

Project description
**Bridging the gap between theory and practice
in professional education programmes**

1. Summary

The Danish government has as a declared goal that 50% of a birth cohort should finish higher education. One third of all students in higher education attend the university colleges' bachelor programmes, which make them central to the attainment of the government's goal. The bachelor programmes currently experience a decline in the number of applicants and an increasing drop-out rate. An inadequate theory-practice relation is one of the causes of these problems. Many students experience a gap between theory and practice and find 'theories' irrelevant to the development of professional competencies. Newly educated professionals report a lack of competencies that are relevant to the challenges of professional practice.

Danish university colleges already focus on the theory-practice dichotomy, and they have developed several strategies to meet this challenge. The project will identify the most promising of these and will, through intervention, document the effects of new strategies inspired by review of internal experiences.

Knowledge about how to establish a fruitful relation between theory and practice in professional education programmes has been generated in many countries. The present project will systematically review this knowledge and make it accessible to professional education in Denmark and other countries.

The development of a fruitful relationship between theory and practice will be a significant contribution to increase desirability, retention and quality of the bachelor programmes. We expect the project to result in research-based knowledge on how to bridge the gap between theory and practice.

2. Objective of the project

The goal of this strategic research project is to generate research-based knowledge about how to develop a fruitful relation between theory and practice in professional education programmes. This knowledge can contribute to the attainment of the goal that 50% of a birth cohort finishes higher education by increasing the desirability, retention and quality of the programmes. The project is designed to answer the following questions:

- Which strategies result in the most fruitful relationship between theory and practice in professional education programmes?
- How does the theory-practice relationship influence recruitment to and drop-out from professional education programmes? And is this influenced by the segment of students, e.g. in relation to social background and academic competencies?

- How can the teaching practice and the organisation of professional education be developed to create a more fruitful relationship between theory and practice?

The project will include an examination of professional educational programmes in Danish university colleges, and the project will be carried out in close collaboration with these colleges. The scientific standards will be secured by starting with a systematic review of international research, by use of state-of-the-art methods, and through contributions to recognised international journals.

3. The main results of the project

This project is designed to:

- Identify the best Danish approaches to bridge the gap between theory and practice, evaluate their results and make them generally known to Danish professional educators.
- Make evidence-based best international practice applicable to Danish professional education through a systematic review of international research knowledge.
- Investigate what kind of bridging will be most appropriate for different segments of students (e.g. in relation to social and cultural background, academic competencies).
- Document through intervention studies how professional education programmes can contribute to bridging the gap between theory and practice.

We expect the project to result in research-based knowledge on how to bridge the gap between theory and practice most effectively. We will develop this knowledge into a set of recommendations to professional educators and policy-makers. The recommendations will be specified to teachers', pedagogues', nurses', and engineers' education.

4. Theoretical background and hypotheses of the project

Overcoming the perceived gap between theory and practice in pre-service professional education has been attempted by many (Westbury et al. 2005). Today, the dominating view is that theory and practice should be integrated (Leinhardt et al. 1995). Reflection is often viewed as the proper way to achieve this integration. Several models of professional education stress the continuing cycle of interplay between theory, practice and reflection as the way to engender changes in students' attitudes and practices (Hill 2000). Among the alternatives to the naïve 'application-of-theory' model of the first part of Twentieth Century is the 'constructivist approach' (Kroll 2004) that encourages students to develop grounded theories based on information gathered from the world of practice (Carlson 1999). Another influential new model of professional education is the 'realistic approach', which directs the 'theory' towards the largest challenges of professional practice (Korthagen & Kessel 1999, Korthagen 2001).

Some of the new approaches have a scientifically documented effect on the competencies of newly educated professionals (e.g. Korthagen 2001). Therefore, it is the hypothesis behind this project that it is possible to bridge the gap between theory and practice in professional education programmes and that this bridging will increase the desirability and quality of the programmes. The existing theory-practice problems are known to have negative effects on the retention rate of the programmes (Jensen 2006), and therefore another hypothesis behind this project is that desirability and retention can be increased by bridging the gap between theory and practice. High retention rates and positive evaluations by students and lecturers can be viewed as indicators of a fruitful theory-practice relation.

The basic hypothesis of the project is:

- Problems concerning the relationship between theory and practice are important causes of the relatively low number of applicants and the relatively low retention rate in Danish professional education programs. The attractiveness and the retention rate can be increased by developing a more fruitful relation between theory and practice.

Further, we base the project on the following assumptions based on Danish and international research:

Students' preconditions influence the extent to which they experience a fruitful relation between theory and practice. Students, who are motivated by the discipline they need to learn and the professions they are going to hold in their choice of education, have a higher statistical likelihood to make a fruitful relation between the theory they learn at college and the practices they face in the workplace. Students, who have worked as teachers, nurses or the like, find it easier to bridge the gap between the theories they learn at college and the practice of the workplace. Students with good literacy skills more easily create a link between theory and practice.

Organisation of teaching influences to what extent a constructive interaction between theory and practice is generated. The following factors are important: Opportunities for students to acquire embodied professional competences through participation in social communities, both at the college and in the workplace; opportunities to involve students' workplace experiences in the teaching at college; opportunities to develop an understanding of what is currently needed to perform as e.g. a teacher, a nurse or a kindergarten teacher.

Organisation of professional education programme influences the interaction between theory and practice. Cooperation between universities, university colleges and workplaces is required for development of new courses and new ways of teaching. Such cooperation will also resolve problems of 'translation' from the scientific world to the university colleges' teaching and to the practice in the workplaces.

Reflective dialogue between students, supervisors and lecturers will give rise to a fruitful relation between theory and practice, and will in this way support the students' acquisition of adequate knowledge. Relations between body, space and artefacts are different at colleges and workplaces, respectively. Insight into these relations' importance may give rise to a more productive interaction between theory and practice. Constructive and lasting changes require that we create cultural and organisational conditions that support these changes.

5. Innovative value, impact and relevance of the project

Lack of qualified professionals is one of the major threats against the Danish public welfare, industrial growth and innovation. Professional education programmes can reduce this threat by:

- Becoming able to attract more and better qualified students.
- Reducing drop-out and increase retention in professional education programmes.
- Enhancing the competencies of newly educated professionals to meet the demands of professional practice.
- Motivating newly educated professionals to stay in their profession or to complete further education in their profession.

- Providing contemporary and future-oriented theories and practice by way of close collaboration between education, research and practice.

The development of a more fruitful relationship between theory and practice will be a significant contribution to the achievement of the five points above. Danish university colleges are already focused on the theory-and-practice challenge, and so they are ready to assimilate new knowledge from research and to implement new and evidence-based practices.

Compared to research and development in Denmark so far this project will be innovative by:

- The involvement of programmes from education, health, engineering and other major areas of professional education.
- The combination of quantitative nationwide methods with qualitative and intervention in-depth studies.
- The close cooperation with international state-of-the art research.

We expect the project to turn out new well educated researchers in professional education and educational studies as whole, with competencies in the fruitful combination of quantitative and qualitative methods involved in this project, made possible by cooperation between different research institutions. Therefore it is our hope, that the project will strengthen the sociological, didactic and pedagogical education research in Denmark, both at the theoretical and the methodical level.

6. Project methodology and results

The project will be focused on selected professional education programmes so that the largest professions from different areas are represented. We expect to concentrate primarily on pedagogical, technical and health education.

Methodologically, the relationship between theory and practice is defined as ‘the students’ experiences of the relationship between theory and practice’. The reason for this definition is that we know from the research literature that students who experience good relationships have higher retention rates than students who experience problems in this respect (Jensen 2006). We are well aware that lecturers and other stakeholders may have others views on theory and practice than the students, but the students’ experiences seem to be the most relevant in the effort to increase attractiveness and retention.

The project will comprise three phases: 1. Identification of the most promising strategies to bridge the gap between theory and practice. 2. An intervention project based on the results of the first phase to test whether the adjusted hypotheses resulting from phase one has the intended effects on the students’ experiences when implemented at a broader scale. 3. Conclusion and communication of the results.

The first phase is aimed to identify the most promising strategies in professional colleges to bridge the gap between theory and practice. This will be done through three sub-projects (1.A-1.C):

1.A An identification of cases for best practice based on quantitative studies of educational institutions with low drop-out rates, taking the students’ social background and competencies into account.

The point of departure is an analysis of institutions with low and high drop-out rates. We will estimate so-called educational institution effects, controlling for a range of family background characteristics and performance at the secondary schools of the students in the educational institutions (Aitkin & Longford 1986, Raudenbush & Willms 1995, Cahan & Elbaz 2000). The objective is to describe educational institution-level differences in drop-out rates that are adjusted for primary selected observed student background characteristics. Formally, by using the Residual Method (see <http://salsa.artisan.se> for a description of the Swedish model), we regress the drop-out rate of the educational institution on mean measures of parental education, income etc. at the educational institution level. The educational institution effects are then obtained by subtracting the predicted drop-out share from the empirical drop-out share (Imbens & Wooldridge 2008). This method is used in Sweden and elsewhere to calculate school effects in lower secondary schools.

The inferences are limited in important ways. Everything that we cannot observe in student background characteristics included in the educational institutions/effects-regression, but which varies between educational institutions, will be attributed to a so-called 'educational institution effect'. However, we only adjust educational institutions' performance for these selected characteristics. Yet, unlike Danish studies on school effects in lower secondary schools, we can control for initial performance by including exit exams grades obtained at educational institutions prior to their entering professional education programmes. This should significantly reduce selection on unobservable data regarding students' choice of educational institution.

One limitation of interpretation remains, though. Even after controlling for factors such as family backgrounds and achievements in school at lower levels, there is still the possibility of selection into schools based on schools' performances or educational institutions-effects (which is what we want to rank) rendering our ranking invalid. Consider the following illustrious example: Assume that the probability of dropping out is negatively correlated with educational attainment in ninth and tenth grade, and that good school performance (maybe due to good management) attracts high achievers (those with the good grades from the primary school). Then, because well-managed school is attractive many high achievers will apply and get accepted (and would have a low probability of dropping out). As a consequence of this, some of the performance of the management/ educational institutions-effects will be soaked up by the coefficient on primary school grades and family background characteristics, and hence the estimated performance measure will be downward biased. A similar but opposite selection could also easily be conducted. In econometric terms, we would say that our distribution of observables is affected by the treatment even before the treatment takes place ('treatment' being education institutions-effects). They (the observable characteristics) become endogenous and are as such not attributes to be corrected for.

The estimated educational institutions effects are comprised of everything that varies at the educational institution level, but which is not captured by the explanatory student background variables. The quantitative part of this project is aimed to analyse the workings within this 'black box'. The type of education at the institution as well as some aspects of the local labour market and socio-economic composition at the local community level will be included in the analyses. Inclusion of local factors will level the playing field for the different schools. It will alleviate some of the issues raised above concerning the affected concomitant variables.

The second part of the quantitative studies is an analysis of existing survey data (data collected by Danish Institute of Governmental Research in three research projects from 1996 to 1998 on professional education programmes), including students in professional education programmes, what factors influence the connection between theory and practice for different segments of students in different types of professional education programmes, as it is well known that the

relation differs depending on the students' competencies, social background and educational program. Hereby we expect to develop, adjust and make our hypothesis more precise.

The third part of the quantitative approach is register based analyses of who starts, who drops out, who gets jobs in their profession. These analyses constitute a frame for the project as a whole.

1.B Interviews with students, lecturers and other stakeholders to identify why and how the best practices work. Teaching and learning activities will be observed, and their effect on the development of students' competencies will be evaluated through interviews.

The primary method in this part of the project will be qualitative interviews with students as a consequence of our focus on students' experiences of theory and practice (Laursen in press). The interviews will be semi-structured focus-group interviews and the interviewees will be selected from different institutions selected in part 1.A of the project, different educational programs and with different backgrounds. It is known from the research literature that students with a strong academic background tend to experience the theory/practice-relationship differently than students with weaker academic backgrounds (Jensen 2006), and therefore both groups of students will be included among the interviewees.

Also, supervisors and lecturers will be interviewed for an analysis of the experiences of the students in relation to the intentions and teaching practices of the institutions.

A closer analysis of the teaching, supervision and learning practices will be conducted using observation and documentation methods of human and non-human actors. The teaching and learning practices will be viewed in their institutional contexts including the material frames and the institutions' strategies and intentions.

1.C A systematic review of published international research on strategies to create a fruitful relationship between theory and practice.

This sub-project will be conducted by Danish Clearinghouse for Educational Research according to their standard methods for systematic review of international research (www.dpu.dk/TheSchool/Clearinghouse).

The second phase is an intervention project based on the results of the first phase. The intervention phase will be carried out in close collaboration with Danish university colleges. The intention is to test if the adjusted hypotheses resulting from phase one has the intended effects on the students' experiences of the relation between theory and practice when implemented at a larger scale.

The adjusted hypotheses developed in the project's first phase are implemented as an intervention in ongoing practice. The implementation will take knowledge and experience generated in the first phase, including knowledge generated from the analysis of international research literature, into consideration.

The main interest in the intervention part of the project is to identify elements in the implemented models that are especially promising in relation to the development of a fruitful relationship between theory and practice. Among expected promising elements are; organisation of teaching, organisation of professional education programmes, and reflective dialogues between students, supervisors and lecturers as according to our hypotheses (cf. 4. Theoretical background and hypotheses of the project). These hypotheses will be refined as a result of the project's phase 1.

By comparing specific elements from different models, it becomes possible not just to describe, but also to evaluate, the effects of the interventions. This approach has many of the same advantages as experiments but can be carried out within a shorter time frame.

The main theoretical interest in this intervention part of the project is to develop actor-network-analyses of the relations and networks in the institutional, material and social contexts for theory and practice in professional educational programmes (Latour 2005).

During the intervention part of the project will be included the development of a cross-disciplinary practice in the professional educational programmes. People working in the professions meet cross-disciplinary problems every day: socially disadvantaged children, obesity among pupils, bullying, language stimulation etc. It's therefore obvious that the university colleges also have to deal with the theory-practice challenge in an interdisciplinary perspective.

A number of professional education programmes will be selected as 'control group', and the practice and the students' experiences in the intervention programs will be compared with this control group. The intervention project will draw conclusion about the validity of the hypotheses that formed the starting point of this phase.

The third and final phase of the project will involve drawing conclusions from different parts of the project and publishing and communicating these results to the international community of researchers and to Danish professional educators.

7. Project plan

The project plan is divided into three phases, and the first phase is divided into three sub-projects:

Phase 1: Analytical project: Identification of promising strategies

- Sub-project A: Quantitative studies
 1. Identification of institutions with high, low or medium drop-out rates. To be concluded January 2010.
 2. Identification of factors influencing the connection between theory and practice for different segments of students in different types of professional education programmes. To be concluded June 2010.
 3. Register based analyses of who starts (finished January 2010), who drops out (finished October 2010), who finds jobs in their profession (finished June 2011).
- Sub-project B: Qualitative studies to be finished June 2010.
- Sub-project C: Systematic review of international research literature to be finished June 2010.

Phase 2: Intervention project from August 2010 to June 2012.

Phase 3: Concluding and communicating to be finished December 2012.

The project plan is shown in the Gantt chart:

No.	Unit of time Task designation	Spr 09	Aut 09	Spr 10	Aut 10	Spr 11	Aut 11	Spr 12	Aut 12
1	Analysis								
1.A	Quantitative Studies								
1.A.1	Institutions								
1.A.2	Segments of students								
1.A.3	Starting, dropping-out								
1.B	Qualitative Studies								
	Observations								
	Interviews								
1. C	Review of research								
2	Intervention Studies								
	Agreement with colleges								
	Implementation								
	Evaluation								
3.	Conclusion,communicat.								

8. Project's international dimension

We will form an international panel of distinguished scholars and meet with the panel once a year during the project period to discuss the plans and preliminary results of the project. The panel will include the following members:

- Professor Jens-Christian Smeby from the Centre for the Study of Professions (CSP), Oslo University College. CSP is the leading Nordic research centre on professions and professional education. Smeby was visiting scholar at DPU spring 2008.
- Seth Chaiklin (SC), The University of Bath, UK. SC is an expert in practice-developing research and would be able to serve as a consultant on the intervention activities aimed to tease out descriptions of new practices.
- Silvia Gherardi (SG), University of Trento, Italy. SG is an expert on practice-based studies, and has conducted a number of empirical studies on how knowledge is constructed at the intersection of different practices of expertise. SG will act as an active international partner and discussion partner in the different phases of the project. We have a long and lasting relationship based on previous international comparative research collaboration and doctoral education.
- Olav Eikeland (OE), Director of the Programme for Research on Education and Work, University College of Akershus, Norway. OE is an expert on workplace learning and on methods in research on learning in practice and development of practices in education and work. He has participated in seminars and cooperated with DPU on several occasions.

The project's main contributions to international research will be the systematic review of research on bridging the theory-practice gap and research-based knowledge on the best practice of bridging the gap in Danish professional education courses.

9. Legal and ethical aspects

No legal or ethical problems are expected concerning this project.

10. Publication and promotional strategy

The results will be published in international journals on professional education, Danish professional journals and periodicals, both as research reports and as recommendations to professional educators.

The project as a whole will be documented in a research report published by the participating institutions. Selected parts of the results will be published in research journals like Higher Education; Higher Education Review; Scandinavian Journal of Educational Research; Sociology of Education; and Teachers and Teaching: theory and practice.

The recommendations to professional educators will be published primarily in journals and other publications by the relevant professional organisations.

Both the analytic and especially the intervention part of the project will be done in close collaboration with professional educators and university colleges. We will request our collaborators to take part in the promotion of the projects' results and ideas. The interventional character of the project will be used as a promotional advantage: The conclusions of the project will be tested in professional education practice.

11. Innovation

The results of this project are expected to promote the following innovations in professional education:

- Professional education programmes will become more relevant and desirable to potential students.
- Institutions will become more able to focus their efforts to attract the students most likely to finish the courses successfully.
- Institutions and lecturers will be able to make their courses more meaningful in relation to students' educational interests and needs.
- The cooperation and dialogues between lecturers, supervisors and students will become more focused on students' learning needs.
- The retention rates of professional education programmes will increase.
- The Danish government's declared goal that 50% of a birth cohort finish higher education will be reached – hopefully.

12. The participating parties

Four institutions will be involved in project:

- The DPU will host and lead the project and most of the researchers in the project are affiliated with DPU. DPU will need students' assistance to transcribe interviews and observation protocols.
- Danish Institute of Governmental Research, AKF, will do the quantitative analyses (sub-project 1.A.1, 1.A.2 and 1.A.3) and take part in drawing conclusions and communicating results (Phase 3). AKF will need students' assistance to do the routine parts of the quantitative analyses.
- University College Copenhagen will take part in the qualitative studies (1.B), the intervention studies (Phase 2) and the concluding and communicating parts of the project (phase 3)

- Engineering College of Aarhus will take part in qualitative studies (1.B), the intervention studies (Phase 2) and the concluding and communicating parts of the project (phase 3)

The following is a presentation of the key researchers:

Professor Per Fibæk Laursen (PhD), DPU, is an experienced researcher in professional education, particularly teacher education. For more than 30 years, he has published research results on professional education, didactics, teaching and learning in books, scientific and professional journals, and he has led or coordinated several research projects. His main contributions to the project will be the general management and analyses of the Danish colleges' practices concerning theories and practice. He will also lead the integration of the results of the different sub-projects and the development of recommendations to professional education.

Director of research, honorary professor Torben Pilegaard Jensen, AKF, Danish Institute of Governmental Research, has conducted educational research concerning how to improve the quality of the education from basic school through youth education, professional education to adult and supplementary training. AKF conducts research into subjects of relevance to the public sector and independent research at an international level. AKF contributes quantitative analyses based on database analysis and surveys about what type of students have a higher or lower probability of completing their professional education, and the impact of the theory-practice relationship on recruitment and drop-out in professional education programmes. The question of what kind of bridging will be most appropriate for different segments of students (e.g. in relation to social and cultural background, academic competencies) will also be investigated.

Bente Elkjær (PhD), DPU, is a professor of organisational and workplace learning at DPU. She has taken a special interest in developing a theoretical perspective on organisational and workplace learning inspired by American Pragmatism. In addition to her role as Editor-in-Chief of *Management Learning*, Bente Elkjær is also the Head of the Doctoral School of Organizational Learning (DOCSOL). She has published widely within her field, and she is currently researching into the relation between workplace learning and change of practices.

Associate professor Lisbeth Haastrup (PhD), DPU, has analyzed pedagogical and health professions in relation to the welfare state. Lisbeth Haastrup has examined the organisational and material conditions for professional education and practice and the changing relations between the professionals and the citizens as pupils and patient with an ethnological, historical and cultural perspective. Her research unit (material culture) has developed necessary competencies and methodological approaches for analyzing educational processes as interaction between materials and bodies, and in embodied and tacit processes of identification and cultural meaning.

13. Project management

The project will be hosted at DPU and led by professor Per Fibæk Laursen, who is an experienced researcher and research manager. Besides being responsible for the general management of the project, Per Fibæk Laursen will be substantially involved in all three phases of the project and will therefore, together with the other members of the project group be able to integrate the phases and sub-projects into an integrated whole.

As the leader of the project, Per Fibæk Laursen will meet with the leaders of the sub-projects every second month throughout the project period and the project group as a whole will meet to discuss plans and preliminary results twice every year.

The parts of the project will be led by a coordinator:

1. A. Quantitative analysis of how the theory-practice relationship influences recruitment and retention.

Coordinator: Director of research, honorary professor, Torben Pilegaard Jensen, Danish Institute of Governmental Research, AKF.

1. B. Qualitative analysis of how and why best practices work.

Coordinator: Associate professor Lisbeth Haastrup, DPU.

1. C. Systematic review of the international research.

Coordinated and conducted by Danish Clearinghouse for Educational Research.

2. Intervention studies in cooperation with selected university colleges.

Coordinator: Professor Bente Elkjær, DPU.

3. Conclusion and communication.

Coordinator: Professor Per Fibæk Laursen, DPU.

The project will be carried out in close cooperation with the eight Danish University Colleges and other institutions of professional education. Both the University College of Copenhagen and the Engineering College of Aarhus are represented in the project group. The members of the project group keep close contact with all Danish University Colleges, and have conducted several projects in cooperation with these colleges. While preparing this project, we have had informal contacts with several university colleges, and they have unanimously shown positive interest. No formal agreement concerning their participation in the project can be made beforehand because the contents and the details of their contribution to the project will be determined by the results of the first phases of the project.

14. Key references

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