

# Teaching for Active Learning TAL2017

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# Teaching for Active Learning TAL2017 - Undervisning i en digital tidsalder

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*Hvorfor blended learning er så vigtigt og udfordringerne med at flytte en institution mod nye modeller for (online) læring*

I november 2017 afholdt SDU Universitetspædagogik (SDUUP) sin femte **Teaching for Active Learning** konference på Syddansk Universitet (SDU). Konferencens hovedtema var aktiverende undervisning og aktiv læring, som er det bærende princip for uddannelse ved SDU. Formålet med vores årlige TAL-konference er at give undervisere, uddannelsesudviklere og andre uddannelsesinteresserede ved SDU og andre videregående uddannelsesinstitutioner mulighed for at

- dele, dokumentere, demonstrere, begrunde og analysere egne eksempler på aktiverende undervisning og aktive læring
- blive inspireret til at videreudvikle egen aktuel praksis eller udvikle en ny egen praksis inden for aktiverende undervisning og aktiv læring

TAL2017 havde særligt fokus på to temaer:

- **Undervisning i en digital tidsalder og hvorfor blended learning er så vigtig**
- **Udfordringerne med at flytte en institution mod nye modeller for (online) læring**

Vi havde fornøjelsen af keynote speaker **Dr. Tony Bates, Distinguished Visiting Professor at the Chang School of Continuing Education, Ryerson University, Canada**, som er internationalt anerkendt for sit arbejde med udvikling af online undervisning. I 2015 udgav Bates bogen "[Teaching in a Digital Age](#)", der er rettet mod undervisere, som ønsker indsigt i forskellige former for online undervisning. Bogen er downloadet mere end 50.000 gange og oversat til 10 sprog. I sin første [keynote](#) talte Bates om vigtigheden af blended learning nu og i fremtidens undervisning. Han præsenterede en række vigtige samfundsmæssige forandringer, som forklarer, hvorfor gode online læringsaktiviteter bør fylde mere i undervisningen, hvis man som universitet vil være konkurrencedygtig i fremtiden. Mange institutioner kan levere godt indhold, men undervisningsperformance, inklusive online undervisning, vil blive et vigtigt konkurrenceparameter i fremtiden, hvilket retter fokus mod udviklingen af undervisernes pædagogiske kompetencer og teknologiske færdigheder. I sin anden [keynote](#) talte Bates om udfordringerne ved at flytte en institution mod nye modeller for (online) læring. På baggrund af de samfundsmæssige forandringer, som blev fremhævet i formiddagens keynote, mener Bates, at alle universiteter står over for nedenstående udfordringer:

- *Skal vi ændre vores undervisningsmetoder for at reflektere forandringerne i verdenssamfundet?*
- *Hvordan kan vi gøre universitetsundervisning mere effektiv for studerende i en digital tidsalder?*
- *Hvordan kan vi belønne dygtighed i undervisning såvel som dygtighed i forskning?*
- *Hvad er omkostningerne og risiciene ved at gøre dette - eller ved IKKE at gøre dette?*

Bates mener ikke, at universiteterne har noget valg, hvis de vil overleve som undervisnings- og forskningsinstitutioner, og det er derfor nødvendigt at tage stilling til "Teaching performance" som et konkurrenceparameter. Læring og ikke mindst e-læring bør derfor på ledelsesplan have et langt større fokus, og der skal ikke kun udarbejdes en overordnet strategi, men også klare strategier for de enkelte uddannelser og de enkelte fag. Dette kræver i følge Bates også et opgør med den måde vi tænker og effektuerer uddannelsesdesign og undervisning på i dag. Alt for meget ansvar og alt for mange opgaver ligger i dag hos de enkelte undervisere og studieledere, der typisk ikke har de nødvendige færdigheder og ressourcer til selv at udvikle online undervisning på uddannelsesniveau. Udarbejdelse af online undervisning og undervisningsmateriale bør af ressourcemæssige årsager derfor ske i teams bestående af faglige, pædagogiske og teknologiske eksperter, så den enkelte underviser ikke drukner i de ekstra udfordringer, som typisk knytter sig til førstegangsudvikling af online undervisningstiltag.

TAL2017 bød endvidere på en række interessante oplæg og workshops på dansk og engelsk. I denne konferencepublikation finder du danske og engelske bidrag i følgende to formater: vodcasts, som deltagerne efterfølgende har produceret, og tekster, som udfolder det oprindelige bidrags pointer.

Både konferencen og denne publikation er med til at dokumentere, at der foregår meget nyskabende, velbegrundet og gennemtænkt undervisning på tværs af uddannelsesniveauer og -institutioner, og arrangørerne bag konferencen takker alle deltagerne og bidragsyderne for deres medvirken til at sætte fokus på blended learning, og på hvordan aktiverende undervisning og aktiv læring kan praktiseres.

Vi håber med denne publikation ikke alene at kunne inspirere til forsat erfaringsudveksling og videreudvikling af de mange gode praksisser inden for aktiverende undervisning og aktiv læring, men også at have givet undervisere mulighed for at dokumentere og dele deres reflekterede erfaringer med undervisning – at synliggøre, hvordan læring er blevet gjort muligt.

På vegne af konferencearrangørerne

Inger-Marie F. Christensen, Christopher Kjær og Pernille Stenkil Hansen

# Keynote Dr. Tony Bates

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Dr. Tony Bates is currently a Distinguished Visiting Professor at the Chang School of Continuing Education, Ryerson University and is also a Research Associate at Contact North Contact Nord. He has almost 50 years' experience in using technology for teaching, starting in 1969, when he began researching the effectiveness of the BBC-Open University television and radio programs, as a founding staff member of the British Open University, where he became a full professor in educational media research.

In 1989, he emigrated to Canada, to take the position of Executive Director, Strategic Planning and Information Technology at the Open Learning Agency, Vancouver. In 1995, he moved to the University of British Columbia, to become Director of Distance Education and Technology. On retirement from UBC in 2003, he started his own consulting company, specializing in the planning and management of learning technologies in post-secondary education. He has worked as a consultant in over 40 countries. He has received honorary degrees from six universities for his research in distance education.

He is the author of twelve books on learning technology, online learning and distance education, including his latest online, open textbook for faculty and instructors, 'Teaching in a Digital Age'. The book, first published in April 2015, has been downloaded over 50,000 times and is being translated into ten languages.

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## **Tony Bates gave two keynotes:**

### ***Teaching for a Digital Age: Why Blended Learning is so Important***

The key challenge for university instructors is how best to prepare our students for a volatile, uncertain, complex and ambiguous world. This entails a shift of focus from content mastery to high level skills development. What teaching methods will facilitate such a shift? What role should technology play in making such a shift? Why is blended learning so important for this shift? The presentation included actual cases and best pedagogical principles as suggestions regarding how this can be done.

### ***Managing institutional change: moving an institution towards new models of learning***

All higher education institutions face the challenge of change, especially in teaching methods, where faculty have a great deal of autonomy. The presentation explored some of the successful practices that have been used to support faculty and instructors in a shift to new ways of teaching. The challenges that still remain to be overcome will also be discussed.

# Mere selvstudie med virtuelle læringsrum ved problembaseret læring

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*Henriette Lorenzen og Isa Neimann Thomasen, Bioanalytikeruddannelsen, Professionshøjskolen Metropol*

## Baggrund

Bioanalytikeruddannelsen er en mellemlang videregående professionsbacheloruddannelse, der uddanner de studerende til at varetage og kvalitetssikre laboratorieanalyser og patientundersøgelser og dermed til at indgå i det diagnostiske samarbejde på de danske sygehuslaboratorier.

På Bioanalytikeruddannelsen i København har vi igennem de sidste 15 år anvendt Problem Baseret Læring (PBL) i studiets sidste halvdel med henblik på at lade de studerende indgå stadig mere selvstændigt i læreprocesser, der er tæt koblet til praksissituationer.

Vi anvender den såkaldte 7-trins PBL-model (Schmidt, 1983). Ved denne model arbejder de studerende gruppevis i faglige forløb, der typisk er af 2 ugers varighed. Læringsprocessen initieres ved et fysisk møde med en åben praksisnær problemstilling og faciliteres af en vejleder. Studiegruppen identificerer egne læringsbehov og opstiller læringsmål, der formuleres som konkrete og afgrænsede spørgsmål. Læringsmålene fungerer som guides for selvstudiet, der er den del af forløbet, hvor de studerende selvstændigt indhenter og bearbejder den viden, der besvarer gruppens læringsmål. Selvstudiet, som på det aktuelle modul udgør 60-70 % af de studerendes samlede studietid, suppleres med undervisning i form af forelæsninger, workshops og laboratorieøvelser svarende til 7-14 timers undervisning om ugen. Der er ikke et pensum, der rammesætter de studerendes selvstudie men anbefalinger til forskellige lærebøger og artikler. Alle forløb afsluttes med et fysisk gruppemøde, hvor læringsmålene afdækkes af de studerende ved faglige diskussioner og fremlæggelser. Disse afsluttende gruppemøder faciliteres igen af vejlederen.

Fagforløbene er flerfaglige og professionsorienterede med elementer indenfor bl.a. biomedicin, kemi, biologi, fysik og statistik. For hvert undervisningsforløb er det overordnede mål for læringsudbytte beskrevet i modulbeskrivelsen.

Vi så nogle udfordringer i forbindelse med de studerendes arbejde under selvstudiet. Vi så, at vores studerende ikke brugte nok tid på at arbejde under selvstudiet og at deres læringsmål ikke blev anvendt aktivt i de faglige forløb, men først blev taget frem ved det afsluttende gruppemøde, hvor de faglige diskussioner var præget af den dårlige forberedelse og manglende fordybelse i læringsmålene.

Ved evalueringer har vi fået bekræftet, at de studerende ikke studerer i den tid, der svarer til et fuldtidsstudie. Vi oplevede også, at det for nogle studerende er uklart, hvordan og i hvilken grad, der skal arbejdes i selvstudiet, når der ikke er et egentligt pensum.

## Mål

Målet var derfor at rammesætte et mere aktivt selvstudie ved hjælp af et virtuelt læringsrum, hvor skriftligt arbejde, koncentreret om de studerendes egne læringsmål, var udgangspunkt for feedback fra vejleder.

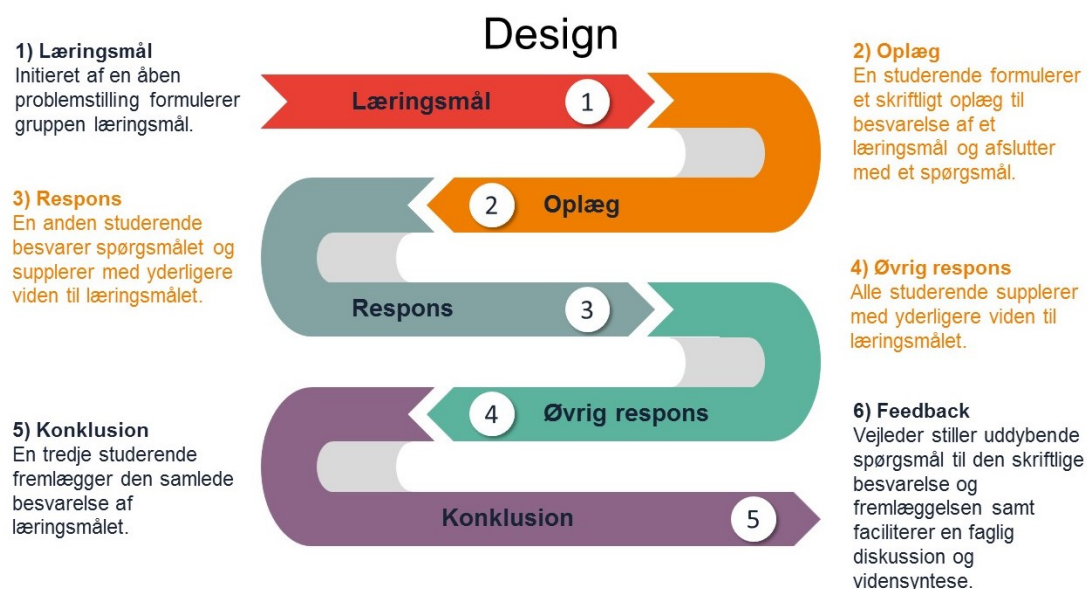
Vores ønske var at gøre vores forventninger til det arbejde, der ligger i selvstudiet mere tydeligt og motiverende samtidig med, at vi ikke veg fra princippet om, at de studerendes egne spørgsmål definerer det faglige indhold, der arbejdes med.

## Metode

Læringsaktiviteten under selvstudiet er tilrettelagt som asynkron kommunikation i et virtuelt læringsrum, hvor de studerende bidrager skriftligt og individuelt til fælles bearbejdning af læringsmålene formuleret af studiegruppen (figur 1). Intentionen med den individuelle skriftlige bearbejdning af læringsmålene er at understøtte faglig forståelse og øge læringsudbyttet hos den enkelte studerende (Dysthe & Engelsen, 2005). Det virtuelle læringsrum er et kollaborativt dokument med en på forhånd fastlagt skabelon. Den eksplicite struktur er valgt for at fremme samarbejde og læring (Laurillard, 2012). Princippet er, at én studerende formulerer et skriftligt oplæg til besvarelse af ét læringsmål og afslutter oplægget med et spørgsmål. En anden studerende udarbejder et respons ved at besvare spørgsmålet og supplere med yderligere viden til læringsmålet. Herefter har alle studerende mulighed for at bidrage til besvarelsen af læringsmålet. En tredje studerende fremlægger konklusionen på læringsmålet i det fysiske læringsrum (Lorenzen & Thomassen, 2016). Intentionen med det afsluttende spørgsmål i oplægget er at understøtte refleksion både hos den studerende, som skriver oplægget og den studerende, som besvarer spørgsmålet under udarbejdelsen af responsen.

Læringsaktiviteten korresponderer med nedenstående udvalgte læringsmål fra modulets beskrivelse. Den studerende kan:

- selvstændigt reflektere over eget læringsudbytte
- selvstændigt reflektere over skriftlighed som et middel til at arbejde med faglige mål
- selvstændigt reflektere over egne skrivekompetencer til at fremstille et videnskabeligt skriftligt produkt
- selvstændigt bearbejde læringsmål gennem skriftlig refleksion
- selvstændigt søge og vurdere relevansen af videnskabelig litteratur



**Figur 1** Oversigt over det samlede forløb og princippet for det virtuelle læringsrum (orange tekst)

Samtlige læringsmål bearbejdes efter samme princip, men fordeles mellem de studerende, således at de studerende på skift har forskellige opgaver (figur 2). Metoden sikrer derved, at hver studerende skriftligt bearbejder to læringsmål og mundtligt fremlægger et læringsmål.

Læringsmål	Oplæg	Respons	Fremlægning
1	Stud 1	Stud 7	Stud 6
2	Stud 2	Stud 1	Stud 7
3	Stud 3	Stud 2	Stud 1
4	Stud 4	Stud 3	Stud 2
5	Stud 5	Stud 4	Stud 3
6	Stud 6	Stud 5	Stud 4
7	Stud 7	Stud 6	Stud 5

**Figur 2** Fordeling af de forskellige opgaver i det samlede forløb.

Vi har opstillet en række krav og forventninger (figur 3) til den skriftlige bearbejdning af læringsmålene, fordi vi anser en tydeligt kommunikeret ramme, som en forudsætning for at fremme samarbejde, læring og høj studieintensitet, således at studietiden anvendes på det faglige indhold og ikke på at forstå formen (Laurillard, 2012).

- På baggrund af læst litteratur formuleres et oplæg til besvarelse af læringsmålet:
- Minimum 0,5 side (1000 tegn uden mellemrum)
- Inddrag erfaringer fra klinikophold
- Oplægget må gerne suppleres med billeder og video, men kan ikke erstatte en tekst
- Inddrag minimum to kilder
- Husk korrekt kildeangivelse
- Oplægget afsluttes med et spørgsmål, som kan føre den faglige bearbejdning af læringsmålet videre. Spørgsmålet kan være noget du ikke kunne finde svar på eller noget du undrer dig over.
- Deadline for upload.

**Figur 3** Forventninger og krav til det skriftlige oplæg.

Vejleder er synlig gennem feedback både i det virtuelle læringsrum og ved fremlæggelsen med henblik på at fastholde motivation og et højt engagement hos de studerende.

Figur 4 viser et eksempel på et læringsmål og et kort uddrag af et oplæg udarbejdet af en studerende.

#### **Oplæg**

**Hvad er analyseprincipperne for TEG? Præanalyse, analyse og post analyse. Hvad er koagulopati og hvordan udvikles det? Forklar de forskellige parametre for TEG og hvorfor de er vigtige?**

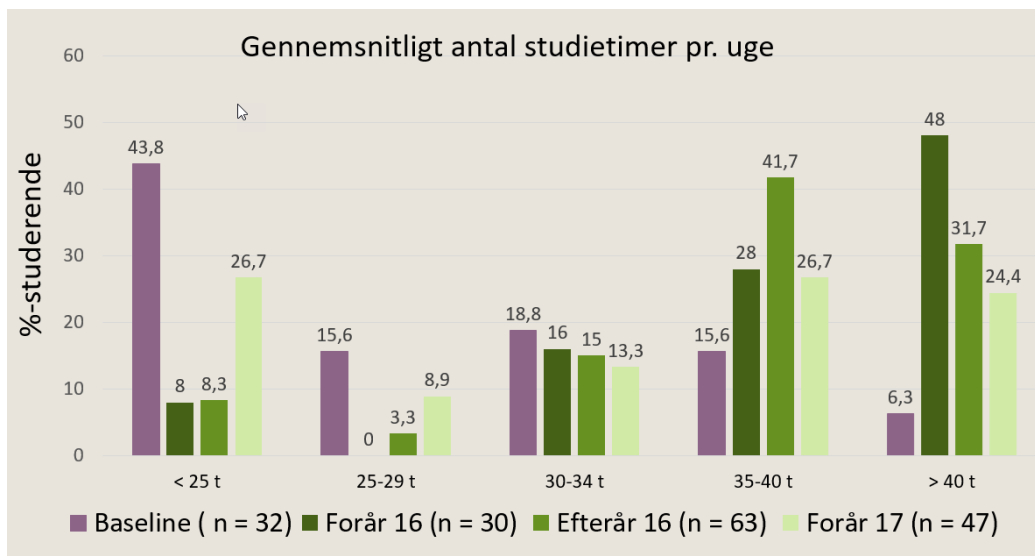
TEG er en funktionel fuldblodsanalyse som anvendes til overvågning af hæmostasen ved massivt blødende patienter og transfusionsbehandling. Resultaterne af målingerne danner basis for en løbende justering af forskellige blodkomponenter. Ved normal TEG analyse og fortsat blødning – overvej kirurgisk blødning(1)

**Figur 4** Eksempel på et læringsmål og et uddrag af et oplæg

#### **Resultater**

Læringsaktiviteten er gennemført på 3 årgange (forår 16, efterår 16 og forår 17) og evalueret af de studerende ved et fokusgruppeinterview og spørgeskemaundersøgelser. En evaluering gennemført for en årgang (forår 15) før implementeringen af det virtuelle læringsrum udgør baseline.

Figur 5 viser et søjlediagram med det samlede antal studietimer de studerende har opgivet, at de gennemsnitligt anvender pr. uge. De violette søjler viser baseline – dvs. før implementering af det virtuelle læringsrum. Baseline viser, at en stor andel (43,8 %) af de studerende anvender 25 timer eller derunder om ugen og at en meget lille andel (6,3 %) af de studerende leverer en studieintensitet svarende til fuldtid. De grønne søjler viser tre årgange, hvor det virtuelle læringsrum er afprøvet. Her ser man en forskydning, således at flere studerende anvender flere timer pr. uge. Helt konkret ser vi, at andelen af studerende som leverer 35 timer eller der over pr. uge, for de tre årgange er på henholdsvis 76 %, 73 % og 51 % af de studerende.



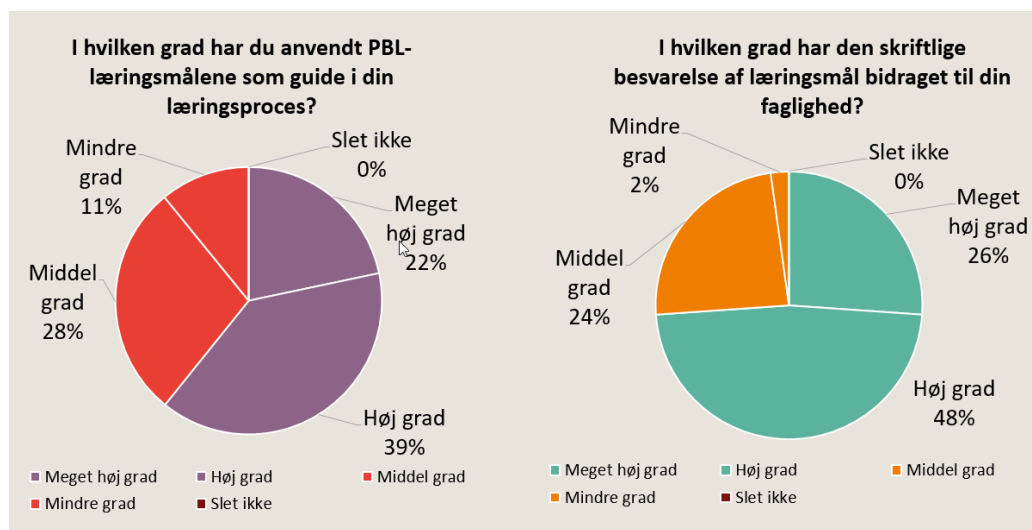
**Figur 5** Studieintensitet målt på samlet tid anvendt pr. uge for studerende på årgang forår 2015 (baseline), forår16, efterår16 og forår17

De studerende siger bl.a. at de arbejder mere intenst, af to årsager:

- fordi medstuderende er afhængige af hinandens indsats
- fordi den skriftlige besvarelse er synlig

Vi så, at studieintensiteten på de første årgange efter indførelse af det virtuelle læringsrum var høj, men nu er faldende. Dels er der stor forskel på årgange og dels kan der være tale om en form for bias, idet undervisere i begyndelsen har udtrykt begejstring for det nye tiltag og tiltaget nu er en almindelig del af vores praksis.

Vi har også spurgt til de studerendes anvendelse af læringsmålene som guide for deres læring (figur 6). I det første cirkeldiagram viser den violette del, at 61 % af de studerende anvender læringsmålene i høj grad eller i meget høj grad. I det andet cirkeldiagram viser den grønne del, at 74 % af de studerende vurderer, at den skriftlige besvarelse i høj grad eller i meget høj grad har bidraget til deres faglighed.



**Figur 6** Frekvensen af de studerendes svar i forhold til anvendelse af læringsmål (baseline 47 %) og den skriftlige besvarelses bidrag til faglighed. Data er baseret på årgang forår17 (n = 47)

De studerende sætter derudover pris på, at det virtuelle læringsrum tilskynder alle studerende til at møde forberedte til de faglige diskussioner ved de afsluttende gruppemøder.

## Konklusion

Brugen af blended learning har mange forskellige udformninger og formål. Vi har på Bioanalytikeruddannelsen i København indført en læringsaktivitet, hvis formål det var at lade et virtuelt læringsrum facilitere selvstudiet ved delvist at rammesætte, og dermed i højere grad at synliggøre, vores forventninger til de studerendes arbejdsindsats.

Vi fandt, at de studerendes arbejdsindsats steg markant efter implementeringen af det virtuelle læringsrum samt, at de studerende i langt højere grad anvendte deres læringsmål som guides for deres selvstudie (Lorenzen & Thomasen, 2016).

Det var ønsket, at en øget studieintensitet under selvstudiet skulle resultere i at de faglige diskussioner og den videndeling, der skulle afslutte fagforløbene, blev løftet til et højere niveau. Nu, hvor vi har anvendt og evalueret brugen af det virtuelle læringsrum i 2 år, ser vi dog en udfordring, der skal arbejdes videre med; Der er en tendens til, at de studerendes arbejde med læringsmålene i det virtuelle rum blot gentages ved det afsluttende gruppemøde, hvorfor det fysiske møde for nogle studerende kommer til at virke overflødig. Det er derfor vigtigt, at vejlederen er ekstra bevidst om relevansen med det fysiske møde og om den opgave, der ligger i at facilitere diskussion, videndeling og viden-syntese hos de enkelte gruppemedlemmer.

Som undervisere og vejledere er vi vant til at planlægge og strukturere undervisningsforløb og læringsaktiviteter, hvis indhold og mål er bestemt af os (og vores bekendtgørelser). Ved en studentercentreret undervisningsform som PBL, hvor målene sættes af de studerende selv, og hvor der ikke eksisterer et rammesættende pensum, kan selvstudiet være en uoverskuelig størrelse - et læringsrum, der er isoleret fra resten af læringsforløbet. Ved at implementere og designe det virtuelle læringsrum i de studerendes selvstudie, kobles selvstudiet med det fysiske læringsrum. På denne måde faciliterer vi de studerendes læringsproces - helt ud i selvstudiet.

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# Is Blended learning another form of playful learning? A design case study

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*Emanuela Marchetti, Assistant Professor, Department for the Study of Culture, Media Studies, University of Southern Denmark*

## 1. Introduction - Quizzes, blended learning and occupational therapy

Blended learning is defined as a hybrid form of learning, combining face-to-face, synchronous teaching activities with online, asynchronous, remote learning practices (Bates 2015, Halverson et al 2012). It has become a popular trend in Danish schools at any level, in relation to the ongoing process of the digitisation of learning practices. As a result, teachers are exploring different approaches, face-to-face and online, asynchronous activities, and digital tools to enable their students to become more independent in their learning process.

Within this framework, a design inquiry has been conducted as a cross-institutional collaboration between the bachelor programme in Web Development at Lillebaelt Academy (EAL) and the bachelor programme in Occupational Therapy at University College Lillebaelt (UCL); both institutions are located in Odense, in the region of Southern Denmark. This inquiry focused on exploring the design of a digital solution that could enrich existing practices in assessment at UCL. The students from EAL acted as designers and developers, while students and teachers from UCL acted as users. During this inquiry, both groups of students engaged in a designerly form of reflection on their learning experience (Cross 2006). This reflection was centered and facilitated by the joined effort of creating a new digital platform, which enabled both groups of students to engage in questioning the nature of quizzes and blended learning and constructing new visions. Results from this inquiry suggest that UCL teachers tended to apply blended learning in combination with gamification and playful learning, where quizzes have become a popular activity, where desired learning goals include textbook knowledge but also reflections on practice. Moreover, the inquiry itself was an active learning practice for EAL students, who engaged in a reflection on their role as technology makers for practitioners active in other fields.

In the following section (2) the empirical study is presented followed by discussion (3) and conclusions (4).

## 2. Empirical study and learning goals

This inquiry was conceived as a pilot study, on the topic of enriching the practice of self-evaluation within blended learning, taking quizzes within the UCL education in occupational therapy as a concrete case.

The project was seen as a promising cooperation between the EAL and UCL and had a two-fold learning goal. First, from the perspective of EAL students, this inquiry worked as a typical semester project, in which EAL students have to actively engage in the development of a website or a mobile application for an external company or a public institution, who acts as clients or users. Through the semester project EAL students have the opportunity to try out in practice the theories, methods, and technical tools that they are supposed to learn in their education. Second, from the perspective of UCL students the project was seen as an opportunity to engage in a reflection about their blended learning practice and learn about how digitisation takes place in the public sector, interacting with IT specialists.

According to EAL learning goals, the inquiry followed an iterative process, according to the principles of Lean UX (Gothelf and Seiden 2013) and User Centred Design methodologies (Preece et al 2015), supported by qualitative interaction analysis applied to video recordings (Pink 2007). These methods were valuable to the inquiry in three main ways; first these methods were valuable for conducting the study, which was framed as a design oriented empirical investigation (Fallman 2004) in which design practice was functional to the uncovering of new knowledge; second these were valuable for the development of the prototype; third EAL students were engaged in an active learning process, having the opportunity to be trained in these methods in the field.

The study was divided into three main stages:

1. User Study
2. Lo-Fi prototyping and formative evaluation
3. Hi-Fi prototyping and summative evaluation

During the user study stage, EAL students had to gather requirements for the development of the prototype, which entailed: an understanding of the use of digital platforms in blended learning and in relation to occupational therapy at UCL. EAL students started their investigation conducting a user study, which involved desk research and interviews with teachers and students at UCL. During their desk research (Dabner et al 2017), EAL students analysed UCL's web page and content management system, to gain an understanding of UCL branding identity and also the needs of students and teachers. This was followed by a series of interviews with a group of 5 students and the two teachers, who were also our contacts in the inquiry. In general, it was very difficult to plan sessions with teachers and students because of the tight schedule of both institutions, therefore we were not able to involve as many students from UCL as we hoped. After this stage, EAL students engaged in the creation of lo-fi prototypes, in the forms of simple digital visualisations of interfaces and scenarios for the new platform. In the field of interaction design, the term lo-fi prototypes or low-fidelity prototypes indicates, simple prototypes that are created during early stages of a design process. Lo-fi prototypes are made with paper and cardboard, these can also include non-interactive digital visualisations of an interactive product, which is still under development. These simple prototypes are supposed to be cheap and easy to make, they are aimed to be showed to users during preliminary tests, the so-called formative evaluations, in order to gather insights for the development of further prototypes (Preece et al 2015). EAL students created a series of lo-fi prototypes, consisting of digital, non-interactive visualisations, which were evaluated during a formative evaluation workshop at UCL, where each group from EAL presented their concept and UCL teachers and a group of UCL students gave their feedback. This session was quite challenging for EAL students, as this project was more complex than others that they experienced, in which they had mainly to develop a commercial website focusing on the needs of end users and support good usability in the practice of online shopping. In this case, EAL students had to investigate both the needs of UCL teachers and of their students, which implies that they had to create a double scenario for two different groups of users interacting with the same system. After the formative evaluation workshop, the students had to start on a new design iteration and create hi-fi prototypes to be evaluated in a summative evaluation at UCL.

The term hi-fi prototypes or high-fidelity prototypes indicates relatively refined prototypes, offering a certain level of interactivity and well-defined aesthetics (Preece et al 2015), hence the making of hi-fi prototypes requires coding and/or the use of graphic design and prototyping tools. These prototypes are created

in advanced stages of a design process and aimed at providing users with a fairly realistic impression of the finished product. Hi-fi prototypes are, therefore, used in summative evaluations, which are defined as testing sessions with users at the end of a design process and preceding the creation of the final product (Preece et al 2015). In this project, EAL students implemented a functional hi-fi prototype, which had to display an example of a possible quiz, to provide a clear impression of how the system will work when fully implemented.

The analysis was conducted through visual ethnography (Pink 2007), as data were collected through video recordings during the interviews and the two evaluations. The resulting videos were analysed paying attention to what people said and to their body language. In this respect, the project could be seen as an active learning experience for EAL students, who, through the design of a complex platform, had to engage in a deep reflection on their professional role as technology makers for people who have different professional backgrounds. At the same time, the project involved UCL teachers and students in a reflection on their experiences with blended learning and digital platforms.

### 3. Discussion

#### 3.1 Quiz and blended learning experience at UCL

Three aspects emerged as central in the experience of quizzes at UCL:

1. Promote students' independence
2. Ease the teachers' workload
3. Richer variation of learning activities

During our interviews with UCL teachers and students, blended learning and quizzes were appreciated for enabling students to become more independent and take charge of their learning process also outside the classroom. UCL has adopted Fronter, a content management system through which the teachers distribute various learning materials such as slides and video lectures authored by the teachers, theoretical chapters and articles, and other resources made available from the Union of Occupational Therapy<sup>1</sup>. The students on their side said that they like the opportunity to remotely access learning materials when it is more convenient to them.

On the other hand, remote access to learning materials was mentioned by the teachers as easing their workload regarding sharing of material, feedback, and assessment. Through Fronter, the teachers can share learning materials, extra readings and other resources, and also create quizzes for self-evaluation that the students can take on their own, as it is known in recent research (Bates 2015, Halverson et al 2012). Quizzes enable the students to keep track of their learning process and the teachers to gain a quick overview of the performance of individual students and talk individually with those who experience difficulties. In this respect, blended learning is perceived at UCL as enabling a richer variety of learning activities, in line with Bates (2015), where quizzes for self-evaluation have become a popular one, both inside and outside the classroom. Fronter and Kahoot<sup>2</sup> were mentioned during interviews as the preferred platforms for the crea-

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<sup>1</sup> In Danish: Ergoterapiforening - <http://www.etf.dk/> (last seen on: 15/01/2017).

<sup>2</sup> <https://kahoot.it/> (last seen in: 15/01/2018).

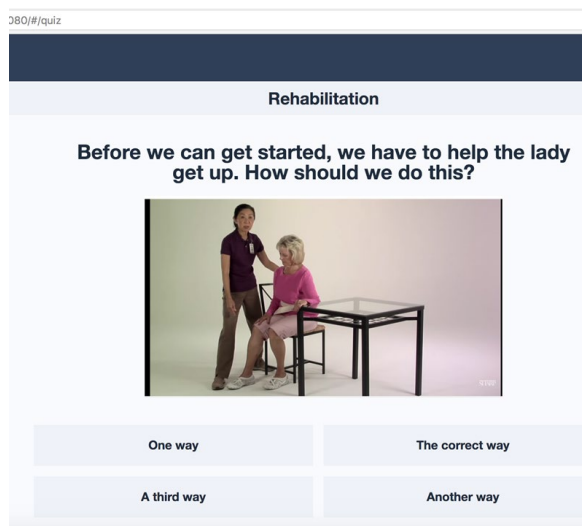
tion of digital quizzes. However, both students and teachers at UCL wish to explore different digital solutions to support richer assessment practices. Fronter is perceived as providing a more traditional support to the creation of quizzes, so that the teachers can create quizzes with open and multiple-choice questions and the students can access them and test themselves simply going online and logging themselves into the system. According to UCL teachers, Fronter was defined as “good” at encouraging the students to engage on their own with learning materials, such as slides and video lectures. Commenting on her video lectures, one of the teachers described them as “traditional”, they are not interactive nor particularly engaging, but they are “good for their purpose”, to enable students to engage remotely with lectures. However, Fronter was criticised by the students, especially because it is not functional on mobile devices and it supports the making of traditional text-based quizzes. In this respect, both students and teachers have expressed the desire to explore more enriching forms of quizzes, also including multimedia. Regarding experience with quiz, Kahoot is perceived as a more engaging and versatile tool, supporting lively social interaction in the classroom and across different groups of students. UCL students and teachers in separate interviews told amusing stories about how they used Kahoot in learning workshops, in which groups of students had to edit quizzes, exchange them and challenge each other in solving them. In this respect, gamification was constantly mentioned as a valuable resource to elicit engagement and fun during learning activities. However, also Kahoot was seen as limited in relation to support for multimedia, moreover, the students argued that in general quizzes can be “dry” and “boring”, especially when retaking quizzes that the students have made themselves for gamified events across the classes.

Parallel to digital quizzes, one of the teachers told that she has often arranged events in which students had to create audio-visual materials about their projects or paper based board games focused on specific topics, similar to the Goose Game or Trivial Pursuit. The students had to roll a dice, move a peg along the board and on a cell on the board, afterwards they would directly get a question reading from the cell or they would pick a card with a question on a topic from their programme. If their answer was right or wrong they could either collect or lose points, advance or go back in their game. During these workshops, the students either played themselves the game that they have developed or exchanged their game with those of other groups. Students and teachers tended to agree that these different activities enabled deeper reflections on the students’ knowledge from complementary perspectives, where the making of quizzes facilitated reflections on theories and methods while taking a quiz would support revision of key concepts. However, they also agree on the need for more engaging and innovative solutions for assessment that would enable students to reflect more in-depth on the application of theories into practice through forms of playful interactions, individually and in groups.

### ***3.2 Design intervention: from quiz to storytelling***

A few issues were, however, spotted in the use of quizzes, as the students said that quizzes can be boring and predictable, especially in the case they had to take quizzes that they have edited themselves in groups. The teachers also said that they are dissatisfied that quizzes, besides promoting engagement, only support “mnemonic” learning and not many reflections or real understanding of the subject. During our interviews, UCL teachers said that they would like to explore the design of quizzes that could also facilitate in-depth reflections: “something more like a simulation, through which students could imagine themselves in that situation”. Moreover, UCL teachers and students suggested the possibility to interact with multimedia content and not only text and still images: “something that would enable the students to see the consequences of their answers.” Based on these critical comments and the extensive application of gamification at UCL,

EAL students reinterpreted quizzes from a storytelling perspective, to challenge the traditional notion of quizzes.



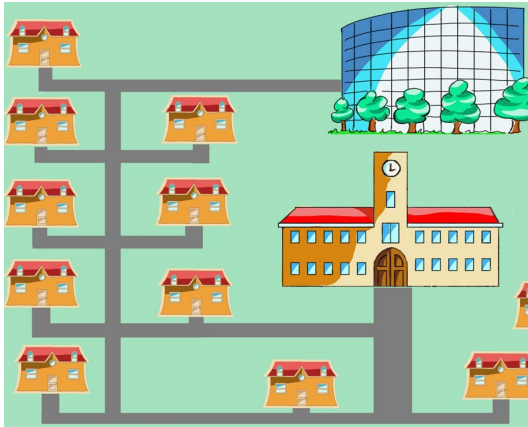
**Figure 1** Quiz as a multilinear story



**Figure 2** Quiz as a simulation of practice

A couple of groups of students proposed to construct the quizzes as multilinear stories, where, depending on the chosen answer, a different question would appear (Fig. 1). This solution was found interesting and challenging during the summative evaluation, since it might lead towards potentially infinite story lines. Other groups reinterpreted quizzes as narrative simulations (Fig. 2), in which the students can see the consequences of their answer through videos or comic strips. During our summative evaluations, UCL teachers and students found these two strategies promising with respects to challenging the present experience with quizzes and self-evaluation.

Currently, a continuation of this study and a new prototype is under development, where multilinear stories and simulations are further investigated, aiming at an ecological representation of occupational therapy for learning and self-evaluation. In this new prototype (Fig. 3), occupational therapy is represented as an activity centered in the local society, a recurring theme in the interviews with teachers and students, as therapists have to come in close contact with the patients when entering their homes. The students could then explore possible therapies for their patients through simple simulation with questions on the theories. This scenario is further explored in (Marchetti and Valente in press). On a general level, this design inquiry has revealed that at UCL blended learning and quizzes are hybridised with playful learning and gamification. However, when teachers want to create new games for their students, they find themselves constrained by the available digital tools, also because of their lack of advanced IT skills, therefore, they often engage in the design and use of paper-based games. This issue is central to the development of the new prototype and it is partially discussed in Marchetti and Valente (2016).



**Figure 3** Visualisation of the new prototype

From the perspective of EAL students, this inquiry enabled them to reflect on design methodologies and their future role of technology makers, who will have to deal with different groups of users within the same project. Moreover, it was challenging for EAL students having to understand the difference between the development of an application and that of a platform in which users are active editors. Questions were raised concerning the EAL students' limited knowledge on occupational therapy, the creation of innovative scenarios, balancing the creation of the prototype and of content. Addressing these questions, EAL students gradually constructed their own space in the project as innovators dealing with practices that are distant from theirs. More specifically regarding the experience and creation of quizzes, this study suggests that quizzes are regarded as a valuable tool, but that they are rather limited. In this respect, this study has identified a need to challenge the common notion of quizzes. More specifically, there is a need for editors that enable teachers and students to explore knowledge through the use of multimedia content, storytelling and simulative-playful interactions. In this way, richer experiences of quizzes might be elicited, supporting current playful practices and fostering reflections on the implications of theories and their application to real life cases.

#### 4. Conclusions

This paper discusses a design inquiry on the re-conceptualisation of quizzes for self-evaluation within a context of blended learning practice.

Data from this study suggests that blended learning and quizzes are appreciated by UCL teachers and students for enabling students to become more independent, easing the teachers' workload, and supporting a rich variety of learning activities, inside and outside the classroom. Interestingly, this inquiry shows that blended learning and quizzes are often combined social forms of gamification and playful learning. At the same time, EAL students, who acted as developers, engaged in a complex dialogue regarding their role in the inquiry, as they were in charge of creating innovative visions and platforms for the quizzes, but they did not have to develop the whole content, as this was the task of UCL teachers. Based on the gathered data, this study suggests that there is a need to design quiz editors that support current playful practices, exploring the use of multimedia content, storytelling and simulative-playful interactions.

A new prototype is currently under development in a follow-up study, where quizzes are re-conceptualised through an ecological approach to knowledge in occupational therapy to better support learning and reflection.

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# Visuel og webbaseret understøttelse af bachelorvejledning

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I denne artikel præsenteres, hvordan projektstyringsværktøjet Trello kan anvendes til at optimere opgave- og vejledningsprocesser på uddannelsesinstitutioner. Trello er et gratis online projektstyringsværktøj, der er skabt med en let tilgængelig og intuitiv brugerflade.<sup>3</sup> På uddannelsen i Idræt og Sundhed på Syddansk Universitet anvendes programmet til at understøtte de bachelorstuderendes arbejde med at nå læringsmålene for bachelorprojektet ved at tjene som en visuel og virtuel fælles platform.

## Baggrund

På uddannelsen i Idræt og Sundhed er vi overgået fra individuel (face-to-face) bachelorvejledning planlagt af den enkelte underviser til en ny fælles struktur med forskellige former for vejledning, herunder obligatorisk gruppevejledning. Overgangen har været initieret af økonomiske besparelser, men også af læringsmæssige potentialer ud fra et socialt læringsperspektiv. I et socialt læringsperspektiv skal læring forstås som noget, der udfolder sig i relationen mellem individ og kontekst (eg. Lave & Wenger 1991). Forskning viser, at studerende lærer mere og skriver bedre opgaver, når de indgår i klynger af 2-7 studerende, hvor de sammen med en vejleder læser og giver feedback på hinandens dokumenter (Jensen 2015). Et projekt om nye vejledningsformer fra Center for Undervisningsudvikling fra Århus Universitet peger ligeledes på, hvordan varierende vejledningsformer herunder gruppevejledning kan medvirke til bedre læringsprocesser, forbedring af de studerendes formidlingsevner og mindske frafald (Floris og Andersen 2006, s.48).

Gruppevejledningen foregår som små forskningsgruppemøder sammensat ud fra de studerendes valg af vejleder. Det består typisk af 3 til 7 studerende, som mødes 3 gange i forløbet. Der er fokus på de studerendes proces og forskning. Til hver vejledning præsenterer de studerende deres arbejde skriftligt og mundtligt og får feedback af vejlederen samt de andre studerende. Vejlederen fungerer som organisator, mens det er de studerendes rolle at påpege, hvilken feedback de ønsker, hvad de ønsker feedback på samt at give konstruktiv feedback på de andres arbejde. Der er tale om en form for partnerskabsmodel (Wichmann-Hansen og Jensen 2015, s.336-338), hvor vejledning er kendetegnet ved samtaler, hvor både vejleder og studerende spørger og svarer, og derved sammen udforsker muligheder og tolkninger. Den didaktiske begrundelse for denne tilgang er et læringsmål om at få den studerende til at forholde sig kritisk, undersøgende og argumenterende over for de valg, der træffes i processen. Som vejleder har jeg oplevet to centrale udfordringer i mit arbejde med den nye struktur for bachelorvejledningen:

- 1) Det kan være svært at holde styr på kommunikationen og delingen af dokumenter med de studerende.

Kommunikation om vejledning, den individuelle såvel som den gruppebaserede, foregår via e-mails. Ved gruppevejledning skal de studerende sende deres dokumenter rundt til alle. Det kan være en udfordring at

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<sup>3</sup> <https://trello.com>

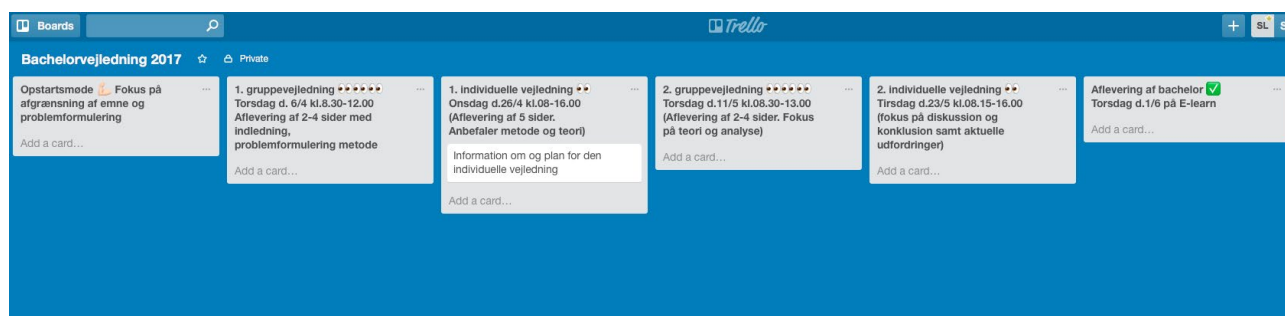
holde styr på de forskellige dokumenter, og de studerende glemmer ofte at sende deres dokumenter til alle i gruppen.

- 2) De studerende har ofte problemer med at forstå processen både i forhold til deres opgaveskrivning, men også i forhold til organiseringen af deres tid og de enkelte vejledninger.

I artiklen vil jeg vise, hvordan Trello har potentiale til at optimere kommunikationen og delingen af dokumenter såvel som de studerendes overblik over processen. Afslutningsvis vil jeg diskutere fordele såvel som udfordringer ved anvendelse af programmet samt komme med gode tips til vejledere. Da mine erfaringer med Trello tager afsæt i bachelorprojektet på uddannelsen i Idræt og Sundhed, vil denne kontekst fungere som eksempel.

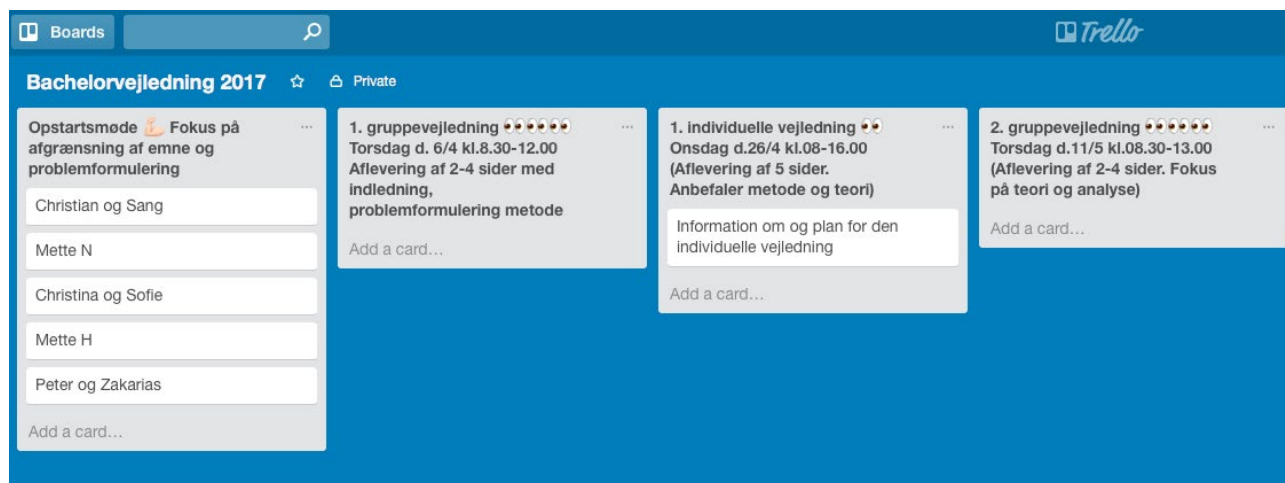
### Design og introduktion af Trello til bachelorvejledning

Trello fungerer som en stor online opslagstavle (board). På et board kan man oprette overskrifter og under disse tilføje opgaver, de såkaldte 'cards'. Inden vejledning starter, skal der designes et board. For at understøtte de studerendes forståelse for delprocesserne i bachelorprojektet samt de enkelte vejledninger har jeg designet et board (se figur 1), hvor overskrifterne udgør en tidslinje bestående af de forskellige vejledningsgange og den endelige aflevering.



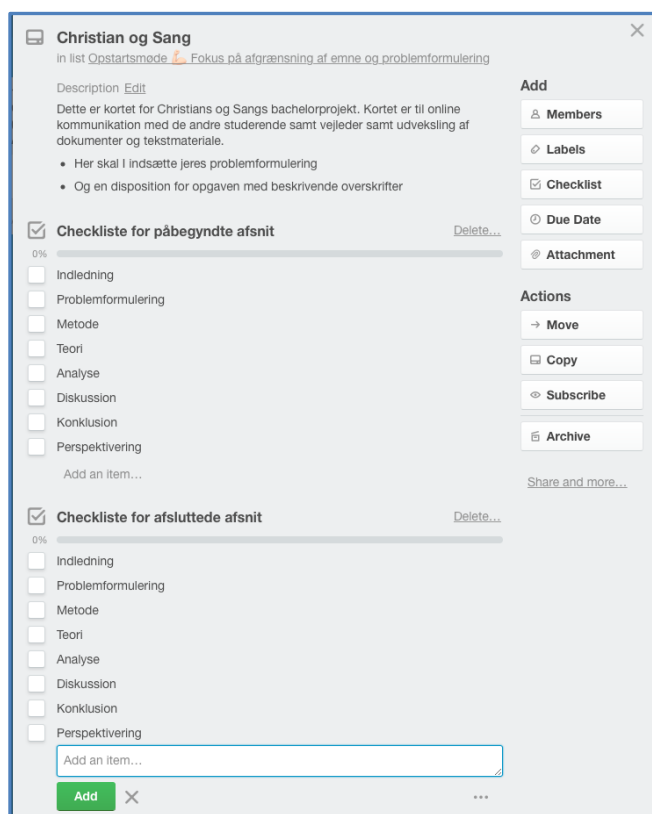
Figur 7 Overblik over boardet til vejledningen

I hver overskrift fremgår dato og tid for vejledningen samt hvad, der skal afleveres inden denne. Til hvert bachelorprojekt oprettes et card (se figur 2).

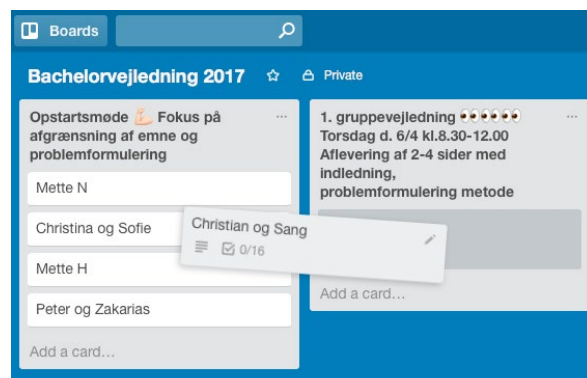


Figur 8 Overblik over boardet til vejledning og de studerendes cards

Projekternes cards kan personliggøres med en titel og beskrivelse i toppen (se figur 3). Der kan uploades dokumenter, laves checklister for opgaver, og endelig kan man sende beskeder til hinanden. Som titel på projekternes cards anvendes de studerendes navn(e), og under beskrivelsen skal de studerende indsætte titlen for deres projekt samt en disposition for deres opgave. På alle cards er lavet en checkliste for opgavens afsnit. Der er en checkliste for påbegyndte afsnit og en for afsluttede afsnit. På den måde kan de studerende løbende krydse af og holde overblik over deres proces.



**Figur 9** Indblik i et card

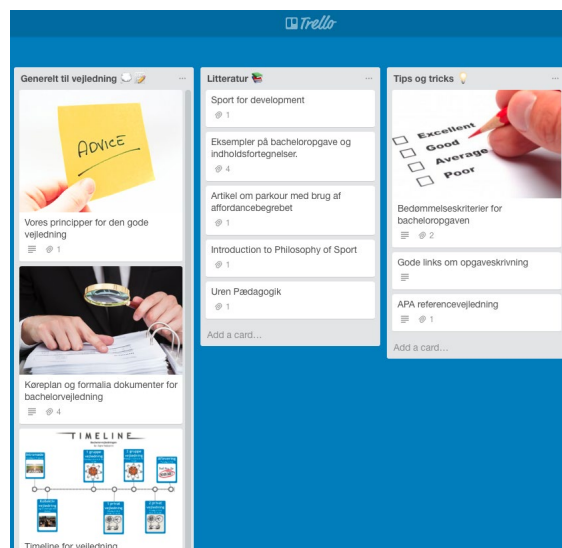


**Figur 4** Flytning af cards inden vejledning

Forud for vejledningen skal de studerende uploade deres dokumenter på deres cards og flytte disse til den pågældende vejledning (se figur 4). Herefter skal de gå ind på de andres cards, finde vejledningsdokumenterne og forberede feedback ud fra konkrete spørgsmål noteret af forfatterne i dokumenterne.

Udover overskrifterne (de enkelte vejledningsgange) og cards til de studerendes projekter har jeg lavet tre supplerende overskrifter (se figur 5):

1. *Generelt til vejledning*. Her har jeg uploadet dokumenter om formalia samt min PowerPoint fra første indledende møde. Jeg har yderligere lagt vores fælles principper for god vejledning ind, som vi fandt frem til ved det første, indledende møde.
2. *Litteratur*. Her lægger jeg løbende litteratur op til de studerende. På den måde har de alle mulighed for at finde det uden at skulle ind på hinandens cards.
3. *Tips og tricks*. Her har jeg for at tydeliggøre læringsmålene lagt bedømmelseskriterierne ind for bacheloropgaven, gode links til opgaveskrivning samt en APA referencevejledning.



**Figur 5** Ekstra overskrifter til relevante dokumenter

Jeg har yderligere gjort en del ud af at designe boardet med billeder, der understøtter de enkelte kort. Scan koden og tag et kig på boardet:



Til det første indledende vejledningsmøde med de studerende introduceres de på 10 min til formålet med at anvende Trello samt de forskellige funktioner i programmet på en stor skærm. Det er meget intuitivt at anvende. Trello er en åben platform, og de studerende har derved adgang til hinandens kort og kommunikation med mig. Det er derfor vigtigt, at der i gruppen aftales fælles spilleregler for, hvad man må kigge på, og hvordan de skal bruge hinanden. Ligesom ved længere vejledningsforløb er det her særlig vigtigt at etablere klare – og gerne skriftlige – aftaler om vejledningen (Wichmann-Hansen og Jensen 2015, s.332).

### Evaluerings af egne og studerendes oplevelser med Trello

For at evaluere brugen af Trello som fælles, virtuel platform til vejledning foretog jeg i foråret 2016 en løbende monitorering af de studerendes ( $n=7$ ) brug af Trello samt min egen oplevelse af fordele og ulemper. Jeg har løbende noteret mine iagttagelser og den feedback, som jeg har fået igennem processen af de studerende. Afslutningsvis gennemførte jeg en skriftlig anonym evaluering ved brug af Padlet, et online kollaborativt skriveværktøj, der er gratis og simpelt at anvende. I evalueringen blev der med åbne spørgsmål spurgt ind til fordele og ulemper ved vores brug af Trello. Der blev også spurgt ind til deres oplevelse af programmets brugervenlighed, hvordan de har oplevet kommunikationen med vejleder, deres overblik over processen samt, hvorvidt de havde ideer til forbedringer.

De studerende har overordnet været meget glade for brugen af Trello. I det følgende vil jeg præsentere og diskutere de studerendes vurderinger af fordele og udfordringer ved at bruge Trello som platform for vejledning. Jeg vil sammenholde dem med mine egne oplevelser og vurderinger for til slut at komme med gode tips til vejledere ved brug af programmet.

### Fordele ved at anvende Trello som fælles, virtuel platform til bachelorvejledning

De studerende har givet udtryk for, at de oplevede det som en fordel at have alle dokumenter og korrespondancer samlet et sted:

*"Dejligt at have ét sted, hvor det hele er samlet – så man ikke skal ind og søge i mail 😊"*

*"Det er en fin måde at udlevere dokumenter til sparring fremfor mail"*

I forhold til sparring mellem de studerende har Trello været en klar fordel i forhold til fildeling. De studerende peger også på, hvordan de har kunne følge med i hinandens projekter og de udfordringer, som de andre studerende sidder med, hvilket har givet dem inspiration og refleksioner til deres eget projekt:

*"Trello giver et blik på, hvad de andre projekter sidder og arbejder på. Både i forhold til udfordringer, løsninger, opgavestruktur osv., hvilket ofte kan tages med videre til ens eget projekt."*

Flere påpeger også, hvordan layoutet er overskueligt og med til at understøtte overblikket:

*"Det er dejligt overskueligt og giver et godt overblik over hele forløbet"*

De studerendes feedback viser, at Trello har potentiale til at løse de to centrale udfordringer ved vejledningsarbejdet: 1) manglende overblik over kommunikation og deling af dokumenter med andre studerende og vejleder, og 2) manglende overblik fra de studerendes side over bachelorprocessen.

Formålet med checklisterne på de studerendes cards var at skabe overblik over processen med at skrive de forskellige afsnit i opgaven. Checklisterne havde imidlertid også en ikke-intenderet motiverende effekt på de studerende:

*"Dejligt, at man kan se, at man rykker i tiden og i de forskellige afsnit! Godt, at man både kan krydse færdige, men især påbegyndte afsnit – det giver motivation"*

*"Super godt med afkrydsningsfunktionen! Det giver motivation og overblik!"*

### Udfordringer ved at anvende Trello som fælles virtuel platform til bachelorvejledning

I forhold til de studerendes vurderinger af udfordringer ved brugen af Trello som fælles platform for vejledningen er der et par stykker, der nævner, at det kræver lidt tilvænning, og at det kan være svært at finde dokumenterne:

*"Den eneste udfordring er, at det kan være lidt svært at finde det, du har lagt op, når man bruger computeren. Hvis man bruger app'en, går den direkte ind på det, og så er der ikke noget problem."*

En anden studerende modsiger imidlertid denne kritik:

*"Jeg har kun benyttet Trello på computeren, og synes at det fungerer godt."*

Udfordringen med at finde dokumenterne kan afhjælpes ved at være mere opmærksom på at informere de studerende om, hvor materialer bliver uploadet på boardet. En anden udfordring er de studerendes tilgang til hinandens projektkort. En studerende har tænkt over, at det gør det nemmere for dem at låne hinandens indhold og referencer:

*"At man kan se hinandens dokumenter, er nogle gange en ulempe, fordi man, hvis man skriver om det samme emne, kan komme til at blive lidt for inspireret af hinanden. Man skal være enig om, hvorledes det er der fra start. Det har ikke været et problem, men det kunne være ☺"*

Selvom vi ikke oplevede, at det var et problem med den konkrete gruppe, så kan udfordringen imødekommes ved, at der indledende laves meget klare aftaler for, hvor meget man må lade sig inspirere af andre (Wichmann-Hansen og Jensen 2015, s.332).

Jeg oplevede undervejs, at nogle studerende sendte mig mails i stedet for at skrive til mig i beskedfunktionen på Trello. Én af disse e-mails drejede sig om en personlig udfordring. Det gjorde mig opmærksom på, at det er vigtigt ved opstart af vejledningen at gøre de studerende opmærksomme på, at det er helt okay at sende mails vedrørende personlige forhold:

*"Det har været ganske fint, det kræver bare tilvænning, når man er vant til at skrive en mail ☺  
En fordel er, at du kan tage flere i samme opslag, hvis det du skriver har relevans for flere af os.  
En ulempe er, at alle kan se, hvad der bliver kommunikeret – så mere følsomme emner er bedre at tage over mail."*

I et andet tilfælde var det min vurdering, at de blot havde skrevet en e-mail, fordi det er sådan, de studerende er vant til at kommunikere med deres vejleder. Jeg valgte at svare dem via Trello i stedet og fik på den måde rykket korrespondancen derind. Som med mange andre teknologiske redskaber er der en væsentlig overvejelse om tidsforbruget i forhold til udbyttet. Som vejleder tager det tid at oprette boardet, men når det først er gjort én gang, vil store dele af det kunne genbruges fremover. Det er muligt at slette de studerendes cards og kopiere resten af indholdet til et nyt board.

### Afrunding og perspektivering

En af de største fordele ved det webbaserede projektstyringsværktøj Trello er, at det gør det nemmere at skabe overblik over de forskellige gruppers projekter, hvilket ofte kan være en udfordring ved gruppevejledning (Floris og Andersen 2006, s.46). Det har særligt været en stor hjælp, at de fleste dokumenter og korrespondancer med de enkelte studerende har ligget samlet på de studerendes cards og ikke i en masse forskellige e-mails. Trello har gode muligheder for at lette overblikket over processen og projekt(erne) for både studerende og vejleder i forbindelse med bachelorprojekt såvel som andre typer af opgave- og vejledningsprocesser. Det vurderes imidlertid, at følgende opmærksomhedspunkter er vigtige for at få det optimale ud af Trello:

- at Trello boardet designes som en tidslinje,
- at vejleder er omhyggelig med at sætte datoer og aftaler ind på tidslinjens overskrifter,
- at det angives tydeligt, hvor dokumenter er uploadet på boardet,
- at der oprettes checklister for de studerende,
- at der fastlægges fælles eksplicitte regler for adgang til og inspiration fra hinandens projekter,
- at de studerende stadig er velkomne til at skrive en mail, hvis det drejer sig om personfølsomme emner.

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# The use of flipped learning to teach Psychoacoustics

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## Introduction

Audiology (hearing science) is a relatively new education at the University of Southern Denmark and the focus when teaching has been on scientific content and not on the style or methods of teaching. This means that the predominant style of teaching is traditional lectures combined with lab exercises. The admission requirements for Audiology is Physics B, Mathematics B and an average grade of 6 or above (kvote 1). This means that there are many students who find it very difficult to follow the very complex subjects like psychoacoustics where they study how the brain analyzes sound. One of the main problems is that the subject is so filled with facts that the students are overwhelmed by them and have a hard time thinking critically about them. The point of the course is to introduce the students to the scientific results of psychoacoustics and then help them think critically about those results. They need to understand how the brain works and then be able to relate this to a patient's experience in the clinic.

The traditional solution to students not being able to keep up is to tell the students to work harder, complain that children don't learn enough in school and commiserate that everything was better in the good old days. But studies like Karpicke and Roediger (2008) shows that being passively presented with the material and trying to learn it is much less effective than trying to recall and use the material. This inspired me to initially focus on active learning where the student is not quietly listening to a lecture but instead is actively using or working with the information. That active learning is a part of the university's underlying principle of education made this approach even more attractive. But when I started trying to change my classes from lectures to active learning, I realized that I still needed the lectures as the basis for the learning activities. I also needed to be present for the learning activities because having the students doing the activities without being able to ask for help would get them stuck and frustrated. This meant that I would need twice as many classes if I wanted to keep the traditional lectures in their current form. This naturally lead me to Flipped Learning, or the Inverted Classroom approach. The Inverted Classroom is defined by Lage et al. (2000) as "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa". Here I use Flipped Learning to mean what happens in the inverted classroom. Some groups have much stricter definitions of Flipped Learning (FlippedLearning.org, 2017) by which my teaching would not necessarily be Flipped Learning. Exactly how Flipped Learning is done can vary significantly from case to case, but I specifically define it as moving most passive listening tasks (lectures) out of the classroom, and most active tasks into the classroom (problem solving, discussions, exercises). To do this I had to consider several questions:

- How much time will it take to convert lectures to videos?
- What benefits / problems will this bring?
- What will the students think of this?
- Can this help me improve my teaching?

## Methods

### *Procedure*

After a test run last semester I decided to record lectures and upload them to Blackboard 2-4 days before each scheduled class. I insisted that the students must watch all videos before class and I would post a limited number of questions with the videos that must be answered before the class. This was to make sure that all students were prepared so they could participate fully in the class exercises.

The classroom activities were organized as follows:

1. First the students answered the questions I had posted with the videos. This would often lead to discussions or questions that could take up to 15 minutes.
2. Then I asked students if they had any questions about the videos. These would normally take around 30 minutes to answer and discuss.
3. Then I would start the first practical exercise. If the lecture had been about how we perceive changes in sound level, I would ask the students to play sounds to each other and see if they could recreate the rules for sound perception from their own small experiments. The experiments were designed in the programming language Matlab, so the students could modify the experiment themselves. When helping the students and giving feedback, I would help with the task, but if possible, I would do it by explaining the process I would use for solving the problem, and not give them the solution itself. Hopefully this process feedback should generalize better as discussed by Hattie and Timperley (2007).
4. After spending 20-30 minutes on the exercise I would discuss the results from the groups and why it did or did not work. This again could lead to further discussions.
5. How much time this would take was very variable so I would always have a secondary exercise that was less important but would still be useful. By having something less important in the end, I could expand discussions as needed.

The exception to this pattern were three lab exercises where the students worked in the lab to investigate a phenomenon that could not be investigated with the equipment available for the in-class exercises.

### *Data collection*

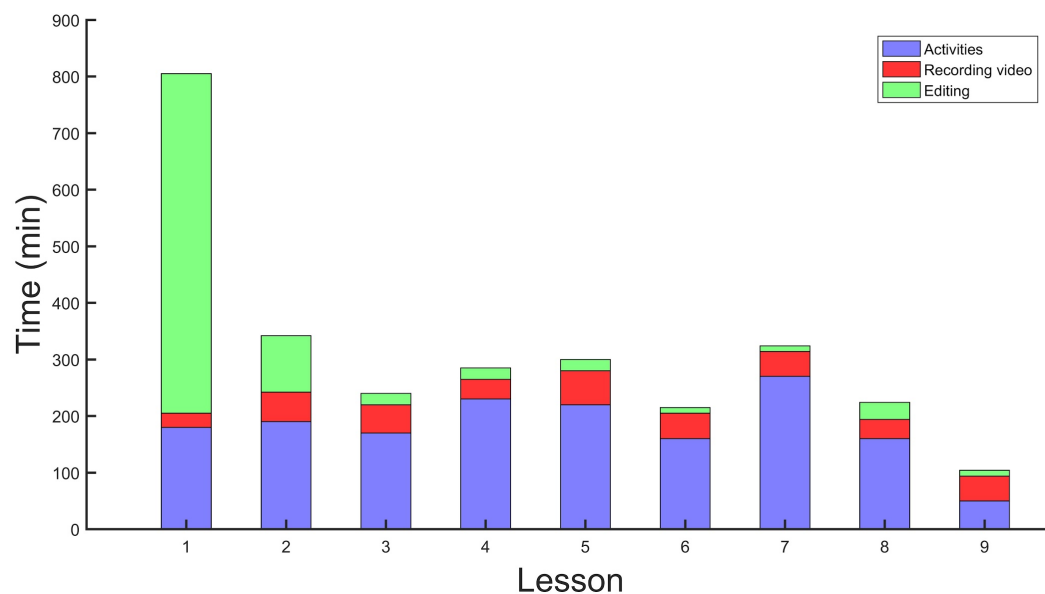
To investigate the time used on converting traditional lectures to flipped learning, I timed three parts of the process. 1. Recording the lecture. 2. Editing the video. 3. Preparing the in-class exercises that replace the lectures. Editing the video includes all the work on the video that is not recording the final video, e.g. setting up lights and sound, failed recordings, editing.

To analyze the effect of flipping the classroom I used a student questionnaire, qualitative discussions with the students about their perception of this form of teaching, my own qualitative experience of the students' commitment, interest, learning and preparation, and my own subjective experience of teaching the class.

## Results

### *Time cost*

One of the primary worries about flipped learning is the extra time it takes, compared to traditional lectures. These results do not include the time used for research and making slides, as this is necessary for both traditional and video lectures.



**Figure 1** Overview of time used on editing and preparing video lectures (green), recording video lectures (red) and preparing in class activities (blue) for each lesson. The editing time include all extra time it takes to change from a traditional lecture to a video lecture, including failed recording attempts and setting up for recording. This time decreases steeply with experience while the duration of the video and time used on preparing in class activities is almost constant.

From figure 1 it is clear, that the first video takes a very long time to make. I had to try recording several times and after recording, I spent a lot of time cutting out the flaws and minor errors from the video. For the second lesson, most of the technical problems were solved but I still used a lot of time on editing the video. For the third video, the editing was much faster, partly because I was getting better but also because I decided to leave in more of the small mistakes. This reduction in my quality standards did not lead to any complaints from the students, on the contrary, they said that they appreciated the informal tone in the videos. For the last lectures, the video editing and production part of flipped learning ended up being only a fraction of the time used on preparing the in-class activities. Of course, those costs will hopefully be a one-time expense because both videos and in class exercises can be reused next year.

### *Student qualitative discussions*

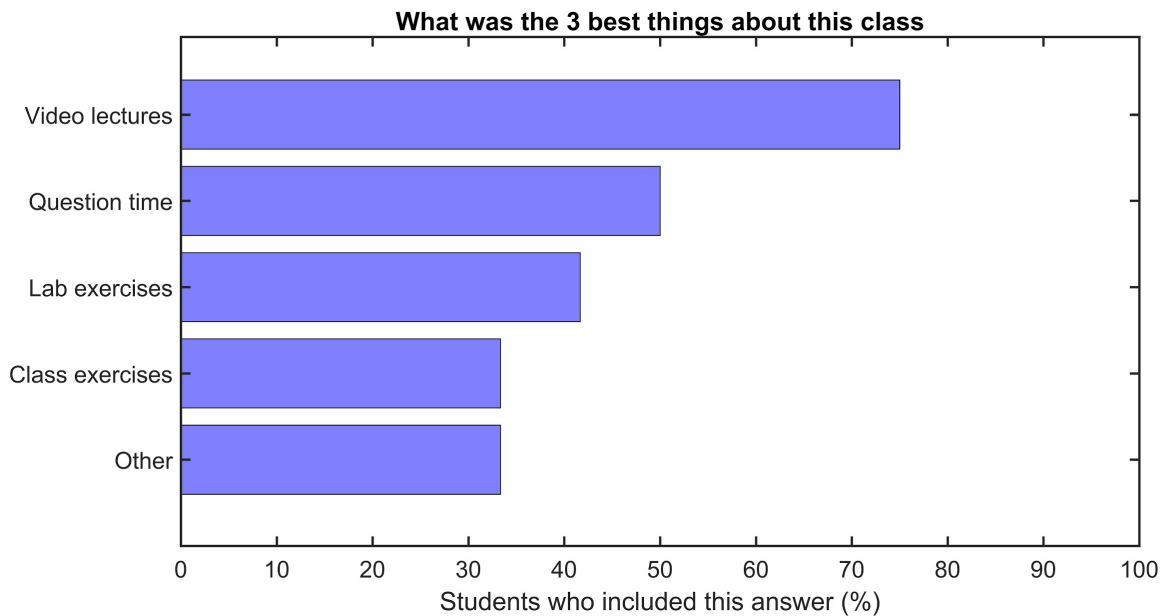
During the semester, I had informal conversations with several students about the use of video lectures in place of traditional lectures. The students were all very enthusiastic about the idea. Some also mentioned that because they could watch the lecture before preparing for class it made the textbook easier to read.

*Student 1: "It is really nice to have the video lectures, I can pause and go back whenever there is something that I don't understand. I understand that it takes a lot of time to do, but I hope more of our teachers will do this in the future."*

*Student 2: "The video lectures give me an overview that makes it much easier to read and understand the text book. I also like that the tone in the videos is informal and conversational."*

### Student questionnaire

The questionnaire was done at the end of the semester. The first part was a series of open ended questions encouraging free form replies. The second part consisted of questions about how useful the different elements of the classes were, on a scale from “not at all” to “very useful”.



**Figure 2** Responses to the open-ended question “What were the 3 best things about this class”. Not all students replied with 3 answers so the numbers do not add up to 300%. The students used different formulations but when it was obvious they meant the same thing the answers were grouped together. Question time is the time in the beginning of the class where I answer questions about the video lectures.

It is quite impressive that in an open-ended question 75% of the students mention video lectures as one of the best things about this class. The second most appreciated part of the class was that there was time reserved in every lecture for in depth answers to questions. The exercises in class and in the lab, were also quite popular.

	Books	Videos	Lab exercises	Class exercises
Very useful	1	15	5	4
Useful	4	0	9	9
Neutral	6	0	0	1
Limited	2	0	0	1
Not at all	0	0	0	0

**Figure 3** Responses to the multiple-choice question “How useful did you find X for learning about psychoacoustics?”. The number indicates how many students selected a given answer. Not all students replied to all questions.

From figure 3 we see that every single student who responded to this question replied that the videos were very useful, compared to only one who found the textbook very useful. Both lab and class exercises are popular with most students.

### *My experience: The type of questions*

The first difference I noticed was in the type of questions I was asked about the lecture. During a traditional lecture, the most common types of questions is:

Question: *I do not understand the difference between X and Y, could you explain it again.*

Question: *Could you give an example of Z.*

Those are good questions that help clear up misunderstandings but they also focus very narrowly on what has just been said and would often be resolved by repeating what I just said in a different way. If we take the question as an indicator of how the student is thinking we could say that it indicates relational thinking using the SOLO taxonomy (Rienecker, 2013). In contrast, most of the questions I received after a video lecture were more clearly stated but also often focused on more complex connections.

Question: *Would this method from context A also be valid in context B that is similar.*

Question: *Would you use this method in this context when this other method seems to have less drawbacks.*

Both of those questions are from the questions I received after my video lectures and they focus on taking the information from the lecture and using it in a different context or comparing it to an idea from another class. If we again see this as an indicator of the students' thinking, we could say they were thinking on the extended abstract level in the SOLO taxonomy.

### *My experience: Who asks the questions*

In most classes based on lectures my experience is that most questions come from very few students, maybe 3 students in a class of 20 will ask 90% of the questions and maybe half will never ask any questions in class. But when answering questions for the video lectures I got the impression that many more students were willing to contribute questions. I did not collect any solid numbers on this but my impression was that almost all students asked at least one question. There were still some students asking more questions than average but the distribution was more spread out.

## **Discussion**

Recording video lectures is very time consuming to begin with, but over time it becomes much faster. The main time cost instead becomes the preparation for the in-class activities. And this is what we want since those activities are the reason for using flipped learning in the first place.

The students clearly liked the video lectures very much, every one of them indicated that the video lectures were "very useful". An important reason for this seems to be that the students could learn at their own speed, pausing the videos as needed.

### Questions

I think the most important part of the activities in class was the time reserved to ask questions and talk about the lectures. The students rated this as most important after the video lectures themselves. Without time for questions I do not think the flipped learning would work as well.

I believe that a student listening to a traditional lecture feels that he or she must ask their questions before the lecturer continues to another subject. Therefore, the student does not have the time to think deeply before asking and many students won't ask at all. Using video lectures, the slower students have the chance to think and ask questions. This can allow the students to move from lower learning levels to higher ones.

### My gain

As a teacher, the main advantage of flipped learning is the extra time you get in class. Both for answering question but also for letting the students work with the subject under supervision. It has also helped me because it has given me much more time to talk to the students and discuss their understanding of the subject. You can only grow as a teacher when you learn what works and what does not work. And moving passive lectures out of the classroom so you get time to interact is a perfect way to get more feedback from the students.

I hope these results will encourage others to try flipped learning. Most can see the advantages of flipped learning but worry that it will take too much time to change to flipped learning. Here I have shown how much time it takes to flip a classroom and that it becomes much faster with experience.

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# Structured preparation prior to laboratory teaching activities

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## Background

The activities described in this paper are aimed at undergraduate science education, more specifically at practical exercises within the biomolecular sciences. Biomolecular sciences being an experimentally grounded discipline, the educational program encompasses learning activities focused on conceptual understanding as well as analytical and practical competences.

One type of learning activities molecular biology students often encounter are practical exercises in the molecular biology laboratory aimed at the development of practical and/or analytical competences. For large student-number courses, these exercises are often highly structured with limited degrees of freedom with respect to activity design, leading to a consequent lack of demands for student participation prior to the practical exercise in contrast to exercises where students need to design the experiments to be performed themselves before going to the laboratory.

In the bachelor program of Molecular Biology at Aarhus University, we have several mandatory courses with practical exercises for large student numbers with the largest course having around 220 students enrolled. The practical exercises on these courses are fully designed by teachers, and the student preparation for these modules involves the reading of practical instructions and theoretical considerations in a laboratory manual accompanied by what activity the students might find necessary to “feel prepared”. However, as teachers we experienced many situations in the laboratories where the student preparation at best was insufficient. We therefore decided to aid the students in the selection of appropriate preparative activities prior to laboratory exercises.

## Students' learning outcome

The primary learning outcome of these supportive activities is that students are better prepared for the practical tasks as well as being more familiar with the topic under investigation when performing experiments in the molecular biological laboratory during their bachelor program. We believe this supports the development of analytical skills in relation to laboratory exercises by enabling communication at higher abstraction levels while performing experiments. In other words, we wished to set the ground for learning activities described by higher-order SOLO verbs in the SOLO-taxonomy (Biggs and Tang 2007) .

## Description of activities

In our perspective, the precondition for successful support of competence development from laboratory exercises is that the students have an overview of what they need to do in practice and why, and furthermore that they can relate the activities to the theoretical field of analysis with its variables and internal correlations. We therefore designed two mandatory online assignments to be completed before the scheduled laboratory activities; one activity intended to prepare the students for what was planned to take place in practice while the other activity was designed to help students gain an overview of the analysis field in question.

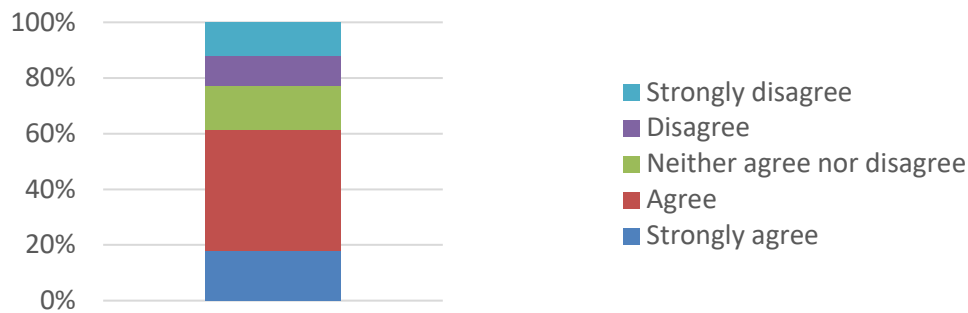
To support student preparation for practical aspects of the laboratory exercises, we have designed Multiple Choice Tests (MCT) – one for each laboratory course – only addressing practical aspects of the exercises. In order to be able to answer these questions, the students need to read the manual carefully and since protocol steps are addressed throughout the entire manual, students are encouraged to read it all. An additional benefit of this activity is that we can direct student attention to particularly essential protocol steps, the importance of which might fade in the context of the entire exercise. Immediately before going into the laboratory, students and laboratory teachers meet for an introduction to the practical exercise and all MCT questions are discussed in this setting. This helps students to address any remaining misunderstandings of what to do and why, and helps teachers to identify protocol steps needing special attention when “in action”.

To support student preparation for understanding the analytical variables and their interrelationship, we ask the students to make a small half-page written assignment focusing on the conceptual understanding of the biological system/mechanism investigated. The assignment guidelines describe which variables should be addressed and on which taxonomical level (e.g. list/describe/compare), and the students are welcome to include figures/models in their assignments if they find it appropriate or helpful. The assignment is evaluated by anonymous peer feedback, with each student giving feedback on two assignments, based on correction guidelines focusing on constructive feedback. Finally, the assignment - which is often adjusted according to the feedback - is handed in as part of the final report for the overall summative assessment.

These activities have been implemented in three bachelor courses in molecular biology with app. 120, 160 and 200 students, respectively. The assignments are set-up in the learning management system known by students and teachers, and easy data handling with respect to MCT results as well as automated assignment distribution for peer feedback make it a technically rather manageable task.

### Evaluation of activities

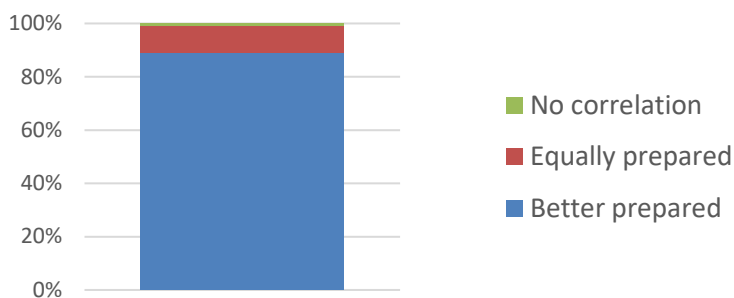
As teachers, we experience that the laboratory activities are conducted more fluently with less mistakes and a consequent quicker progression through the manual. The reduced time is not a criterion for success, but we interpret it to be the consequence of better-prepared students who, to a very little extent, need to repeat protocol steps. We also experience students asking questions reflecting more complex considerations and discussing protocol steps at higher taxonomical levels than before, with a concomitant reduction in need for basic descriptive information related to the practical aspects. In order to evaluate the MCT from the student perspective, we made a five level Likert-type scale survey with items addressing different aspects of the initiative. When asking students whether they prepared more thoroughly for the practical aspects of the exercise 20% (of 150 respondents) responded that they would have prepared equally well if the MCT had not been there, as represented by the dark blue and yellow fractions in Figure 1. However, 60% felt better prepared due to the presence of the MCT as represented by the orange and light blue fractions in Figure 1. From our perspective, this is a very satisfying outcome.



**Figure 10** Evaluation of student responses to the statement; “I have read the laboratory manual more carefully because I had to do the multiple-choice test”. The data is based on 150 respondents.

In a qualitative survey, students responded that the MCT was important as motivation for reading the manual, but the test was also appreciated for its ability to help students judge whether they had understood the essential parts. The latter point is also illustrated by the fact that some students try to identify the correct answer on wrongly answered questions prior to in-class activities, although not being allowed to re-submit the MCT, merely for the sake of “getting it right”.

With respect to student preparation for understanding the analytical variables and their interrelationship, we experience a significantly reduced need for clarification of concepts during the practical exercises allowing a more qualified discussion to take place while performing the experiments. In order to evaluate the written assignment from the student perspective, we made a questionnaire with closed questions. When asking students whether they felt better prepared due to the presence of the written assignment, only 10% of 116 respondents reported to consider themselves as prepared as they would have been without doing the assignment (depicted in orange in Figure 2).



**Figure 11** Self-reported student distribution on agreement with the following statements: A: “I would have prepared equally well on the theoretical concepts without the written assignment” (fraction depicted in orange), B: “I am better prepared on the theoretical concepts because I had to do the written assignment” (fraction depicted in blue) and C: “I do not see any correlation between the written assignment and the laboratory exercise (fraction depicted in grey). The data is based on 116 respondents.

In a qualitative survey, the students underlined the motivating aspect of the assignment in relation to preparation for in-class activities. Interestingly, the students stressed the benefit of having to give feedback on two assignments as they contrasted these against each other as well as against their own assignment.

In conclusion, we experience a clear improvement in student preparation for practical exercises after including two mandatory online activities structuring the preparation prior to in-class activities, and although

students find these activities time-consuming, they acknowledge the supportive potential of the MCT and assignment and evaluate them very positively.

### Generalisability

On a general level, this is an example of structured mandatory preparation prior to in-class activities. Although we have always stressed the importance of preparation prior to practical exercises, it was not until we nourished the motivation by including mandatory preparative activities that we gained the desired outcome.

More specifically of relevance for subjects with experimental laboratory classes, this set-up can be directly transferred to other subjects to increase student preparation for practical performance and support development of conceptual understanding in the context of practical activities, respectively. Finally, the ease with which MCTs and peer feedback assignments can be designed in learning management systems eliminates any obstacles related to the manual handling (handing out/collecting/distributing) of tests and assignments.

The time spent together with students in the teaching laboratory is very valuable and we consider it a criterion of success that we experience possibilities of discussing obtained results with students at higher levels of abstraction. For courses with limited degrees of freedom in learning activity design, this has proven to be one way to activate students prior to in-class activities with a beneficial outcome.

This model for structured preparation prior to laboratory activities is implemented as part of all experimental laboratory exercises in the bachelor program in Molecular Biology at Aarhus University from the summer of 2017.

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# The use of Wikis in project work: “To Wiki or not to Wiki”

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## Background

The aim of this article is to present the results of an attempt to include the use of Wiki-pages as a means of communication between students during a semester course. The course was the 3<sup>rd</sup> semester Develop Intelligent Dynamic Mechatronic Systems project course (SPRO3MC) under the Mechatronics Engineer program at the Mads Clausen Institute in Sønderborg. 44 students of mixed nationality attended the course.

The students were divided into 9 project groups by random selection. The semester course was organized mainly as group work of 8 hours per week with few topic related joint lessons during the semester. In parallel to the semester course, the students followed two mandatory courses, “Sensors and actuators” and “Electronics 2”. The general theme for the course was “Autonomous Intelligent Vehicles” and the task given to each group was to identify a need for a small vehicle (or downsize a larger vehicle) of their own choice. They were then supposed to analyze the application and construct a functioning prototype with focus on design and production. There is considerable focus on engineering methods and skills. The content includes mechanics, electronics, software, user studies, specification of needs and to some respect regulatory and safety issues. The aim of the course is to train the students in cooperative group work, reflection and applying what they have learnt in other courses.

The groups finalize their projects with a report and there is an internal oral examination, which counts for 50% of the whole grade of the semester. At the end of the project period, the students present their projects at the annual TEKDay, an open exhibition in Sønderborg for all students. An example of one of the project group projects completed is shown in figure 1.



**Figure 1** Test of an autonomous vehicle following a person in the Bilka-warehouse, Sønderborg, Denmark

### The Wiki-challenge

A challenge in this course was the variety of cultural and educational backgrounds of the students. Lessons with all students (here 44) combined with internal feedback with constructive criticism between the groups are expected to increase students' learning outcomes. In this study, Wiki-pages are used as the main communication platform.

Research questions:

- Can the introduction of Wiki-pages help the students / groups to increase internal communication and align expectations?
- Can e-learning contribute to increase communication between project groups?

The students were given the task to describe their project on Wiki-pages on Blackboard and give feedback to the other groups regarding problem formulation, project delimitation and concepts of autonomous vehicles. The expectation was that the groups would relate to other opinions and reflect upon these via the feedback. They also received practical information about project delimitations (too easy, too difficult) and feedback on their concept and ideas.

According to literature, a large difference in the volume and content of Wikis can be expected, when students have a high degree of autonomy (Snodgrass 2011). There are varying opinions on the effect of applying Wikis; from Wikis being an important tool to Wikis being time demanding and annoying. The participation in generating Wikis varies considerably and depends very much on the relevance of the given task as well as study area (Cole 2009). The variations mainly relate to formal requirements for the Wiki-pages and the motivation for participating. The use of Wikis seems most suited in combination with face-to-face

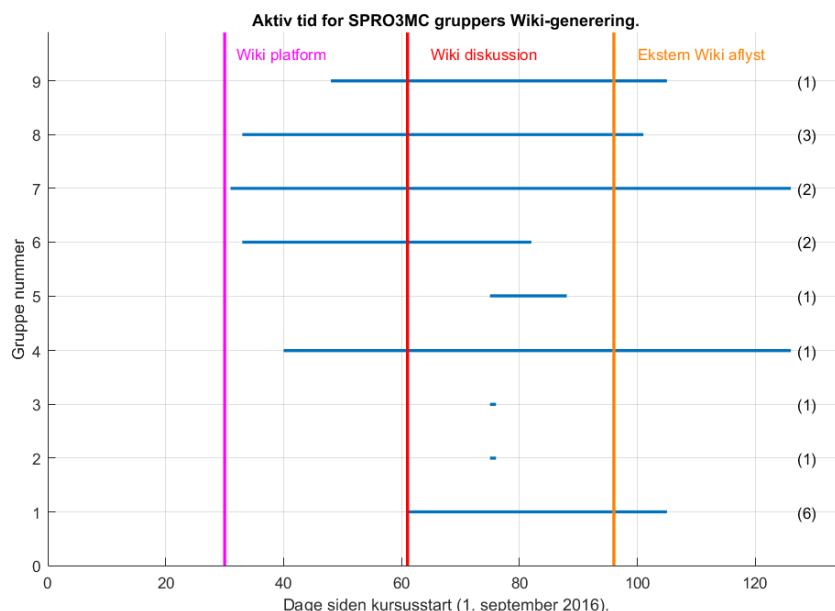
teaching and evaluations as well as in cases with large classes and limited time for interactions (Snodgrass 2011). The practical circumstances around the generation of Wikis have a profound influence on the actual use of them and specific training and instruction are recommended (Snodgrass 2011). Wikis are mentioned as “ice-breakers” on large courses, where the use primarily had a social aspect. Easy use and editing is considered crucial (Augar 2004). Groups with already well-established communication are not so willing to use Wikis for communication (Carr 2008). As sharing of information via Wikis is “asynchronous”, it provides room for reflection compared to classical teaching in large classes, but there should be a real goal/motivation (for the students) for applying Wikis in a given context (Carr 2008). The SPRO3MC course does not contain many formal lectures and the students have a high degree of internal communication via their group assignments so the motivation for using Wikis is initially expected to be low. A motivating factor was that the Wiki-pages should be used to present the projects to industry.

### Generation of the wiki-pages and recording of data

The students were asked to apply Wikis for a general description of their projects and to comment on the Wikis of the other groups via the “Comment”-function in Blackboard’s Wiki tool. The results/data of the actual use of Wikis for project communication were collected in several ways:

- Via a questionnaire at the end of the course.
- Monitoring of the history of the generated wiki-pages.

The generation of wiki-pages was monitored with respect to date of generation and last date of modification. All 9 groups generated Wiki-pages, as can be seen in figure 2.

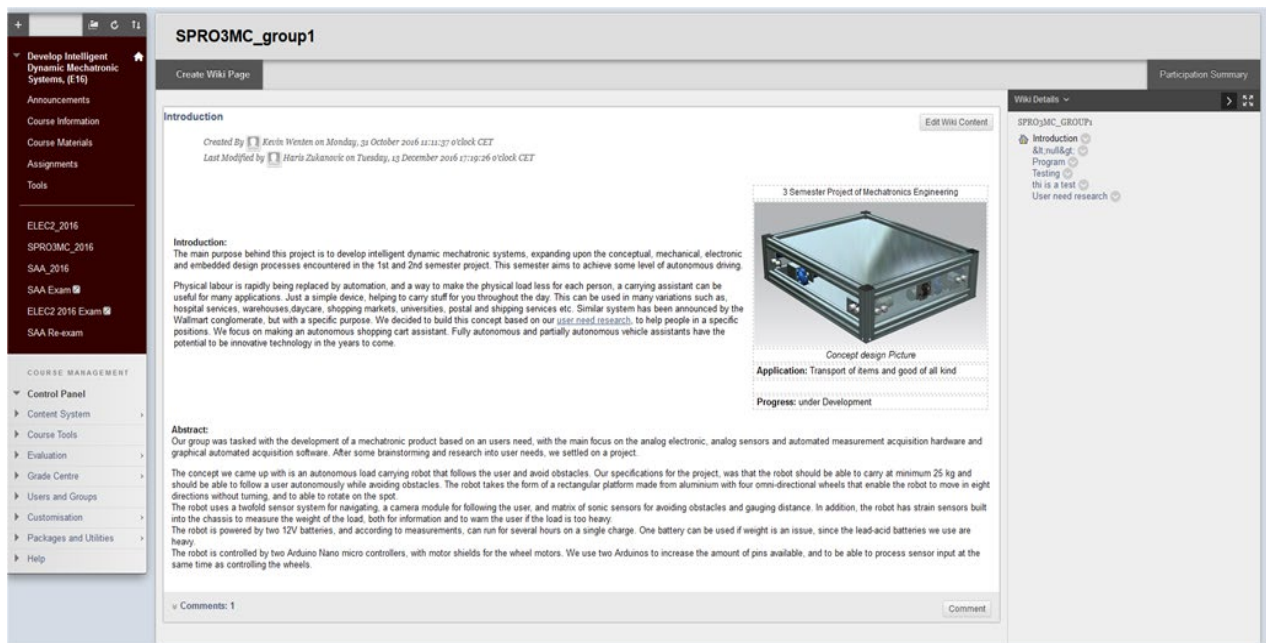


**Figure 2** Wiki-chronology for each SPRO3MC-group. (x) indicate the number of actual Wiki-pages

The Wiki-platform was ready in Blackboard 30 days after the course start, and it can be observed that 5 groups started working on their wiki around 14 days later. Each week, the teacher motivated the groups to get started. 61 days after the course start, the groups were informed that the pages were very important for the TEKDay later. That motivated one group to start. Two groups only generated very rudimentary Wiki-

pages and another group was active in around 14 days. Around 95 days after the semester start, it was discovered that external companies could not access Wiki-pages on Blackboard, which lowered the motivation quite a lot. Only two groups continued to update the Wiki-pages until the end of the project period.

As shown in figure 2, there is a large difference in the content of the individual group's Wiki-pages, from just one simple page to multiple pages, embedded video, animations etc. The level depended very much on the skills of individual students, as the design of Wiki-pages etc. is not part of the curriculum. See figure 3 for an example of a well-designed Wiki-page.



**Figure 3** Example of a Wiki-page from group 1

## Feedback via Wiki-pages

Feedback from supervisor and fellow students are important for a project (Hattie 2007). Scheduled, formal feedback was given orally once per week, where the group first presented their progress and then discussed the project with the supervisor. Several times, all students were personally encouraged to comment on the other groups' Wiki-pages with respect to content. However, it showed to be extremely difficult to start the process and the result was that only very little communication happened via the "Comment"-function in Blackboard's Wiki tool. Only one group commented on the other groups. See table 1 on next page.

Group	Received comments	Given comments
1	1	0
2	1	0
3	0	6
4	1	0
5	0	0
6	1	0
7	1	0
8	1	0
9	0	0

**Table 1** Received and given comments

A dialogue with the students revealed that the students did not perceive “Comments” in Blackboard’s Wiki tool as suitable for communication between groups. On a daily basis, they shared group rooms and communicated face-to-face. This observation is in compliance with Carr (2008). Daily communication within the individual groups primarily took place via direct oral communication and via social media like Facebook. Compared to that form of communication, the “Comment”-function in Blackboard’s Wiki tool was perceived as a more formal and rigorous means of communication.

### Evaluation

The questionnaire survey performed via Blackboard’s “Survey”-function had a reply rate of 25% (11 out of 44 students). The questionnaire contained 4 questions:

1. *Did you find the Wiki-pages helpful in your project communication?*

Possible reply	No. of replies
Yes, very helpful	0
Somewhat helpful	2
A little helpful	2
Not helpful at all	7

2. *Did you find the received comments helpful for improving your project?*

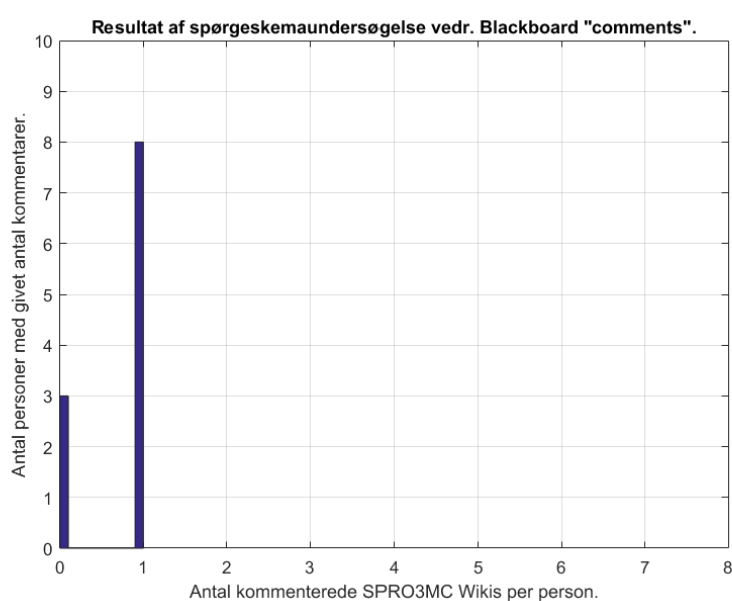
Possible reply	No. of replies
Yes, very helpful	2
Somewhat helpful	1
Only a little helpful	4
Not helpful at all	4

3. *Are you likely to use communication via Blackboard in future project work (if it is not mandatory)?*

Possible reply	No. of replies
Very likely	0
Likely	0
Unlikely	3
Very unlikely	8

4. *How many group Wikis have you commented on during the project?*

Reply (0-8), see figure 4.



**Figure 4** Distribution of commented Wikis per student at SPRO3MC

As can be deduced from the data and figure 3, only 11 (25%) of the students have responded to the questionnaire. Of those 3 have stated that they have not given any comments and 8 stated to have given 8 comments. This information is, however, not consistent with data in table 1, where, via the Wiki-pages, it can be seen that a total of 6 comments were given/received. Of these 6 comments 4 come from a single student, who has not answered the questionnaire. It is possible that some students have misunderstood the question and have considered the replies from the whole group, not the individual student.

## Conclusion

The teaching situation investigated above is based on project work and only few lectures. The findings obtained regarding the use of the Wiki tool in Blackboard therefore only relates to project based teaching and not to teaching in general.

It can be concluded that the introduction of Wikis in the SPRO3MC project work only had a minimal effect on students' / groups' internal communication and alignment of expectations. All 9 groups designed Wiki-pages but the effort showed large variations between the groups. This was expected and in compliance with literature (Carr 2008, Snodgrass 2011). The use of Blackboard also for external communication was not possible due to technical limitations and firewall issues. The primary motivation factor was therefore lost. Wikis were only used to a limited extend for communication, as the use of other solutions like Facebook and Dropbox were preferred by the students. According to Carr (2008), this was to be expected. It was further confirmed that the use of Wikis to facilitate group dynamics and mutual teaching has a limited effect on groups with already established communication means like the SPRO3MC groups. The groups were physically located in the same rooms during the semester and had much and frequent direct contact and informal communication. The "ease of use" of Blackboards Wiki-page function was commented by several students, who found it more difficult to use than more modern communication platforms like for example Facebook and ease of use is according to Auger (2004) critical for a successful implementation.

Teachers/lecturers are recommended to consider the following advice, when considering the use of Wikis in project work:

- Students should be introduced to Wikis right at the beginning of a course.
- There should be a clear motivation factor for students to use Wikis (and they should recognize that).
- The use of Wikis should be weighed against already established informal communication channels between groups.
- The use of Wiki-pages should be considered as part of formal communication between lecturer and student groups, for example in the form of hand-in assignments.

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# Blended Learning in Part-time Higher Education - Using digital tools to create an ongoing and constructively aligned learning environment

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## Introduction

The most effective higher education environments are ones in which students are actively involved as part of a community of learners. Part-time higher education programs may pose particular challenges for creating an ongoing, lively and active learning environment: Students often have full time jobs and the distance between students may be high. Hence, it may be difficult for the students to find the time and place to engage in collaborations outside of the classroom. Blended learning is a method for combining in-person classroom teaching with learning through online and digital media, and allows collaboration between students and teachers, across time and space. Evidence suggests that blended courses produce a stronger sense of community among students and teachers, than either traditional or fully online courses (Rovai & Jordan 2004). Yet, as Biggs emphasize, any learning environment (face-to-face or blended) must be aligned with the intended learning outcomes (ILOs) of the course in order to support social collaboration and efficient and independent learning (Biggs 2003). This paper presents the results of a study, investigating the question:

What are the potentials for using digital tools to create an ongoing and constructively aligned digital learning community in higher part-time education?

## Part time Master in Medical Anthropology

The Master in Medical Anthropology is a 60 ECTS part-time program at Copenhagen University, which runs over four semesters. Each semester is organized around 10 weekly two-hour lectures and four two-day seminars. The third semester of the Master course was the context for this study. The aim of this semester is for the students to acquire in-depth knowledge on a selected contemporary theme in Medical Anthropology, and to write a 36,000-word essay, where they demonstrate the ability to do a literature search on a self-selected problem-statement, perform an individual analysis and clearly communicate an anthropological argument. The essay is assessed by two internal examiners using the Danish National 7-point grading scale. The essay is to be handed in by the end of the semester, but can be written during the whole course. The intended learning outcomes for the semester and the assessment criteria for the essay, are mentioned below;

Intended learning Outcomes	Assessment Criteria
<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Demonstrate in-depth knowledge on selected contemporary theories in medical anthropology</li> <li>• Demonstrate knowledge on methods for literature search</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Analyse and reflect on contemporary problem areas and theories within a selected field of medical anthropology</li> <li>• Demonstrate an overview of relevant literature within the selected field</li> <li>• Critically reflect on the validity and relevance of sources</li> </ul> <p><b>Competence</b></p> <ul style="list-style-type: none"> <li>• Work independently with a small self-chosen academic project in medical anthropology</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to identify and narrow down a relevant problem statement in the field of Medical Anthropology</li> <li>• Ability to search for, apply and reflect on literature from the field of Medical Anthropology, which is relevant for the problem statement.</li> <li>• Ability to perform an independent analysis by relating theory to empirical material from literature</li> <li>• Ability to motivate a relevant analytical approach in relation to the problem statement.</li> <li>• Ability to clearly communicate an anthropological argument.</li> </ul>

Students are diverse in terms of age and professional background and comes from a variety of places in Denmark and in the Nordic countries. The course has been running the last 10 years, and we know from previous years, that students find it challenging to build a new professional identity as 'Medical Anthropologists'. Many students have a health-related background, and work in an environment, which takes a bio-medical and normative understanding of health, as its point of departure. Especially the ability to pose a relevant problem statement and to demonstrate a more critical and reflective writing style, has shown to be challenging.

### Teaching activities

The study used three different digital tools which were selected with the overall aim of creating an ongoing and active community of learners among participants in the MA program. The tools made use of different pedagogical means (reflection logs for self-reflection, collaborative reading, writing exercises and peer feedback) and were designed with the intention to align with the intended learning outcomes described above. 21 students participated in the course. Participants were divided into four groups within which both online and offline interaction took place.

#### *1. Reflection logs for self-reflection shared in groups online*

The reflection logs were introduced to the students, as a vehicle for self-reflection on individual learning processes. After each seminar, the students were asked to write at least 900 characters, expressing their

individual reflections on the course. It was specifically emphasized, that the task was not to repeat theories or the content of the course, but to express own thoughts, concerns and reflections. The reflection logs were to be handed in, no later than one week after the seminar, and were distributed among group members.

#### **Reflection log**

Lige i denne weekend synes jeg, at jeg har så mange associationer til ALT i undervisningen. Det handler om ældre, om care -om teknologier -om praksis. Kleinmans artikel handler også om care på en måde, så jeg kommer til at reflektere over mine egne forældre og svigerforældres situation. Ja, min egen situation som omsorgsgiver for mine forældre, for den sags skyld. Det er en meget relevant del af uddannelsen for mit vedkommende lige nu i relation til mit job, hvor det handler om care, ældre, tillid og teknologi. Jeg har også været superglad for uddybningen omkring en praksisteoretisk tilgang, både i torsdags og fortsat hen over weekenden afsluttende med monografiggennemgangen Mol's bog Logic of care. Jeg var glad for at se Robotfilmen om Alice. Tankevækkende at høre, hvordan flere af kommentarerne gik på, at det er skræmmende. Den teknologiforskrækkelse har jeg ikke, men det har været en proces og det handler om, at jeg ved, hvad der virker og jeg tænker, at der er uendeligt langt til, at robotterne erstatter os –de kan supplere nogle funktioner og ofte de funktioner, som vi gerne vil undvære –de repetetive, kedelige opgaver.

**Figure 1** Example of a reflection log

## *2. Online 'social reading' of core academic texts (Lacuna), with text-based annotations and online discussions*

For every seminar, a core text from the syllabus was chosen, and uploaded online through the digital system Lacuna. Lacuna is an open-source, online learning tool designed to create new possibilities for reading and learning collaboratively (<https://www.lacunastories.com/>). By focusing on tools for digital annotation, Lacuna allows students to share real-time comments on a text online. Moreover, the lecturer can read the students annotations before face-to-face classes, and use them as a way to prepare discussions in-class.

The students were asked to make four annotations in the text, which were: 1) to identify the problem statement in the text and describe with own words what it is aiming at 2) to identify where the authors argue in favor of a particular analytical approach and describe with own words why it is relevant 3) to mark in the text something they find unclear or do not understand and describe with own words, what they would like to be discussed in-class 4) to mark in the text a point which is relevant for practical work in health, and describe how and 5) to select one annotation from another student which puzzles them, and provide comments. The annotations were used by the lecturer in-class to structure the discussion of the text and to engage students in discussions.

Hjemmearbejdsnarrativer vedrører, hvad behandlere, patienter og familier forventer i forhold til, hvordan den behandling, der er iværksat i en klinisk kontekst, vil udfolde sig, når den bringes hjem. Hvordan skal denne fortsættes og fre

Håb om bedring af kroniske tilstande i klinikbaserede behandlinger i en kontekst af familiekontekster er det ofte vanskeligt givet af det sundhedsfaglige personale, forskellige ud fra patientens og behandlingsforhold mellem behandler og patient (Mattingly) i hverdagsverden, hvor de ikke

**Metode**

I den efterfølgende del af denne artikel er baseret på feltarbejde i Uganda udført af en anden case er baseret på feltarbejde i Danmark udført af en tredje case trækker på feltarbejde i USA udført af en fjerde case større amerikansk metropol i perioder af selvstændige projekter og er udvalgt til denne artikel.

Der er både forskelle og ligheder mellem alle anvendt traditionelle etnografiske interviews, vi har arbejdet med et teoretisk tradition og med et fokus på de mangfoldigheder herunder særligt forholdet mellem interview og patientens. Der er imidlertid forskel på Uganda er baseret på deltager-observation gennem længere tid, men indeholder ikke interviewdata og deltager-observation observation, som er optaget på video, derfor varierende i de tre cases, som de

Problemstilling:

Här framgår det tydligt att artikelförfattaren utgår från narrativ och att de vill problematisera vad som sker när behandlingen flyttar från kliniken till hemmet. Jag skulle vilja formulera det enligt följande:

Hur kan man utifrån ett narrativt perspektiv förstå upplevelser och hantering av hemarbete hos patienter som lever med kronisk sjukdom? Hur kan detta skilja sig mellan olika sociala sammanhang?

Christoffer Mikael Holm

Comment

Everyone

1 Reply

Reply

Spørgsmålet tager udgangspunkt i narrativer om, at familier og patienter får hjemmearbejde i form af at skulle udføre behandlinger hjemme, som er iværksat af klinikken. Og artiklen spørger dels hvorledes behandlingsnarrativet kan fremmes og udvikles hjemme i en hverdag, og hvad sker der, når hjemmearbejdet ikke kan realiseres?

f5adb495e5a16cb50cd072d4f09350c39fc0baa2samf-domain

Comment

Everyone

1 Reply

Reply

Problemstilling: Hvad sker der med helbredsmæssige fremtidsnarrativer når de ikke er afstemt imellem de involverede parter (behandler, patient, familie)?

Undren: Der tales om kronisk hjemmearbejde til kroniske sygdomme, hvor det kan være svært for patienten selv, samt familien at være helbredere. Kroniske sygdomme kan som oftest ikke helbredes! Jeg synes der er en væsentlig forskel i fx. at skulle vedligeholde et funktionsniveau/sygdomsniveau, udskyde en forværring eller helbrede en kronisk tilstand/sygdom i forhold til hvem der kan/skal tage ansvar!

bcd4cbaacd1ea1dd5cb988a6310e8a9e0339532csamf-domain

Comment

Everyone

**FILTER ANNOTATIONS**

« < > »

1 of 43

NONE MINE ALL

☒ Show Highlights

☐ Has Reply

Tags:

Category:

User:

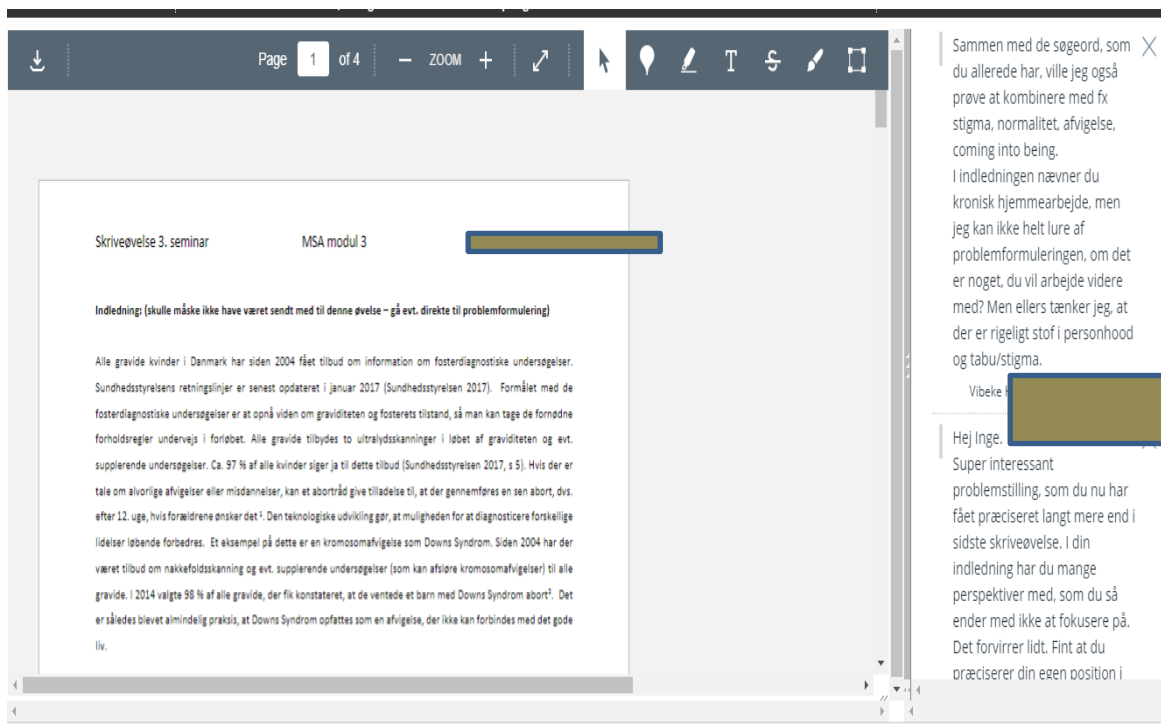
RESET

**ACTIVE FILTERS**

Figure 2 Text based annotations in Lacuna

### 3. Online peer feedback on writing exercises (Absalon)

Writing exercises were provided to students in between seminars. The students were asked to write 2-3 pages on their essays related to particular tasks, such as; problem statement, literature search, analysis and the overall argument of the essay. The written exercises were distributed among group members, who were asked to give online feedback. The lecturer then commented online on the essays and the feedback that were given by peers. In-class, the lecturer presented general feedback on the submitted written exercises and on peer feedback, and used exemplary written exercises as illustration.

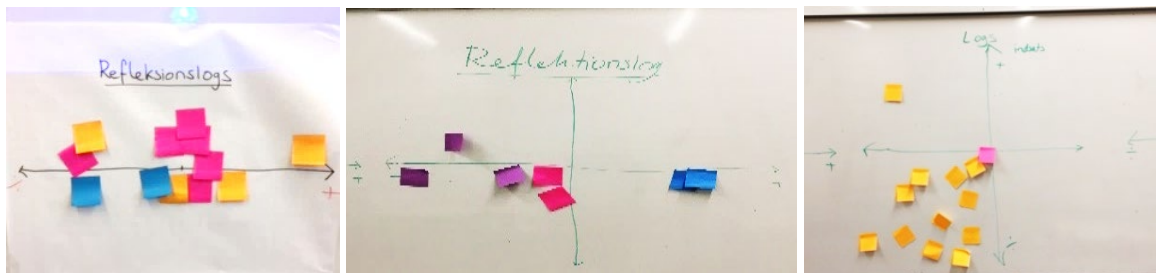


**Figure 3** Example of online peer feedback on writing exercises

## Evaluation of online activities

The three online activities were evaluated by the end of each seminar by way of a one-dimensional visual analogue scale and oral discussions. The main points are reported below;

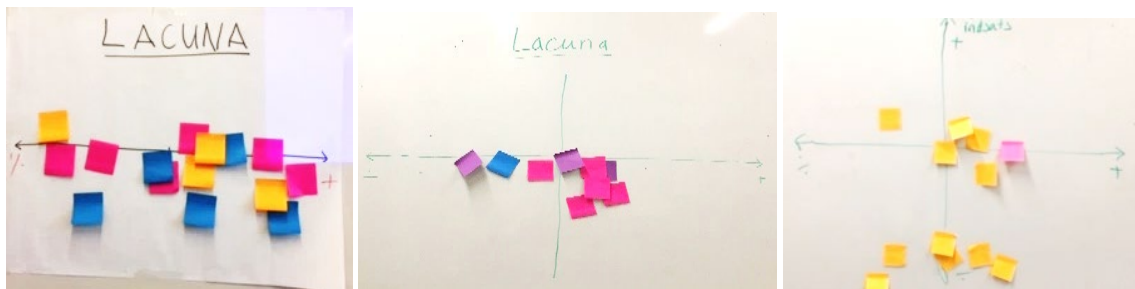
### 1. Reflection log



- The students' participation in this exercise decreased significantly during the course from half of the students to none.
- The students' evaluation of the usefulness of the exercise similarly decreased over time, ending up with a negative evaluation of the exercise as a whole.

*'I don't have time to do it, and am not sure why it is relevant, but perhaps it could be useful for me'*

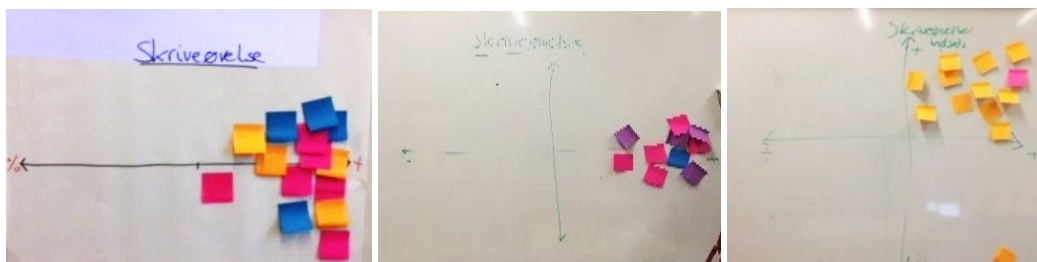
## 2. Online social reading via Lacuna



- Half of the students participated in this exercise. The level of activity was constant over time.
- Half of the students found the exercise useful, but experienced technical problems as a significant obstacle.

*'It is a great concept, I just had some serious technical issues in the beginning, which made me sceptic'*

## 3. Online peer feedback



- All of the students found the written exercises and online peer feedback useful or very useful
- All students participated in the exercise the first time. Participation decreased slightly over time.
- The number of participants who engaged in peer feedback varied between the groups.

*'Seeing the quality of other people's work, and compare it to my own, made me read my own work in a new light. It was very inspiring.'*

*'I think this is very useful, but I am not sure whether I am qualified to give feedback to my peers. Are my comments good enough?'*

*'Our group didn't work very well, we did not give much feedback to each other'*

*'I did not have enough time to provide proper feedback. I had more than enough to do, with completing my own assignments', '*

## Reflective description of experiences with the activities

The study shows that digital tools for social reading and online peer feedback may stimulate further collaboration and reflection between students and between students and lecturers between in-class sessions. In particular, online social reading seems to be an effective tool for students to engage with a text in between in-class sessions and for the lecturer to prepare for text-based discussions in-class which take as their point of departure the students' situated learning processes and for anchoring discussions in-class to a core text.

Online peer feedback on written exercises seems to be an effective tool for developing academic writing skills and competences aligned with the intended learning outcomes of the course. The study can point to the following recommendation for use of blended learning;

- Participation in online activities is most effective, when the online activities are supported by in-class activities and online presence by the lecturer.
- Anchoring online activities in groups may increase activity. Hence, the role of the teacher should also focus on the nurturing of group collaboration online and in-class.

However, the study also found barriers for the intended use of digital devices, where the most significant were technical problems and the sense among students and lectures, that blended learning takes a lot of extra time. Moreover, the study illustrates that the evaluation of the same digital tool might change over time. Hence, the situated character of evaluations has to be taken into account when evaluating blended learning programs. Considering the perception by students and lectures that blended learning consumes additional time, we need more knowledge on how – and to which extent - online learning can substitute face-to-face classroom lectures and seminars. What are the tools particularly suited for and what are they not suited for?

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# Encourage students to reflect on current and prior lectures with mini tests

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[LINK TO VIDEO](#)

## Referencer

Megan Smith & Yana Weinstein: Six Strategies for Effective Learning,  
<http://www.learningscientists.org/blog/2016/8/18-1>

Dette blokindlæg giver en oversigt over de seks effektive studieteknikker samt henvisninger til yderligere materiale omkring studieteknikkerne.

# Rollen som online underviser i blended og online learning – TAL2017

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[LINK TO VIDEO](#)

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