi, L., Fredriksson, K., Ikonen, S., Mäntysaari, M., Niemi, L., Paldanius, K., Parkkinen, T., Tulva, T. , Ylönen, F. & Saari, S.: *Eettisyyttä, elastisuutta ja elämää. Yliopistojen sosiaalityön ja ammattikorkeakoulujen sosiaalialan arviointi yhteistyössä työelämän kanssa.* Tampere: Tammer-Paino Oy.
6:2004 Ståhle, P., Hämäläinen, K., Laiho, K., Lietoila, A., Roiha, J., Weijo, U. & Seppälä, H.: *Tehokas järjestelmä – elävä dialogi. Helian laatutyön auditointi.* Tampere: Tammer-Paino Oy.
7:2004 *Korkeakoulujen arviointineuvoston toimintakertomus 2000–2003.* Tampere: Tammer-Paino Oy.
8:2004 Luopajärvi, T., Hauta-aho, H., Karttunen, P., Markkula, M., Mutka, U. & Seppälä, H.: *Perämerenkaaren ammattikorkeakoulu? Kemi-Tornion ammattikorkeakoulun kokonaisarviointi.* Tampere: Tammer-Paino Oy.
9:2004 Moitus, S. & Seppälä, H.: *Mitä hyötyä arvioinneista? Selvitys Korkeakoulujen arviointineuvoston 1997–2003 toteuttamien koulutusala-arviointien käytöstä.* Tampere: Tammer-Paino Oy.
10:2004 Moitus, S. & Saari, S.: *Menetelmistä kehittämiseen. Korkeakoulujen arviointineuvoston arviointimenetelmät vuosina 1996–2003.* Tampere: Tammer-Paino Oy.
11:2004 Pratt, J., Kekäle, T., Maassen, P., Papp, I., Perellon, J. & Uitti, M.: *Equal, but Different – An Evaluation of the Postgraduate Studies and Degrees in Polytechnics – Final Report.* Tampere: Tammer-Paino Oy.
1:2005 Niinikoski, S. (toim.): *Benchmarking tutkintorakennetyön työkaluna.* Tampere: Tammer-Paino Oy.
2:2005 Ala-Vähälä, T.: *Korkeakoulutuksen ulkoisen laadunvarmistuksen järjestelmät Ranskassa.* Tampere: Tammer-Paino Oy.
3:2005 Salminen, H. & Kajaste, M. (toim.): *Laatua, innovatiivisuutta ja proaktiivisuutta. Ammattikorkeakoulujen koulutuksen laatuyksiköt 2005–2006.* Tampere: Tammer-Paino Oy.
4:2005 *Korkeakoulujen laadunvarmistusjärjestelmien auditointi. Auditointikäsikirja vuosille 2005–2007.* Tampere: Tammer-Paino Oy.
5:2005 *Auditering av högskolornas kvalitetssäkringssystem. Auditeringshandbok för åren 2005–2007.* Tammerfors: Tammer-Paino Oy.