SCHOOL OF BUSINESS AND SOCIAL SCIENCES
AARHUS UNIVERSITY

Educational IT at BSS – a focus area at AU

The Educational IT initiative means that, in the period 2018-2023, AU will be focusing on the use of digital learning technologies in teaching. Through competency development for teachers, adaptation of digital learning tools, redesign of teaching programmes and recognition of excellent teaching, the goal is for the initiative to enhance research-based teaching.

As part of the initiative, on 28 November 2017, the faculty management team at Aarhus BSS adopted an action plan to develop Educational IT-supported teaching at Aarhus BSS (*'Handleplan for udvikling af Educational IT-understøttet undervisning på Aarhus BSS'*). According to the action plan, the main objective of developing teaching through Educational IT is *'...to use Educational IT as a catalyst for maintaining and possibly even developing the quality of research-based teaching[...]. This involves redesigning teaching programmes or learning activities by integrating digital technology to address some of the challenges currently faced by students or teachers on the study programmes at the faculty.'*

This memo briefly explains
1. the rationale behind using Educational IT in teaching at Aarhus BSS,
2. the preconditions for well-integrated use of Educational IT,
3. four formats for courses run to varying degrees by means of learning technologies,
4. the potentials of using the described formats at Aarhus BSS

1. The purpose of Educational IT at Aarhus BSS

Educational IT in teaching at Aarhus BSS (see the action plan) should not be applied simply for the sake of technology, but rather in order to facilitate academic activities that may address some of the challenges faced by students or teachers, or in order to respond to some of the development initiatives that teachers want to implement for a specific course. Basically, the use of Educational IT or digital learning technologies aims at enhancing research-based teaching.

In relation to teaching on higher education degree programmes, integration of digital learning technologies has proven useful for a number of learning objectives (Price & Kirkwood, 2011, p. 3-4 (synthesis)), for example *to engage students in a variety of ways in their learning, appropriate assessment and feedback for students,* and *developing students' abilities to link theoretical and practical aspects.*

At Aarhus BSS, under the right conditions, learning technologies can be integrated for similar purposes, in particular to support the action plan focus areas:

- *more engaging and inclusive forms of instruction*
- *more diverse forms of feedback*
- *increased flexibility in relation to students' participation in teaching*
- *learning adapted to student diversity with regard to qualifications and learning patterns*
- *students' acquisition of additional academic skills and competences*
- *students' acquisition of competences (i.e. additional learning) beyond the competences acquired through the academic, face-to-face meeting*

Appendix 1 lists examples of activities and technologies that may help implement the focus areas specified above.

2. Preconditions for well-integrated use of Educational IT

The role of the teacher
In order to ensure appropriate use of learning technology in teaching, a number of basic elements related to teaching must be considered. It is essential to ensure a strong link between learning outcomes, forms of examination and teaching activities (alignment) and to consider students' backgrounds for understanding and working with the academic teaching materials (Biggs and Tang, 2011). The teacher plays a central role in this connection. Furthermore, the teacher is the key player in ensuring a clear coupling between technology-supported learning activities and other learning activities in the course. This is done by motivating, initiating and following up on students' work on different learning activities. Taking on this role takes time and practice for the teacher.

The role of technology
Next, the role technology in a specific course should be considered: should technology *support*, *enhance* or *transform* existing teaching practice (Price & Kirkwood, 2011 (guide)). While the first two strategies focus on providing more flexible/efficient access to materials and on making additional materials and learning activities available, the latter strategy involves a revision of the existing teaching practice. Here, courses will be redesigned with a view to offering students different and new opportunities to achieve the learning outcomes of the course. The way in which technology will transform teaching practices thus depends on the role it is given.

The role of the institution
Comprehensive and systematic use of learning technologies for teaching and learning activities aimed at influencing students' learning outcomes will often require that the teachers involved engage in iterative development work in relation to their teaching (Alammary, Sheard & Carbone, 2014). Experience from Aarhus BSS suggests that, in this connection, teachers need institutional backing in the form of: technical support, resources and, not least, recognition of increased time spent on teaching. International as well as local experience from Aarhus BSS furthermore indicates that at least three iterations of a course are likely to be required before the course has found its new form.

3. Delivery formats for courses

In order for Aarhus BSS to be able to realise this new initiative and develop a common terminology for the efforts launched, a categorisation has been established (see the action plan) which describes four course design formats, integrating technology in different ways.

1. **Technology-distributed**
2. **Technology-supported**
    2.1. *in-class*
    2.2. *out-of-class*
3. **Blended Learning**
4. **Online**

The matrix below shows the position of the four formats (including subcategories) in terms of integrating physical and digital learning environments, respectively, and in terms of carrying out key (or compulsory) learning activities with or without using technology.

combination of physical and digital learning environments

out-of-class **technology-supported** in-class	**blended learning**
technology-distributed	**online**

low degree of key digital learning activities — — high degree of key digital learning activities

either physical or digital learning environment
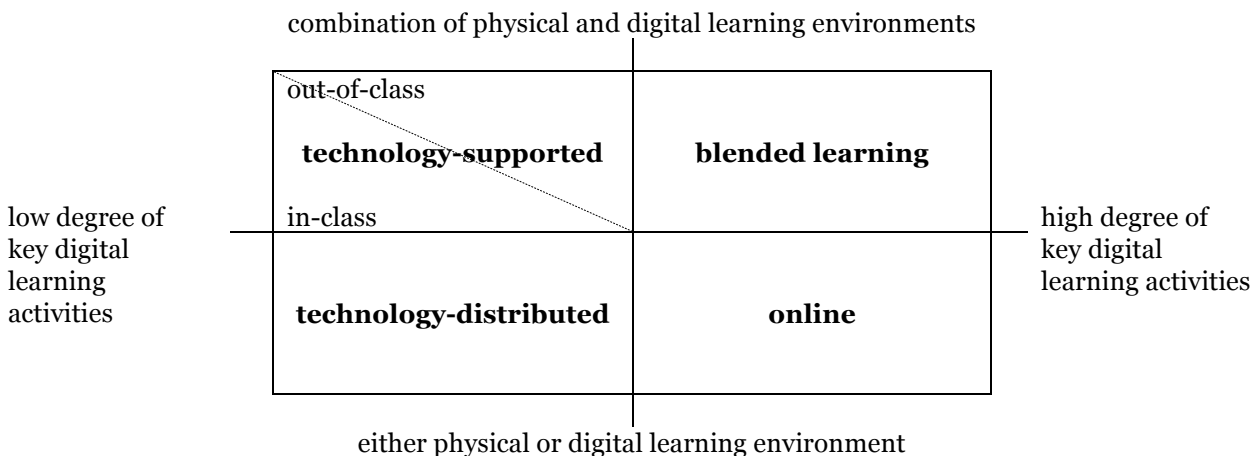
Below is a brief guide to the individual categories:

1. **Technology-distributed:** classroom teaching on campus. Digital learning technology is used to distribute course materials and course information through the university's LMS (Blackboard).

2. **Technology-supported:** classroom teaching on campus. Learning and/or teaching activities facilitated through digital learning technology in or outside the classroom are typically a supplement to other teaching activities. Technology-supported activities take place one or several times during a course and may take the form of in-class or out-of-class activities, but not necessarily both.

    2.1. ***in-class:*** digital learning technology is only used to support activities during lessons
    2.2. ***out-of-class:*** digital learning technology is only used to support activities outside lessons

3. **Blended Learning**: classroom teaching on campus combined with online learning and teaching activities. Key learning and/or teaching activities are facilitated through digital learning technology and online. Teaching is designed so that there is a clear link and mutual dependence between online activities

in which students are required to participate, and classroom activities on campus. For example, participation in lessons requires participation in online activities before and/or after class.

4. **Online:** all learning and teaching activities are facilitated by digital technology and take place online.

The following sections provide a more detailed description of the four course design formats based on examples from Aarhus BSS and focussing on the possible scenarios for working with the four formats within the EduIT initiative.

3.1. Technology-distributed
Description

Technology-distributed denotes the category of courses run exclusively as classroom teaching on campus (i.e. in a physical learning environment), but where the course materials, the course description, lists of participants, messages from the teacher etc. are available on the course site in the Blackboard (BB) Learning Management System. Varying BB tools may be applied, depending on whether the course coordinator has used department-specific or programme-specific templates to set up the course site (menu structure) or has customised the course site to the specific course. For example, some teachers prefer to organise their course materials in a week structure or a lesson structure in order to make the course structure visible to students, instead of placing all the course materials in the same folder. The course typically involves no or a low degree of key/compulsory learning activities to be carried out using digital learning technology.

Scenarios within the initiative

The *technology-distributed* category may include systematic work to customise the course site to the course structure and the learning activities, including preparation, in which students are expected to participate. In this way, the BB course site can help make it clear to students when and how they should prioritise/perform work in relation to the course. A well-designed course site will *support* (see Price & Kirkwood) existing teaching practice and possibly provide easier access to course materials, for example, but will not do much more than that.

3.2 Technology-supported
Description

Technology-supported denotes the category of courses that make use of digital learning tools for learning activities in lessons on campus (*in-class*) and/or between lessons (*out-of-class*). Learning technology is typically integrated into individual learning activities extracted from all the teaching activities in a course. Integration of learning technology may be limited to using the same digital tool throughout the course, or it may cover a range of different technologies to match the different purposes of course activities. Technology-supported learning activities in this category are typically less centralised or optional learning activities.

In-class

Courses at Aarhus BSS that currently fall into this subcategory are courses using, for example, *student-response technologies* (such as Mentimeter and Poll Everywhere) during lessons, or courses integrating collaborative tools (such as Padlet, Google Docs and BB blog/wiki) in group teaching. In lectures, digital learning tools are typically used to ask students questions during the lecture, make students reflect on their answers and possibly discuss these with their neighbour before wrapping up in plenary sessions and giving feedback on why some answers are/may be more correct than others. This practice is also widely used in classroom teaching, but due to the lower number of students, classroom teaching also provides a setting for

introducing technology-supported activities in which students, individually or in groups, use digital tools to follow up on presentations, discussions and group work, and to work on producing academic content for their own assignments, including written assignments for submission.

Out-of-class

Courses in this subcategory use a wide variety of digital tools to present topics from the syllabus or to make students work with the learning outcomes of course outside lessons. With regard to presenting topics, this is typically by means of screencasts (slides with voice-over), video presentations or learning paths with text used before or after class. With regard to engaging students in independent work outside the classroom, examples from Aarhus BSS on the use of digital tools for this purpose can be found both in BB and (currently) in third-party tools (such as PeerGrade, Google Forms, Padlet, Pearson's MyLab, etc.). Learning outside lessons may also be achieved by taking part in quizzes, asking questions about the syllabus, developing problem statements, training specific methods of analysis or providing feedback on assignments to fellow students.

Scenarios within the initiative

This category can include systematic work to generate experience in supporting various academic learning activities using digital tools in order to ensure that teachers and students achieve the desired outcome.

Expected impact of integrating technology

Initiatives within this category are likely to add new aspects to teaching *(enhance,* see Price & Kirkwood). The use of technology-supported teaching may influence students' learning outcomes, but if technology is used sporadically or is not used for key learning activities in the course, it is less likely to have an impact. However, it is likely that technology-supported learning activities may contribute to the students' involvement in the course and to their activity level during lessons.

3.3 Blended learning

Description

Blended learning denotes the category of courses that systematically combine *in-class* activities with *out-of-class* activities. The difference between this category and the *technology-supported* category is that digital learning activities are used for key or compulsory learning activities in the course, and that the physical learning environment and the online learning environment are systematically combined to ensure the greatest possible effect. Courses in this category thus have course designs with a clear interaction between *in-class* and *out-of-class* activities. For example, activities in class need not be supported by digital learning technologies, but students' preparation for class, as well as their work after class, will usually be through online learning activities.

Examples from Aarhus BSS are already available, showing how teaching has been organised in a blended-learning format. This may be as *flipped learning*, where all or parts of the course topics are presented online in videos, screencasts and texts in order to free up time during face-to-face meetings for students to work actively on solving case assignments and written assignments under the supervision of teachers or instructors during lessons. Blended learning may also take a more classic form, with students preparing for class by engaging in online activities before class, thus allowing the teacher and the teaching activities to use the materials prepared by students at home as a starting point for lessons, and to presuppose a higher level of

knowledge when the lessons start and when working on students' own material.[1] A third variant of blended learning focuses on ensuring flexibility and ongoing contact with students during a course with few face-to-face sessions, for example in connection with project-oriented courses and seminars in further and continuing education. Finally, there is an example from Aarhus BSS where parts of a course have been shifted to an online format in order to ensure better conditions for students to do individual work on one of the methods of the course in a specific computer program.[2]

Scenarios within the initiative

Within the *blended learning* category, work can focus on creating a course design with systematic and coordinated use of the physical and online learning environments with regard to carrying out compulsory or key teaching and learning activities. The decisive factor is that all activities support the overall learning outcomes of the course and meet the needs or challenges faced by students and teachers in connection with teaching.

The proposal is not to focus on arbitrary targets for the face-to-face/online ratio in blended learning (for example that campus-based activities account for 29% and online activities account for 71% of the course), but rather to develop various models for courses to ensure coherence between online activities and different types of campus-based teaching, such as exercise sessions, classroom instruction, lectures, project-oriented courses, seminar teaching, etc.

Expected impact of integrating technology

Integrating technology into courses within this category is likely be of a *transforming* nature (see Price & Kirkwood). It is likely that, compared with the *technology-supported* category, the impact of course design can more easily be detected among students.

3.4. Online
Description

Online denotes the category of courses that are completely online, without any sessions on campus. The course website in BB will be the central site for presentations of course content through videos, screencasts, texts, etc., for online learning activities based on the tools of the platform, and for communication between teachers and students. Furthermore, a number of synchronous technologies such as video conferences (e.g. Adobe Connect, AppearIn, Skype), chat technologies (e.g. Padlet back-channel) and other collaborative tools (e.g. Microsoft Teams) will be applied.

Meetings between teachers and students are an important part of teaching at Aarhus BSS, and requirements for weekly minimum numbers of lessons, not to mention students' expectations for teaching to involve face-to-face meetings with their teacher, are conditions that must be taken into account when organising teaching. Consequently, reorganising *entire* courses into pure online courses without any form of classroom teaching is not an obvious choice. However, there is a great potential in considering whether, from a learning perspective, *parts* of individual courses could be online, and whether students can acquire knowledge and competences in more appropriate ways than through classroom teaching. For example, this could be relevant in work to learn about subject-specific computer programs, to acquire general competences (e.g. study

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[1] For a specific example, watch this interview: http://treat.au.dk/eksempler/creating-a-better-point-of-departure-for-in-class-discussions

[2] Watch an interview with the teachers:http://treat.au.dk/eksempler/fra-ovelsestimer-til-online-videobaseret-undervisning (in Danish)

techniques, teamwork, employability) or to ensure better transitions between qualifying education and the university, and between the university and the labour market.

Scenarios within the initiative

This means that, within the *online* category, work may be focused on reorganising *parts* of (or entire) courses into an online format. This does not necessarily mean that an online course has the same duration as a traditional campus-based course. The target group, the academic content, the learning outcomes and the desired flexibility of time and place will guide the final course design, including the duration of the course. Furthermore, the use of synchronous and asynchronous technologies will depend on how academic content is best presented and processed (simultaneously or with a time delay).

Expected impact of integrating technology

Most online courses will probably belong to the *transform* category (see Price & Kirkwood), because the existing teaching practice typically changes considerably (although a campus-based course and course design may also be reproduced in an online version, e.g. through video streaming lectures). Whether redesigning a course to an online format will have a positive effect on students' learning outcomes is likely to depend on the types of learning activities included in the course design (Rienties & Toetenel, 2016).

4. What are the potentials of the four course formats?

Using the four formats to categorise teaching at Aarhus BSS makes it possible:

- in the short term (< 1 year) to identify which of the four formats the courses at Aarhus BSS belong to at the outset of the initiative, and to consider whether other formats should be offered on individual degree programmes in relation to individual courses and entire study programmes through a more coordinated effort.

- in the medium term (2-3 years) to develop courses in relation to the four formats and apply the formats, e.g. in course descriptions via EDDI and possibly other systems, to communicate to students what to expect in terms of integration of technology into the course. Moreover, it will be possible to conduct annual monitoring of changes in the range of formats and to monitor which digital learning technologies are used within the individual formats, thus ensuring corresponding/up-to-date support and technologies.

- in the long term (5 years) to evaluate the distribution of Aarhus BSS courses in terms of formats at the end of the initiative. In addition, follow-up research on formats will be conducted in relation to teachers' and students' experiences, resources invested and benefits from the different formats.

Appendix 1: Proposals for specific activities and technologies
Appendix 2: Project template

Appendix 1

Suggestions for specific activities and technologies that can be used to support the action plan focus areas. See treat.au.dk for more suggestions and step-by-step instructions.

Focus areas	Description of activities	Suggestions for digital learning technologies
Engaging and inclusive forms of instruction	It can be difficult to engage all students, particularly when teaching large classes and giving lectures. *Student-response* technologies may support activities that allow for engaging many students at the same time and on an ongoing basis in peer discussions or plenary discussions. In smaller classes, Blackboard functions and other technologies can also be used to facilitate student input as part of teaching activities.	*Student-response technologies:* Mentimeter, Poll Everywhere, Kahoot *Blackboard:* Blog, Wiki, Journal *Other technologies:* Padlet, Mindmeister, Google Docs
Diverse forms of feedback	Study environment surveys at AU have shown that students constantly demand more feedback. Additionally, formative feedback is one of the most effective learning tools (Hattie, 2012). Various digital learning technologies may be used to broaden the range of feedback options. One form of feedback is quiz technologies (both independent quizzes and quizzes integrated in video materials, for example) designed by the teacher in different formats (multiple choice, open text, matching, etc.) for students to test themselves. Furthermore, a range of technologies are available to facilitate peer review/feedback processes in which, using rubrics for example, students can evaluate tasks (e.g. text, video, etc.) and provide feedback to other students. The teacher manages the overall process, but is not directly involved in providing feedback.	*Quiz technologies:* Blackboard quiz; EdPuzzle (video with MCQ) *Peer feedback technologies:* PeerGrade, Blackboard blog
Increased flexibility	There are several options for synchronous and asynchronous technologies that may increase the flexibility of teaching. For example, students may be granted access to different types of teaching materials in Blackboard at their own pace, and they may participate in teaching, group work and supervision through various video conference technologies without being present on campus.	*Blackboard:* Learning module, Blog, Wiki, discussion forum, *Video conference technologies:* Adobe Connect, Skype, appear.in
Differentiated teaching initiatives	Irrespective of the size of a class, it may be difficult to plan teaching activities to fit each individual student's need for support to	*Videos/screencasts:* Camtasia Soapbox

	understand the subject-related theories, empirical knowledge and working methods. Through dialogue with the teacher, students can test their understanding, but when this is not possible (e.g. in large classes), the teacher may use various technologies to produce supportive teaching materials. Such materials include learning paths, 'question trees', instructions and short videos or slides with voice-over explaining key concepts, methods or calculations, for example.	Explain everything (iPad) *Blackboard:* learning module/items *Other technologies:* Google Forms
Additional academic skills and competences	Academic meta-competences such as writing and scientific reasoning typically need to be practised in parallel with students acquiring specific academic content. Teachers may use different technologies to introduce students to the specific requirements for communicating within a given academic field, in addition to the general requirements for scientific writing and reasoning. This can be through the teacher commenting on example material, but also through assignments in which students practice their skills of developing problem statements and other components of written/oral knowledge production.	*Videos/screencasts:* Camtasia Soapbox Explain everything (iPad) *Blackboard:* blog, discussion forum *Other technologies:* Scribo and other writing programs
Acquisition of general competences	Other more general competences that may also be practised through technology-supported activities include study techniques, employability, teamwork, digital competences and understanding technology. These activities may be integrated into the courses, but may also be offered separately.	In principle, all of the above technologies and activities may be included here.

Appendix 2: Project template

Title/heading
Give the project a working title

Motivation and goals

Describe the project - describe:

1) What is the background for launching the project?
2) How will the project be integrated in teaching, and what is new compared with existing practice?
3) What do you hope to achieve with the project?
4) Which students/groups of students constitute the target group for the project?
5) Which parts of the project will be supported by technology and how?

Evaluation

How will you evaluate whether you have successfully met the project objectives?

____ *My own observations/experience*
____ *Oral evaluations by students*
____ *Written evaluations by students*
____ *Course evaluation*
____ *Other:*

Please elaborate:

Have you carried out/are you able to carry out an evaluation of existing practice in relation to the objectives of the project before the project starts?

If yes, please explain how:

Study programme/course
Specify under which study programme and course the project will be carried out:

Delivery format

How will you describe the current delivery format of the course, see EduIT memo? (please tick)

___ technology-distributed
___ technology-supported (___in-class /___ out-of-class)
___ blended learning
___ online

If you expect that the project will involve a change of delivery format, please state the expected new delivery format (please tick):

___ technology-distributed
___ technology-supported (___in-class /___ out-of-class)
___ blended learning
___ online

Please elaborate:

Teachers

1) Who will carry out the project?
2) What is your current knowledge/experience of the course, the students and the use of technology in teaching?

Resources

What resources do you need in order to carry out the project?
(e.g. student assistants, sparring with the CTL, licenses for technologies)

Implementation

1) When do you expect to develop materials and activities for the project?
2) When will the project be carried out? (specify semester and year)