Centre for Teaching and Learning

Overview of the objectives, expertise, organisation and services of the CTL

September 2018
Torben K. Jensen

Contents

Introduction

The Centre for Teaching and Learning (CTL) is a research-based unit for educational development in a HE context. The raison d'être for the CTL is to develop the teaching at BSS. The means are research, teaching and development.

1) The CTL is responsible for a wide range of tasks agreed with BSS over the years. The different tasks share the same strong educational expertise and are held together by strong synergies.
2) The CTL is a well-run centre, and this is also how it is perceived by its employees. The centre is highly regarded by its users and well-integrated into the BSS and AU, with many cooperative relationships and close coordination of activities with the Dean's Office at BSS. Over the years, the intensity of cooperation and the size of tasks have always been adaptable to the needs of the management, lecturers and other stakeholders.
3) Being action-oriented is in the DNA of the CTL, and the Centre has made a difference at BSS, for example by further developing existing teaching and supervision practices through extensive course activities for teaching staff at all career stages; by supporting numerous development projects and even more teaching staff; by contributing to good decisions, fast implementation and secure operation of digital teaching systems; and by supporting the BSS quality assurance policy in a number of areas, thereby contributing to institutional accreditation.
4) BSS is regarded as the largest teaching institution in the area of business and social sciences in Denmark. For a teaching institution of this size, it is only natural to prioritise research into business and social sciences didactics. Through the CTL, BSS has also earned a reputation for working systematically with educational development on a large scale.

This memo contains a brief description of the objectives, expertise, tasks, services, relationships and organisation of the CTL. Along with the documents (in Danish) *Grundlagsdokument (2011)*, *Praksis på BSS for udvikling af undervisning og undervisningskompetencer (2014)* and *Formålsfordelt budget - rapport + bilag (2015)*, as well as the CTL website, this memo provides a comprehensive description of all the activities at the CTL.

Objectives and responsibilities of the CTL

The *Grundlagsdokument* (foundation document) (2011) states that the CTL is a centre for research-based development work. The Centre is organised as a product-support entity under the Dean's Office at Aarhus BSS, and the CTL has a centre director appointed by and referring to the Dean of Aarhus BSS. The overall objectives of the CTL are to:

- help improve the quality of teaching at BSS;
- promote a research-based development of
  - forms og learning, teaching techniques, e-learning, multicultural and multilingual learning environments, types of examination, teaching assessment, competencies of teaching staff and teaching design, etc. at BSS;
- communicate knowledge about learning, pedagogy and didactics to staff and students at BSS;

- and, to some extent, also to communicate knowledge to other institutions, external organisations and the business community.

The principles for the CTL are in accordance with the principles behind the establishment of the four educational development units at AU in 2004, namely that educational development work at AU is to be didactic-based (i.e. anchored close to the programmes and therefore, the faculty), be based on research and be targeted at teaching staff at all career stages.

In March 2014 the faculty management team at Aarhus BSS discussed and approved a report on practice at BSS for the development of teaching and teaching competences (*Praksis på BSS for udvikling af undervisning og undervisningskompetencer)*. The report describes how BSS in practice meets the AU quality assurance policy and BSS's strategy in the area. The report describes what is referred to as didactic competency development at large scale in a research-intensive faculty based on (i) a course package from the CTL for teaching staff at all career stages, (ii) development and deployment of a joint LMS (learning management system), a digital examination system, digital evaluation and increased focus on Blended Learning, (iii) an effective incentives structure and (iv) integration between the competency development strategy and HR policy.

The rationale for BSS' strategy for didactic competency development is also described in the practice paper and, in brief, it entails that, if the university is to provide such a complex service as research-based teaching, the university employees must command two skills sets: research skills and educational (pedagogical/didactic) skills. These skills sets are not necessarily related, and both have to be obtained independently. As research-based teaching is a highly complex and diverse activity, there is no quick fix to quality assurance. The teaching staff have to regularly take a number of didactic choices that require long-term, systematic development of their pedagogical knowledge and skills; i.e. focus on a competence strategy.

The raison d'être for the CTL is to help develop teaching at BSS. The means are research, teaching and development work.

Staffing and internal organisation at the CTL

Staffing

The CTL was established in 2011 in connection with the extensive reorganisation of AU by merging the old Centre for Learning and Education (CLU, SAMF, established 2004) and the Learning Styles Lab (LSL, ASB, established 2007). When it was first set up, the CTL had a staff of 12. The main task was initially to offer a relevant pedagogics course packages for university lecturers at all career stages at BSS.

In the following years, the CTL was assigned new tasks to develop and offer courses for Master's thesis supervisors and PhD supervisors, implement the first AU educational IT strategy and implement and operate Blackboard, WISEflow and Blue. In order to perform these tasks, ten more were employed at the CTL over a number of years.

Strategic decisions at BSS relating to developing teaching and developing teaching competencies have thus been followed up at BSS with specific plans and investments.

The CTL staff are currently divided into the following job categories:

- 1 centre director, associate professor, with tasks related to management, representation, research, teaching and development.
- 5 associate professors with tasks related to research, teaching (typically courses and workshops) and teaching development (typically commissioned tasks).
- 1 assistant professor with tasks related to research, teaching (typically courses and workshops) and teaching development (typically commissioned tasks).
- 2 PhD students on five-year contracts with research (PhD projects), teaching (typically courses and workshops) and teaching development (typically commissioned tasks).
- 5 academic employees (AC) with tasks related to teaching (typically of courses and workshops), teaching development (typically commissioned projects), educational IT, production of digital teaching materials, as well as documentation and knowledge sharing.
- 4 academic employees (AC) with tasks related to IT system administration and system operation and development (Blackboard, WISEflow and Blue), support, data analysis (often commissioned), and project coordination. One of these positions is a two-year position that expires in 2019.
- 1 academic employee (AC) with tasks related to administration, coordination and management support.
- 2 administrative employees (HK) with tasks related to course administration, communication and secretarial tasks.

Since 2013, the CTL has also had one dedicated support officer (Blackboard, WISEflow and Blue) on loan from BSS-IT.

Pursuant to the long-term budget framework decided by the Faculty management team in 2016, when the CTL grant from the Faculty was reduced by DKK 0.8 million. for each of the years 2017, 2018 and 2019, the number of staff at the CTL in the period will be reduced by four employees.

Internal organisation at the CTL

The aim of the internal organisation of the CTL is to support the CTL's core activities and vital functions, i.e. to support the CTL's educational, research and development activities as well as internal continuing education and a good working environment at the CTL.

Quality assurance of CTL services has always had the highest priority and it has been a crucial element in the internal organisation. The CTL provides highly specialised services and know-how about teaching to a busy, competent and self-aware target group who have been trained in criticism from their research activities, to which they are deeply committed. This means that the conditions for educational development work entail that our consultancy and courses have to be perceived as relevant and of the highest quality *every time*. The conditions entail that it takes years for a HE educational development unit to build up a good image among researchers, but it takes just *one* bad course to destroy it. The CTL has managed to build and maintain a good image among its users for the quality of its services.

On this basis, the CTL has developed an effective and well-proven internal structure, in which working groups are staffed by people from across job categories, who together have a sufficiently broad range of competences within research, teaching, educational IT, system operation, etc. This applies for the following working groups:

- The staff take all ongoing cases at the CTL, then coordinate and allocate tasks, including enquiries about commissioned tasks.

- The three study board groups coordinate and complete development tasks commissioned by teaching staff, teaching teams, course coordinators and directors of studies from the respective board of studies' degree programmes.
- The digital team manages stable operation, support and development of the three systems and coordinates between the three systems.
- The course evaluation team coordinates operation, development, data deliverables and communication around course evaluation.
- The Edu-IT and university pedagogics teams develop and implement courses and workshops.

Budget, management and staff at the CTL

Ever since its establishment, the CTL has had its own budget and its own manager responsible for the budget, recruitment and dismissals, pay negotiations, HR, SDD interviews and employee well-being.

According to the current budget agreements, the CTL receives approx. DKK 13 million a year from the faculty to perform its current tasks. Furthermore, the CTL has an option to increase its revenues and activities by attracting research and development funding and selling services. With research and development funding from Erasmus, Eurostar and the research councils, and by selling analyses to AU (study environment, work environment, quality of PhD courses), the CTL has secured annual external revenues of approximately DKK 1 million. The CTL has always kept to budget.

The CTL has also always managed to maintain a good work environment according to job satisfaction measurements and among the best at AU in terms of the high degree of well-being, great interest in and commitment to tasks, friendly and helpful colleagues, as well as visible and clear leadership.

In this context, the CTL is an extremely well organised, efficient and reputable centre.

Educational expertise at the CTL

The overall objective at the CTL is to help raise the quality of teaching at BSS. This is by the CTL completing a number of tasks and providing a number of services for BSS and AU in the form of communication, teaching, development projects, advice, expert help, analyses, documentation and research. These services will be described in the sections below.

Task performance and delivery of the services is *on the basis of a particular educational expertise* built up over many years, and briefly described here. The CTL's educational expertise can be described in many ways. None of them are easy to keep short, as it is expertise that unfolds in courses, development processes, memos, reports, research articles and textbooks. Below is an attempt to briefly describe and summarise the CTL's specific expertise and know-how under four headings: The CTL's expertise is (i) knowledge about research-based teaching, (ii) special didactic knowledge about teaching in these subjects, (iii) special know-how about generating change in teaching practice, and (iv) specialised research competencies within the field.

1. Expertise at the CTL: knowledge about research-based teaching

The overall focus at the CTL is to help raise the quality of teaching. At the university, this is synonymous with helping raise the quality of *research-based teaching*. With outset in the qualification profile, very briefly this can be described as teaching that, through a Master's degree programme, results in students commanding the theory, empirical aspects and methodology of the subject. So we are interested in a specific type of learning at the university; in-depth learning that is coloured by the researchers' way of handling and exploring a topic. This requires activating teaching techniques and active students. This requires (i) teaching staff with extensive research knowledge within their respective research fields, (ii) a range of didactic tools and know-how as well as (iii) an organisation that supports this kind of teaching activity. Over the years, the CTL has amassed considerable knowledge about didactic tools and know-how on the organisational framework and its interaction with different research environments.

Formats of teaching

The CTL has in-depth knowledge about a wide variety of formats of teaching used in a university context. Examples of such formats are lectures, student presentations, theoretical exercises, cooperative learning, peer instruction, peer assessment, dialogue- and discussion-based teaching, case teaching, peer feedback, laboratory teaching, problem-based learning, project learning, internship, collective and individual supervision, autonomous learning, etc.

Course design

The format of teaching is just one element in the planning and implementation of a course. The total course planning process also contains decisions relating to the *content, learning objectives, type of examination and assessment strategies* and *teaching media* (including the use of technology). The CTL has in-depth knowledge about course design and the interaction between the content, objectives, examinations, teaching and media in university education, taking into account the student's qualifications and framework conditions for the teaching.

Teaching technology

Now that virtually all teaching materials are digitised, and all courses have a course website and thus both a digital and physical learning environment, there are important new conditions and opportunities in teaching. The CTL has built up extensive knowledge about the use of educational IT in teaching, including formats for *technology-supported teaching*, *blended learning* and *online teaching*.

Digitisation and system operation

Some digital learning tools permeate the entire organisation and become a structural framework for teaching. These include *learning management systems, systems for exam digitisation* and *systems for digitisation of course evaluation*. The CTL has implemented and for many years operated BSS's systems, and through this, the CTL has built up knowledge about the didactic and administrative advantages and disadvantages of a number of systems as well as in-depth knowledge about the selected systems at both BSS and AU levels.

The teaching organisation

Teaching, courses and programmes are embedded in a large organisation, which both demands and provides relevant *outcome goals* for teaching, *course evaluation data, documentation of teaching skills (teaching portfolios), learning analytics* and *programme management.* The CTL has comprehensive knowledge about all of these topics, as well as knowledge about *rules, decision-making processes and policies* relating to teaching at the university.

Theories and research results on teaching and organisation

The CTL has far-reaching knowledge about research results and theories within the organisation, including *teaching and learning theory, theory of general and specialist didactics, evaluation theory, professional theory, theories of digitisation, organisation theory, theory of practice*, etc.

The two figures in Appendix I below illustrate the topics included in the professional knowledge at the CTL.

2. Expertise at the CTL: know-how about teaching teachers to teach

Over many years, the CTL has also amassed didactic knowledge about how to communicate and teach the above topics for specific target groups at the university. The CTL teaches *students, student teachers, PhD students, assistant professors, associate professors, professors, course coordinators* and *directors of studies* and, like all other teachers, the CTL plans its teaching taking into account the qualifications, motivation and structural frameworks and uses these as the basis for selecting relevant content, objectives, teaching activities and technology. Teachers at different career stages need different things. In addition, it is vital that the CTL also takes into account that different discipline values and teaching traditions at the faculty's six departments influence in different ways the teaching discourse on the respective programmes. The same considerations must be taken when involving development projects.

3. Expertise at the CTL: initiating change

Development projects and courses in university teaching and didactics often have to strengthen the participants' ability to develop their teaching, and thereby motivate them to *initiate changes in practice*. This requires thorough knowledge about *organisational change*, which is a prerequisite to support *implementation* of large digital teaching systems.

This means that the CTL has built up, and needs, significant knowledge regarding implementation of major and minor changes in teaching, and in this context knowledge about motivation, incentives, framework conditions and decision-making processes relating to teaching at the university.

4. Expertise at the CTL: research competence

Ever since it was established, the CTL has conducted research into educational issues within the topics described above based on teaching practice at BSS. The research generally takes outset in quantitative and qualitative research methods, as well as systematic literature reviews, as they are used in other research at BSS. Research at the CTL is described in more detail below.

The CTL has particular focus on the learning perspective. This focus arises from the CTL's constant target of optimal conditions for student learning. This does not mean that the CTL has no eye for administrative, financial and policy matters.

CTL services for teachers/lecturers and degree programme directors at BSS

Based on the expertise described above, the CTL supplies a number of services for faculty lecturers and degree programme directors. These services are described in detail on the CTL website, and more briefly below.

Support for teachers/lecturers and teaching teams

All teaching staff at all career stages at BSS can individually or in groups contact the CTL for feedback on any educational issue they wish. For example, there is feedback on lectures, classroom teaching, supervision, use of educational IT, feedback, formulation of learning outcomes, planning and designing courses, managing the multicultural learning environment, design of and follow-up on course evaluation, (more advanced) use of Blackboard, (more advanced) use of WISEflow, etc.

The CTL is involved in a large number of advisory processes with individual lecturers or lecturer teams. Furthermore, the CTL receives about twenty enquiries a year about individual development for individual teachers, commissioned by the directors of studies and/or heads of department.

Development of courses and degree programmes

The CTL supports course and programme development through short or long courses commissioned by teaching teams, course coordinators or directors of studies.

The CTL also offers help to forge a better knowledge base in the form of studies and data analyses to support development projects.

In its internal organisation, the CTL has formed *board of studies groups* to more effectively support close cooperation with study programmes and boards of studies on development projects.

The CTL is currently involved in about 10 commissioned development projects, including analyses of possible gender bias in course evaluation, analyses of the effect of different forms of note-taking and techniques, development of lectures, experiments with digitally supported peer feedback for large classes, conversion of group tuition from part-time academic staff to instructor teaching, conversion of individual supervision to collective supervision, etc.

Educational IT tools

The CTL teaches the use of technology in teaching. This is through individual coaching sessions, workshops, course activities and through the maintenance and development of a large online resource called TREAT (Teachers Redesigning Educational Activities with Technology). TREAT gives access to a range of digital tools, and it explains how they are used and what they are best used for, i.e. what educational problem they can be used to address. On the other hand, you can also go into the web resource with an educational problem and find your way to relevant technologies. Finally,

the database has a series of practical examples (videos), where teachers from BSS describe their experiences with the relevant tools.

The CTL also operates a [Media Lab](#) with advanced equipment for producing training videos and advice on production of digital learning objects and presentations. In Media Lab, teachers can obtain hands-on help to plan and record videos, podcasts, screencasts, etc. Teaching staff can also borrow various equipment from the laboratory.

Inspiration days

The CTL organises regular inspiration days on current topics related to teaching at BSS. The purpose of these inspiration days is to inspire teaching staff to organise and run their courses in new ways, and to create a forum for exchanging experience across the entire faculty. The programme always has a practical focus and includes presentations by the teaching staff at the faculty. Topics addressed have included course evaluation, classroom instruction, lectures, Master's thesis supervision during the study progress reform, study intensity, blended learning and feedback.

Courses and workshops

Since it was established, the CTL has offered courses in university teaching and didactics for teaching staff at all career stages at BSS.

There is a progression in the course package, so that the content and scope are aligned with the teaching assignments that are typically undertaken at individual career stages.

Most courses are compulsory, and during their careers, researchers employed at BSS participate in 7-8 weeks of formal educational training in the form of courses offered by the CTL.

The course package, which has now been offered for seven years, has helped secure teachers at BSS more tools in their pedagogical toolbox, and it has provided them with a considerable degree of common language for their pedagogical choices. Both factors have contributed to the professionalisation of teaching at BSS.

Analysis of own and colleagues' teaching practice, and experience sharing between experienced teachers, are essential elements in all the courses mentioned above. This has helped systematise the exchange of experience between teaching staff, and it means that employees at CTL maintain invaluable knowledge about how teaching practice at BSS looks and develops.

The compulsory courses throughout all the years have been positively evaluated by the participants at the end of the course. The practice at BSS of having compulsory didactic courses for teaching staff at all career stages seems appropriate in terms of the positive final evaluations and other feedback, and given that many course participants come back and ask for more feedback and help from the CTL.

In addition to the courses, the CTL also offers a range of workshops of 2-3 hours' duration on a number of educational topics, including the use of Blackboard, WISEflow and Blue. All the workshops can be adapted to the specific needs for different subjects, and they are often incorporated as part of the departments' or institutes' local events, specialist days and local course activities.

Operation of digital systems

The CTL has for several years operated and been responsible for the three large digital systems at BSS to support teaching: the learning management system Blackboard, the digital exam system WISEflow and the digital course evaluation system Blue. The CTL is also responsible for communication about the systems as well as technical and educational support for the teaching staff, and the CTL participates in more long-term integration of the systems into course design and course formats with more extensive use of technology.

The three systems were implemented in 2013, 2014 and 2015, respectively, in close collaboration between the CTL, BSS-IT, BSS Studies, directors of studies and the Dean's Office. System ownership was placed at the CTL. In all three cases, BSS has focused on the principle of SAAS (Software as a Service) in selecting digital solutions in this area, while AU selected solutions based on local hosting and local development projects. AU now also seems to be moving towards SAAS solutions, and Blackboard is now being operated in a joint solution for the entire university.

The CTL has amassed considerable experience in implementation, operation and development of large-scale digital systems. WISEflow handles approximately 370 exam flows, corresponding to approx. 35,000 individual written exams each semester. Blue handles evaluation of approximately 430 courses, corresponding to approx. 27,000 individual invitations for students to evaluate the courses, and the system issues about 780 individual reports for teachers per semester. It has been possible for BSS to deploy all three systems in record time, with very high uptimes and secure operation, with minimal use of AU IT, and with extensive functionalities.

Over the years, among other things in connection with consultancy, system selection, gap analyses, data analysis, etc. it has been noted that there is a very big difference between whether the large digital teaching systems are operated and developed on the basis of a primarily IT-technical, administrative or educational perspective, and it has been found that there are many benefits arising from the fact that the three systems at BSS have to a large extent also been developed on the basis of the CTL's *educational expertise.*

Surveys, memos, key figures and learning analytics

For several years, the CTL has been carrying out analyses for AU, supplying surveys to BSS, and producing memos on key concepts and strategies. More recently, the CTL started to investigate the opportunities in learning analytics.

Surveys

The CTL was responsible for AU's educational environment assessments (UMVs) in 2007, 2011, 2014 and 2017 as well as for the AU workplace assessments (APVs) in 2009, 2012 and 2017. Furthermore, the CTL was in charge of the surveys of quality in PhD programmes (KIP 1 and 2) in 2014 and 2017, an analysis of stress in PhD students in 2018, and the analysis of the quality of Master's theses under the study progress reform in 2018. Thus, the CTL has been responsible for 11 major surveys in 11 years. The CTL has built up extensive experience in completing extensive surveys at AU based on questionnaires, quantitative data and statistical analyses. Work involves design and quality assurance of questionnaires, collection of data with high response rates, and thorough analyses. Reporting has always been within the agreed framework for time, content, quality and consultation processes.

As the CTL has both internal information about the university as an organisation and insight into relevant international research literature about university teaching, the analyses and reviews delivered are always theory- and research-based, practice-relevant and action-oriented. Work is organised and negotiated in close dialogue with the commissioning party, who may be programme managements and fora at all levels and across faculties.

In accordance with specific agreements for the individual studies, the CTL has also researched and published on the basis of the collected data, which has given the CTL opportunities to contribute to the international literature on the basis of unique data sets. Over the years, the CTL has also validated several questionnaires published in international journals. See below under the Research section.

Memos

The CTL provides regularly memos about educational topics for the Aarhus BSS School Board of Studies and other academic environments. The memos are written on the basis of research literature, and they serve as a basis for clarification and further discussion at the faculty and departments on selected subjects. For example, the most recent memos for the Aarhus BSS School Board of Studieswere about feedback and educational IT.

Evaluation data, key figures and learning analytics

Since 2015, BSS has had a common digital evaluation system for teaching and supervision at the faculty. The common data collection across now six semesters, and the common evaluation database, provide the individual teacher and the boards of studies with entirely new possibilities to monitor trends over time and, where relevant, compare evaluation data across the organisation.

The CTL has concluded a cooperation agreement with AU BI (Business Intelligence) and AU Student Administration and Services on cooperation on data in a data lake, which, after a detailed procedure and in agreement with the vice-deans, enables the CTL to link evaluation data with information from the study administrative system on, for example, students' grade levels, grades in the relevant courses, fields of study, nationality, gender, etc. This offers entirely new possibilities to enrich analyses of evaluation data. The CTL is also working with AU BI on using common analysis tools and data-display tools.

Furthermore, the CTL is working with UniWise to develop assessment analytics based on the digital data generated from digital exams, and to convert some of this information into advisory services for students. Before long, it will also be possible to provide behavioural data from students' activity on Blackboard.

Following an agreement with the vice-dean for education, the CTL is starting to analyse the possibilities and pitfalls in learning analytics based on the new data set.

Research

Educational development work at AU must be research-based. This has been a premise for the educational development work at AU since the establishment of the educational development centres in 2004. It has also been written into the CTL foundation document from 2011 and practice paper from 2014. Educational and teaching development work in a research-heavy academic environment must be research-based in order to give the teaching staff the skills to conduct teaching and supervision of high standards and with credibility. The research activities help ensure that the

courses, consultancy and supervision activities (i) have a systematically well-founded knowledge base where possible, (ii) are transparent with regard to their foundation, (iii) have the requisite attention to detail and humility demanded in research-based teaching, and (iv) have a high level of credibility in the eyes of other university researchers.

Practice-based research

The CTL has decided to manage its research rights and duties through a goal to deliver practice-based research at international level. The centre's research is *practice-based* in the sense that the research generally involves empirical data from BSS and is always conducted for the ultimate purpose of enhancing the decision-making of teachers and managers at BSS within the area of teaching and learning. The centre's research is *international* in the sense that the research is based on international research literature and theories on university teaching and subject-specific didactics, and it contributes to the same literature.

The CTL has succeeded in this objective, in that the CTL has a research programme aligned with the centre's teaching and development tasks. Among other things, the research programme covers the following topics: motivation and learning strategies among students, interaction in the classroom, Master's thesis and PhD supervision, educational value of educational IT, student participation in feedback, teaching and learning in international study programmes, and the importance for teaching of core disciplines.

Research results are included in the basis for the CTL's teaching and consultancy for teachers and managers. The research results are to a considerable extent published in the highest ranked international journals within the area.

CTL research fills an important niche in Danish educational research in two respects: It explores teaching in the business and social sciences, and it is based on a range of quantitative and qualitative research methods and systematic literature review-studies, which are also used in social science research environments.

The CTL recruits its researchers in three ways: Through recruitment of researchers with research experience from other fields, by training them itself through enrolment at the Aarhus BSS Graduate School on the PhD programme Social Science and Business (two of the CTL's current employees obtained their PhD degrees in this way, two employees are currently enrolled) and finally through PhD programmes in collaboration with the departments.

CTL research publications

CTL's total research publications in the past five years, i.e. in the period 2013-2018 are listed at CTL website and they include 3 PhD theses, about 30 articles, about 15 books and contributions to books as well as about 70 conference contributions. In addition, there are the 11 AU surveys mentioned above.

Research quality

Research quality at the CTL is assured through the same mechanisms as for the rest of BSS: Publication in high-ranking, peer-reviewed journals; research, publishing and working partnerships with strong foreign university educational research environments; and finally international participation in assessment and appointment committees.

Over a short time, the CTL has been able to establish an international network that is large enough and academically strong enough to recruit international researchers and to staff the assessment committee for appointments and the defences.

External funding

The CTL is continuously looking for external funding for its research projects, and currently has a part in the following external funding:

- Pathways to Improve Quality in Higher Education. PIQUED (Pathways to Improve Quality in Higher Education) will provide new research-based knowledge about quality-development work, its effects, and how to measure these. Grant for research on quality in higher education from the Danish Agency for Science and Higher Education. The funding covers: 02/04/2018 → 01/04/2021
- Educational Quality at Universities for inclusive international programmes. Erasmus + strategic partnership. The funding covers: 01/09/2016 → 31/08/2019 www.equiip.eu
- An Online Massive Assessment Platform for secure, learning-efficient large-scale assessments. A 3-year Eurostars project with financial support from the Innovation Fund Denmark and EUREKA. Eurostars is a joint programme between more than 30 EUREKA member countries and the European Union. The funding covers: 01/08/2016 → 31/07/2019
- Rethinking the role of English-taught programmes in the European Higher Education Area. Project coordinated by ACA (Brussels, BE) and financially supported by the European Commission. The funding covers: 01/10/2013 → 30/09/2014
- The Challenges of the Multilingual and Multicultural Learning Space in the International University. A 3-year Erasmus Academic Network with financial support from the European Commission's Lifelong Learning Programme. The grant covers 01/10/2012 → 30/09/2015. http://intluni.eu/

The synergy between CTL's research, teaching, development work and consultancy

As described above, the CTL carries out a range of tasks: individual consultation, course development, operation of digital systems, communication, teaching, assessment and research.

The tasks at CTL are linked together by a very clear educational expertise and a very strong synergy between the tasks. The basic consideration, which permeates all the CTL's activities, is how student learning can be increased and optimised through the organisation of teaching at the faculty.

Research is the backbone of knowledge

Research is the backbone of the CTL's educational expertise and is a precondition for the CTL's tasks. CTL research projects are carefully selected in order to be relevant to the CTL's other work. Research results provide direct input to the CTL's courses, development projects and consultancy, and they are incorporated in decisions by teachers and educational managers at BSS. The CTL's research activities also contribute to keeping the centre's employees up to date on the international literature in the field, and furthermore research work ensures solid research methodology competences at the centre. A number of research projects at the CTL take place in collaboration with researchers at the

faculty's departments, which also contributes to stronger relations, better research competencies and extensive knowledge about teaching environments at the faculty.

Example: Quality in PhD programmes (KIP)

A specific example of the value of the CTL's research work in the centre's consultancy, teaching and development tasks is the so-called KIP projects (quality in PhD programmes).

In 2013, the PhD graduate schools at AU commissioned a survey of the quality of the PhD programmes at AU. The CTL designed and completed the survey as an online questionnaire sent to 2,244 PhD students. The response rate was 79%. The survey's results were included in a report published in 2014 as well as two international articles, so far. The survey was repeated in 2017.

A main result from both surveys (in 2014 and 2017, respectively) is that student satisfaction with the supervision and feeling of integration in the research environments are closely associated with a number of success parameters such as progress in the project, the development of independence, well-being and confidence in own skills. The results have spurred the development of new teaching material on the compulsory course held by the CTL for associate professors and professors at BSS. The teaching material is thus both research-based and localised, helping to ensure that the participants find it relevant and convincing.

In addition, the reports have been applied as a data basis for a number of local decisions and initiatives at AU's four PhD schools. For example, the reports are widely used by programme chairmen in work to assure the quality of the individual research programmes, and the 2014 report was incorporated as data material in the international evaluation of Aarhus BSS Graduate School in 2015. Most recently, Talent Development AU invited the CTL to present and discuss the results of the 2017 survey with the PhD administration. Finally, the study's research results have attracted international attention and led to publications in prestigious journals, an internationally sought-after questionnaire and international keynotes, among others for the EUA-CDE.

There are many similar examples of the specific impact of CTL research within other areas.

Synergy between activities - digitisation and system operation as an example

The synergies between the CTL's activities are not just because CTL research informs its teaching and consultancy. There are a number of other synergies between the various activities and tasks at the CTL, and these are illustrated in the following description of how the CTL operates digital systems.

The CTL is responsible for the operation of BSS's three digital systems; Blackboard (LMS), WISEflow (digital exams) and Blue (course evaluations). For comparison, operation of similar systems for the rest of the university is anchored in the administration. The different anchoring of the systems has made it clear that the CTL adds a particular educational expertise to operation of the teaching systems. This complements and balances the other administrative considerations and benefits teaching development at BSS.

Example: Evaluation.

Development, implementation and operation of the new joint digital evaluation system at BSS has required a wide range of expertise on procurement and operation of digital systems, establishment

of databases, data processing and presentation of data, evaluation theory, questionnaire techniques and quality parameters in university teaching, BSS's organisation and teaching practice, and communication and maintenance of websites, etc. The main focus of the work throughout has been how to establish an evaluation system that can support the *development* of teaching, teaching and academic skills in order to optimise student learning. Organisation of the evaluation project and staffing the evaluation team at the CTL have reflected this range of expertise, and the task would not be possible if it were not anchored in an organisation that can muster such a wide range of knowledge and competencies. On the other hand, course evaluation data - now enriched by the study-administrative data generated through a collaboration with AU BI - is included in consultancy from the CTL for the individual teacher, if teaching staff so request, and in the CTL's other consultancy and research (taking into account the rules adopted by BSS on the use of evaluation data).

Example: Digital exams.

Exams are a very large administrative task, and the desire to digitise all written exams in the education sector is very much rooted in the desire for time-saving workflows. However, in its advice on system choice and in the centre's development work as the system owner, the CTL has always taken outset in the principle that a digital examination system is not just an administrative system, but also a pedagogical system.

i. When digitising teaching, it is necessary to digitise exams too, so that the same types of digital course material included in the teaching can be included in the exam material.
ii. The most important pedagogical choices in organising courses are linked to the choice of type of examination and assessment strategies and, consequently, a digital system must provide a sufficient range of options.
iii. The exam is also an opportunity to provide students with feedback, and a system must be able to support this.

Furthermore, digital exam systems can provide large amounts of data on exam results and exam behaviour, and the CTL is involved in research aimed at making this "big data" useful for assessment analytics for students.

The CTL's working relationships with the Faculty

In connection with courses, consultancy, development work, operation of systems, etc., the CTL is in contact with teaching staff and administrative staff at BSS on a daily basis.

The CTL is also involved in a number of fixed working relationships with various other players in the BSS. Some of the most important are listed here:

- **Vice-dean for Education**: regular meetings every 14 days plus correspondence as required. Discussion on all relevant issues related to the CTL's activities, including system operation, tasks, reports, key figures, memos, agendas, positions and positions in connection with committee work at BSS and AU level. For a number of years there have also been meetings about every month with the Dean of BSS.
- **Aarhus BSS School Board of Studies**: participation in selected meetings when the CTL takes part in task performance or has been invited into the discussions (most recently, for example, evaluation, Campus 2.0, the educational IT initiative, feedback).
- **Directors of studies**: regular meetings on specific collaborative projects on the various courses and course evaluation, educational IT, etc.

- **Vice-dean for Research**: analyses for the PhD school, courses in PhD supervision. The CTL also assists twice each year in the graduate school's intro day for new PhD students.
- **BSS Studies**: cooperation on digital exams (WISEflow), gap analyses, study start exams, the legal basis for exams, etc.
- **BSS IT**: support on three digital teaching systems, integration of digital systems with other systems (dedicated support staff located at the CTL).
- **Aarhus Career**: evaluation of courses.
- **Summer University**: evaluation of courses.
- **BSS Communication**: operation of a number of websites.
- **User groups on study programmes**: development of Blackboard.

The CTL's working relationships at AU level

The CTL is also involved in a large number of relationships at AU level, often as a representative for BSS. The CTL is represented in the following fora and relationships at AU level:

- **UPNet management team:** The UPNet management team comprises managers from the four university teaching development centres at AU. As a group, the UPNet management team often advises the senior management team in matters related to university teaching and educational IT. Among other things, UPNet managers sit in the AU Edu-IT Forum and the LMS external advisory group. UPNet managers coordinate a number of joint activities between the four university teaching development centres, including the course in university teaching for assistant professors. The CTL coordinates the work of the group and provides secretariat assistance.
- **Edu-IT Forum:** forum with overall responsibility for coordination of procurement and operation of common digital systems for teaching, as well as advice on educational IT strategy, etc.
- **Edu-IT HUB:** The CTL collaborates with the HUB through regular meetings, among other things in the Edu-IT Forum as well as through a number of specific projects, where the CTL provides staff and expertise for specific AU projects, including tasks in connection with the LMS tendering procedure (market interviews, specifications of requirements, etc.) and advice on Media Lab design.
- **LMS tendering procedure:** The CTL is represented in the *steering committee*, the *reference group* and the *working group* and has also participated in the market interviews with suppliers.
- **Blackboard Project Manager Forum:** The CTL participates in the group that decides, coordinates and implements a number of more technical and system-related elements in Blackboard.
- **Education Committee (UfU):** The CTL participates regularly in the working groups appointed by the Education Committee (most recently working groups on AU's use of Uddannelseszoom, drop-out surveys and AU's rules for teaching portfolios).
- **AU-IT:** The CTL has meetings every quarter with the development manager at AU-IT to coordinate the need for development and integration of BSS's three digital systems.
- **AU-BI:** The CTL works with AU Business Intelligence on analyses of BSS's evaluation data enriched with data from the study administration system (data-lake) as well as on the use of the Power BI analysis tools.

- **AU Student Administration and Services:** The CTL has regular meetings with Educational Development and Analysis on developing opportunities for institutional analytics and learning analytics.
- **AU Talent/heads of graduate schools:** The CTL makes regular contributions with analyses of various aspects of quality in PhD courses (most recently an analysis of stress among PhD students).
- **AU's local COIMBRA group**

Over the years, this collaboration with a range of players has had different intensities and has shifted as new tasks and changing needs arise, but the CTL has always had many collaborative interfaces and is well integrated in the BSS and AU organisation.

The CTL's working relationships outside AU

The CTL's knowledge and expertise is also in demand outside AU, both nationally and internationally.

The CTL collaborates on research and publication with a number of foreign researchers at universities in Scandinavia, Europe and Australia.

Employees at the CTL have also been invited as keynote speakers at international conferences more than 20 times over the past seven years.

The CTL has over the years participated in three working groups in a research-ministerial context relating to quality in teaching, indicators of quality in teaching, and measurement of quality in teaching, and the CTL has participated in a number of meetings with officials on other topics.

The CTL has also on one occasion been visited by the research minister and a group of officials.

The CTL has been invited to join a number of international evaluation panels on the evaluation of educational centres (Lund), PhD programmes (Roskilde), study programmes (HUM-KU, NOKUT (Norway)), educational development projects (Tromsø); as well as various aspects of internationalisation (Israel, Milan, Groningen, Freiburg).

The CTL has also been invited to advise the management at a number of national and Scandinavian universities on the development of teaching and teaching competencies.

Over the years, the CTL has hosted around 30 foreign delegations and visitors who wanted to hear more about how we approach educational development work at BSS and at the CTL.

Finally, the CTL has held numerous presentations on university educational topics on courses and theme days at Danish and foreign higher education institutions.

The considerable international demand for, and interest in the CTL's expertise indicates the high quality of activities at the CTL.

Summary

The CTL performs its function, as has always been intended: a research-based university pedagogics development unit. The raison d'être for the CTL is to develop the teaching at BSS. The means are research, teaching and development.

The CTL is responsible for a wide range of tasks agreed with BSS over the years. The different tasks share the same strong educational expertise and are held together by strong synergies.

The CTL is a well-run centre, and this is also how it is perceived by its employees. The centre is highly regarded by its users and well-integrated into the BSS and AU, with many cooperative relationships and close coordination of activities with the Dean's Office at BSS. The intensity of cooperation and the definition of tasks have always been adaptable to the needs of the management, teachers/lecturers and other stakeholders.

The CTL is action-oriented in its DNA, and, among other things, this is expressed by (i) every year for three years in succession, in cooperation with many other players, having been responsible implementing a major new digital education system and then having it cheaply and efficiently operated, and developing the systems and their use and (ii) having carried out 11 major commissioned questionnaire surveys at AU and BSS over the past 11 years, each delivered within the agreed framework for time, content, quality and consultation processes.

The Centre has made a difference at BSS, for example by further developing existing teaching and supervision practice through extensive course activities for teaching staff at all career stages; by supporting numerous development projects and even more teaching staff; by contributing to good decisions, fast implementation and secure operation of digital teaching systems; and by supporting the BSS quality assurance policy in a number of areas, thereby contributing to institutional accreditation.

BSS is regarded as the largest teaching institution in the area of business and social sciences in Denmark. For a teaching institution of this size, it is only natural to prioritise research into business and social sciences didactics. Through the CTL, BSS has also earned a reputation for working systematically with educational development on a large scale.

Appendix I: Figures to illustrate aspects of the CTL's educational expertise

See the section on "The CTL's expertise: knowledge about research-based teaching" for more details about the two figures below.
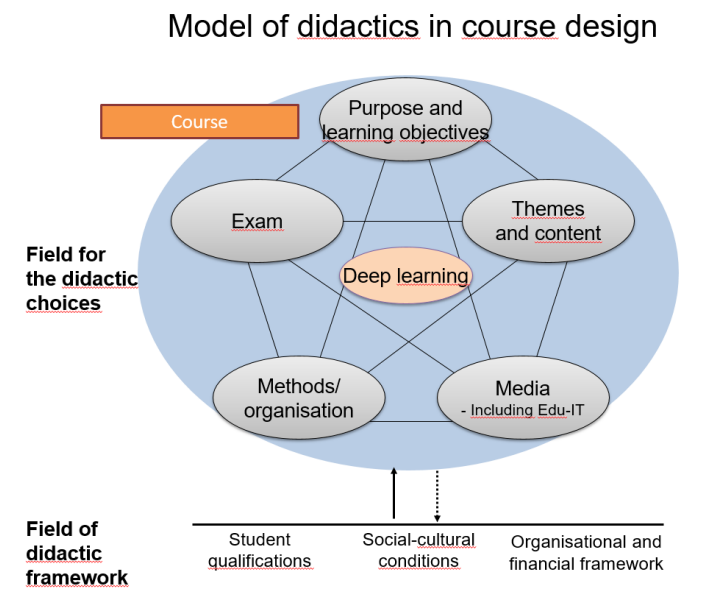
Figure 1:

Model of didactics in course design

Figure 2: