

# Designing Digital Higher Education: Case Aalto Online Learning

Tomi Kauppinen<sup>1</sup>, Yulia Guseva<sup>1</sup>, Sara Gottschalk<sup>1</sup>

<sup>1</sup>Aalto Online Learning, Aalto University, Finland, [firstname.lastname@aalto.fi](mailto:firstname.lastname@aalto.fi)

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## 1. ABSTRACT

In this paper we report on a model and experiences in designing digital higher education. Our case is Aalto Online Learning—an Aalto University wide strategic initiative for educational development. Since the kickstart in the year 2016, our activities have been to create online and blended learning experience designs, related learning materials and media, and as its foremost ambition, to transform and improve the educational setting and structures of the university and beyond. Instead of starting from a single platform or technology with all of its constraints, Aalto Online Learning starts from ideas to improve learning, and selects or develops a design to bring the idea to reality in an agile and collaborative activity. We have evaluated the whole process—from the call for idea proposals to funding, design, development and dissemination at courses—via nine consecutive rounds from early 2016 to early 2020. To overcome identified challenges in each round, we have clarified the model, introduced new training and production approaches, identified and ran online learning theme groups, and developed innovative tools and platforms. The model has been used to identify learning improvement ideas and to develop them into solutions for over 240 courses at Aalto University.

## 2. LEARNING TO CO-CREATE WITH PEERS

Students seek for digital materials and tools to support their education in a lifelong learning fashion where they can easily access contents both within courses and beyond them. At the same time, educators at universities, but also trainers in companies, wish to learn how to create those contents, and use tools and platforms to edit and share them. The problem our society is facing is thus twofold: 1) how to *train the educators/trainers* and also 2) how to *help learners to learn to learn*. Over the last decade, many blended learning initiatives have been initiated in higher education institutions all over the world. These initiatives have diverse setups, activities and goals.

For example, the University of Copenhagen's online and blended learning site<sup>1</sup> on online and blended learning, which was established as part of a strategic project called OBL 2016, offers various resources for teachers and staff—descriptions and guidelines for specific tools, interviews with teachers who use these tools or have flipped their classrooms (see Tucker, 2012 on the flipped classroom approach), articles, an e-learning support team.

The University of Central Florida has researched their evolution of blended learning practices for more than a decade, finding that success in blended learning programs is shaped through the alignment of institutional, faculty, and student goals, and that a solid infrastructure as well as continuous evaluation are essential. (Moskal, Dziuban & Hartman, 2013)

The University of New South Wales in Australia aimed to mainstream online learning opportunities through three complementary academic development initiatives. These provided teachers with a chance to collect experiences in online and blended learning as well as “an opportunity to interact, mentor, and share knowledge with one another”. (Mirriahi, Alonzo, McIntyre, Kligyte & Fox, 2015)

Swinburne University of Technology Sarawak in Malaysia reported on their Blended Learning Initiative, where activities included the establishment of an academic practice team to lead the initiative, a website with information and resources, appointed faculty-based digital learning technologists to support technical development in the faculty, as well as facilities with broadcasting systems. (Ying & Yang, 2017)

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<sup>1</sup> <https://obl.ku.dk/about/>

These examples show similarities to Aalto Online Learning's activities. However, they also indicate that community building, co-learning and co-creation among teachers and staff is a rather unique approach to improving online and blended learning in higher education.

With more than four years of experience through the Aalto Online Learning initiative, we argue that it is necessary to substantially design digital higher education. Our conclusion is that it is vital to identify and understand the range of online learning approaches and activities, systematically develop models and learning experience example cases, and disseminate them widely. In the case of Aalto Online Learning and its over 200 pilots<sup>2</sup>, the range of approaches is quite broad from virtual reality to online textbooks and automatic assessment and from educational videos to serious games, or from online social interaction to location-based storytelling with augmented reality. We further want to make a case for the importance of establishing a community and network of practice that uses and tests these models and fosters continuous co-creation and co-learning, thus improving learning at scale.

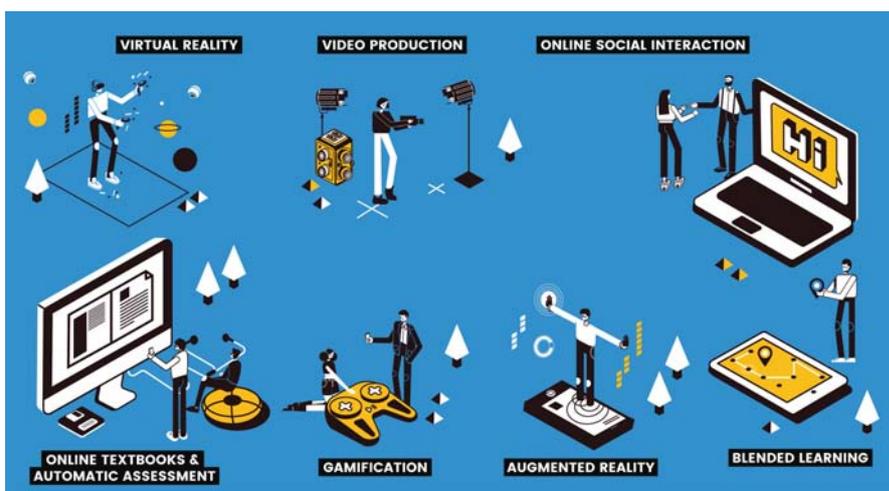


Figure 1. Aalto Online Learning theme groups for community creation, illustration credit Parvati Pillai.

### 3. APPROACH: CALL FOR IDEA PROPOSALS AS A STARTING POINT FOR NEW PILOT PROJECTS

Our approach starts with a dream by our educators to improve their courses, and ultimately the learning of students. The call for idea proposals is our channel to gather these dreams—ideas—from all creativity pockets of our university. So far we have organized the call for idea proposals nine times between Spring 2016 and Spring 2020. The questions for the call form have been iteratively developed over time. To start the preparations for the project in January 2016, we interviewed nine pilot leaders, and recorded what they were seeking in their projects. These interviews revealed various needs to put ideas into practice. They summarised as follows:

- Peer discussions about pedagogical choices (online/blended learning)
- Tooling for preparing interactive exercises and face-to-face collaboration
- Learning analytics that can be compared and made decisions upon
- Best practices and know-how about video/audio production
- Both automated assessment and peer review platforms
- Guidance for license decisions and openness levels
- Experience in sharing and co-working across school/discipline boundaries
- Practical help for design and tech

For the first call for idea proposals in 2016, we turned these typical answers into questions (e.g. What kind of practical support would you need to design and implement your idea?). We carefully checked the answers of the idea proposers in each of the nine rounds. When some question did not seem to

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<sup>2</sup> <https://onlinelearning.aalto.fi/pilots>

inspire good answers, we simply rephrased the question or dropped it from the form. Similarly, if we saw a need to share novel aspects or themes in discussions, we brought these as questions into the next round. This kind of agile and lean development has been the cornerstone of getting more to-the-point answers in the idea proposals. It has also served as learning material of its own: it asks idea proposers to think of the crucial aspects of learning design when propelling creative solutions.

There are two categories of funding people can receive from Aalto Online Learning—seed funding and implementation funding. Seed funding allows the exploration of appropriate tools, technologies and online resources for an idea, and the start of collaborating with existing pilots. During this phase, the ideas become more tangible as people prepare the schedule and budget for idea implementation. After the seed funding phase, they are invited to submit a new proposal to get funding for the actual implementation.

After the idea has been selected to become a pilot, people can start working on it. This can mean, for example, starting to make videos or hiring an employee to help with all the development. All pilot participants become a part of our Aalto Online Learning coaching network. We encourage our coaching network to attend and give workshops, share best practices and support each other. We also require that the results of pilots become accessible to all Aalto people—and the world—on our website ([onlinelearning.aalto.fi/pilots](http://onlinelearning.aalto.fi/pilots)) to provide examples of our educational development.

#### 4. AGILE AND ITERATIVE IMPROVEMENT OF AALTO ONLINE LEARNING ACTIVITIES

As Aalto Online Learning we take an agile and lean development approach to all of our activities and events<sup>3</sup>. In this section we will introduce and share some of the iterative improvements that have been shaping Aalto Online Learning practices.

##### 4.1 Video Production Training

In Aalto Online Learning we have organized video production workshops from the very beginning, substantiated by the research that—videos have proven highly beneficial for learning (Cascaval, Fogler, Abrams & Durham, 2008; Brecht, 2012; Tiernan, 2015). However, the workshops were scattered throughout the year and did not follow a logical sequence. For newcomers to the field, the video production process was unclear. They did not have a comprehensive picture of video production methodology and how much time was needed to allocate for each stage of video production. Moreover, workshops were not aligned with every pilot's production timeline. For instance, a scriptwriting workshop would be scheduled after certain pilots passed the pre-production stage and were already recording their videos.

We came to the conclusion that something needed to be changed about this model. Our solution was to create a video training package which we provide to pilots once they are accepted to Aalto Online Learning.

This video training is currently organized on the same week as a kick-off event. We call it a video training week. The package includes several sessions to ensure that pilots get necessary skills to start planning and executing their video production:

1. *Video: Overview of the video production process.* From this video pilots get an overview of what happens at pre-production, production and post-production stages.
2. *Peer-reviewed article on learning in the era of online videos* (Guseva and Kauppinen, 2018). From this article pilots learn why the quality of the video material matters and what challenges teachers typically face.
3. *Workshop on how to write a great video script.* In this workshop participants get tips for writing and formatting scripts that will be spoken on camera, analyze examples of good and bad scripts and test how a teleprompter works with a script.
4. *Workshop on screen recording software Camtasia.* In this workshop participants learn how to use a screen recording and editing program for capturing anything on the screen.
5. *Video package on presenting on camera.* This package consists of eight short educational videos to teach the skills you need to succeed in presenting on video.

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<sup>3</sup> See <http://onlinelearning.aalto.fi/events/>

6. *One-on-one session with the coach on training presentation skills.* This session is a follow-up on the previous video package. A teacher delivers a short presentation at the studio and a coach gives feedback. This session was originally organized as a regular workshop, but we noticed that some of our participants were intimidated when practicing in front of an audience. This resulted in a lack of attendance and impersonal feedback. Therefore, we changed the format to an individual session to create a safe space for teachers to practice and a platform for the coach to give more detailed feedback.
7. *One-on-one session on video production.* This session is designated for defining the concept of an educational video or an online course and for discussing video production plans.
8. *Video making slots.* Pilots can book a slot at the studio and present anything they like. It can be regarded also as an opportunity to practice being in front of the camera.

In the first implementation of the training week we did not have free days between the workshops and the video production day. We received feedback that pilots did not have enough time to process and apply all of the new information obtained in the training sessions to prepare for the shooting. Taking that into account, we now schedule workshops at the beginning of the week and video production sessions on Friday, so that participants have one or two days in between to prepare.

We have observed that some of the most successful workshops have been run by people from Aalto Online Learning community. They might not have been experts on the topic before becoming an Aalto Online Learning pilot. However, they have learned by doing during their time in the project and know first-hand what challenges other pilots usually face. Thus, they have been exceptionally successful at tailoring the content of the workshops to the teachers and university personnel engaged in developing online and blended learning approaches for teaching and learning.

## 4.2 Monthly studio days

In order to create a process of enabling pilots to do video production, we introduced monthly studio days in 2019. Monthly studio days are organized once a month and consist of several one-hour slots. Pilots are allowed to book one or two slots. Two slots is usually an optimal time for recording at the studio on one day. Presenting on camera is very energy-consuming, so after two hours presenters tend to get exhausted and the quality of their presentation goes down. However, two hours might not be enough for some pilots to complete their whole video production. In that case, a pilot books slots for several monthly studio days. Our experience has shown that having less material to present at each given session can aid in the delivery of information.

This concept has worked very well because we do not need to make individual video shooting arrangements for every pilot. Pilots are notified about the monthly studio days schedule in advance and can book slots themselves. Thus, when the slot is booked, they are provided with a deadline for having their script ready. Pilots can choose between black, white, or green screen backgrounds for their videos. There is also a possibility to use a light board which allows teachers to draw luminescent notes while facing the camera at the same time. It works best for calculations and sketches, or for language teaching.

Aalto Online Learning is collaborating with the university media unit, Aalto Studios, that is in charge of shooting and editing. Pilots do not have to worry about production arrangements and can focus on writing a script and preparing for presenting in front of the camera.

Attending video training week workshops is a requirement for booking a slot at monthly studio days. That way we can ensure that pilots come to the studio prepared and that they are equipped with the necessary skills to make a successful video.

## 4.4 Learning Experience Design Clinic and Video Production Clinic

In early 2020, weekly Learning Experience Design (LXD) Clinics were added to the offerings of Aalto Online Learning. The clinic offers a space for pilot leaders to discuss, explore and improve their pilot ideas and concepts, and receive guidance and tools on how to improve the learning experience for their students. Focus is thereby set on implementing online and blended elements into courses and teaching. The open clinic format allows pilot leaders to book a 45 minute session when needed and provides case-specific support. The clinic is continuously developed based on feedback.

Around the same time in 2020, weekly Video Production Clinics were further added to our offering. These are individual 45 minute sessions, like other clinics, for defining the concept of an online course or educational video, discussing video production plans, or evaluating the work pilots have done. Prior to the clinics, pilots could contact us by email if they had questions. However, some people might have felt that their question is not important enough to contact us, or they have not realized this opportunity even existed. If there was a need to schedule a meeting, it required an exchange of several emails. Now, that there is a dedicated clinic for all video production related matters, pilots simply book a slot, lowering the threshold for initiating the meeting.

#### 4.5 Variety of workshops and trainings

We invite and are always open for our pilots and pilot leaders to host workshops and training for the coaching network and peer-learning. Often, pilots have been asking on their own volition to host workshops, which indicates their positive relationship to the Aalto Online Learning community. Workshop themes have been, for example, Augmented Reality for Interactive Storytelling (ARIS) or Playable Concepts.

#### 4.3 Learning@Aalto Galas

The biggest event for the coaching network is the Learning@Aalto Gala (L@A Gala) which we planned together with the other strategic initiatives of Aalto University in the field of education. During the L@A Gala's demo session, we encourage people to present their development results to other members of Aalto University interested in educational innovations. The gala takes place yearly and has always been a highlight for the community, celebrating, showcasing works by pilot projects, and facilitating people to find new connections for future collaborations. The idea of organizing big events date back to Spring 2016. The first iteration under the name of Education@Aalto attracted around 50 participants. The event was successful but we learnt about the importance of organizing different sessions close to each other to avoid confusion.

Later versions of our Learning@Aalto Galas have been held in our Learning Centre, an open space where everything is in close proximity. Iterative improvement of the gala concept has also included a range of important success elements (like illustrative event maps, large name tags with a program on one side and the name on the other side, minute madness sessions to allow pilot projects to pitch about their projects before the demo session). In the latest rounds we have arranged workshops in the morning hours before noon, and devoted the afternoon to pitches, demos, award ceremonies and overall celebration of learning with good music.



Figure 2. Left: Learning@Gala 2018, photo credit Jere Savolainen; Right: Cloud Reachers podcast, visuals credit Lisa Staudinger.

#### 4.6 Cloud Reachers podcast

Aalto Online Learning launched the Cloud Reachers<sup>4</sup> podcast in June 2019 with season 1 consisting of ten episodes, followed by season 2, which aired in March 2020 with ten new episodes. The idea of the Cloud Reachers podcast is to invite experts to discuss with hosts different aspects of the future of learning (like future skills, artificial intelligence, educational games, spatial thinking, virtual reality, design thinking, creativity, community-building, accessible design, human computation, video

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<sup>4</sup> <http://cloudreachers.com>

production or online and blended learning). Our guest experts have been from a wide range of institutes, including our local Aalto University circles. Experts are invited to share their stories, pivotal events in their life and working life, and essentially reflect on what they are doing to push the envelope on transforming learning across different organizations.

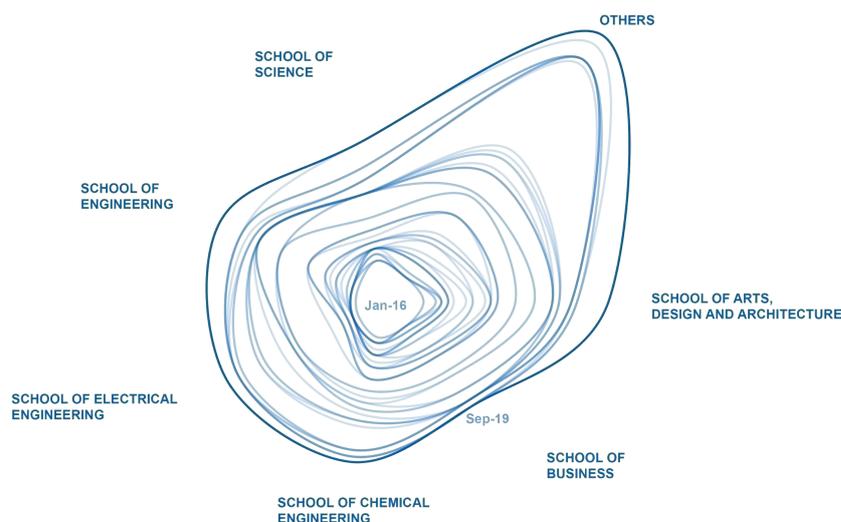
The concept for the podcast production was developed iteratively. First, there was a recording of short podcast episodes on different aspects of information visualization<sup>5</sup>, targeted to two courses taught by the first author of this paper. The idea was to dive deep into podcast production with all of its important aspects (like the use of studio facilities, working with microphones, and using voice and selecting words in an audio-only environment). After these promising experiences and insights, we designed Cloud Reachers Season 1 to feature ten different guests and opted for 30 to 60 minute episodes with each of them.

For each episode we proposed seven personalized questions for the guests to lead the discussion and to give a structure for the podcast episode. We learnt that an important question to pose was about the pivotal changes concerning learning, career goals, or motivations in an invited guest's life. This created a good twist for an episode, and thus later emphasized its role increasingly. We have also had invited talks, for instance from the Finnish Broadcasting Company YLE, to share their experiences on creating and broadcasting radio shows and podcasts. In those sessions we increasingly gained more confidence that the checklist we had for the podcast included the crucial production elements of a professional podcast. The essential elements of our current checklist include: visual identity, excellent audio quality, consistent length of episodes, well prepared but flexible episode structures, invited expert guests, social media marketing, regular airing of episodes, and readiness to be a guest in other podcasts.

## 5 RESULTS: IMPACT OF THE AALTO ONLINE LEARNING INITIATIVE

### 5.1 Making an impact in and beyond our community

The call for idea proposals, together with intensive actions to create a university-wide community of educators and educational developers has helped us to substantially transform the education at Aalto University to include more online and blended learning facilities. The pilots have directly developed or improved 244 different distinct courses (out of >3000 of our courses) in all of our six schools, and in the language center. Resulting online learning formats range from video production to games for learning, and from augmented and virtual reality to online textbooks and automatic assessment, and blended learning to podcasts and online social interaction.



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<sup>5</sup><https://soundcloud.com/user-705936595/sets/tomi-on-information-visualisation-the-roles-of-stories-time-space-and-theme>

Figure 3. Reach to all six schools of Aalto University. Each ring represents one month of Aalto Online Learning since its start in January 2016.

## 5.2 Pilot leaders share their impressions

Based on qualitative interviews with Aalto Online Learning pilot leaders and a survey, both conducted in early 2020, key factors that have made Aalto Online Learning an impactful initiative are outlined below.

### *A low-threshold and structured funding model as an activity enabler*

Through the Aalto Online Learning pilot program, easily accessible funding is made available for educators to develop their teaching. The pilot program application process involves little bureaucracy and instead focuses on helping educators to quickly bring their ideas to life. This has been reported as unique. The funding structure intends to give pilot leaders paid time off from their daily tasks to work on their pilot ideas. At later stages, pilot funding can also be used to hire experts and assistants. Interviewees further reported that their pilot activities made it easier to apply for additional (external) funding if needed and therefore to continue their developments.

### *Community and events as enablers for collaboration*

Educators accepted into the pilot program received direct access to other pilot leaders through the Aalto Online Learning community, events and workshops. Interviewees reported that the available community, events and workshops were unique, personal and extremely beneficial. They enabled peer support and exchange, new contacts and most of all, successful collaborations between educators. These would have otherwise not been possible, as usually intentions to collaborate stall due to a lack of time and funding.

### *Technical support & human resources as enablers for successful implementation*

Guidance and provision of technical support, such as accessible and continuous IT support for online learning tools or video production training, was reported as essential to successfully implementing pilot ideas. It lowered the threshold for teachers especially where no technical culture existed.

Additionally, as briefly mentioned above, the chance to hire assistants and experts (inside and outside of Aalto University) was reported as extremely helpful as it gave pilot leaders the resources to successfully kick-start, develop and achieve goals.

### *Aalto Online Learning pilot structure as an enabler for experimentation, self development and innovation*

The low threshold of submitting an idea, as well as the personal application process and program structure, provides the right kind of space for educators to become inspired. It invites them to freely work on their ideas, experiment, test and thus innovate. It further motivated them to develop their skill sets to fully realize their pilot idea. Being offered this kind of possibility made the pilot leaders enthusiastic which led to successful pilot results and the willingness to share their experiences within and beyond their departments, which in return inspired others to submit their ideas to the Aalto Online Learning pilot program as well.

### *Aalto Online Learning key beneficiaries*

Positive impact was achieved on several levels. First, pilot leaders were able to develop the ideas which they often had been carrying around with them for years as well as their teaching approaches. They further developed their own skill sets. Second, the courses involved in pilots were strongly improved. Course formats and activities were updated and developed in a more student-centered way; new courses and learning materials and opportunities were created (see Figure 4). Third, student feedback related to pilot developments was reported to steadily improve. This indicates that students benefited from the pilot developments. Further, new and improved courses led to higher student reach. Fourth, collaboration across teachers, departments and schools at Aalto University was increased.

## 5.3 Improved blended and online learning examples

Aalto Online Learning pilots have been utilizing a range of activities and formats in their blended and online learning (see next section). These are continuously developed and implemented in new and

ongoing pilots and courses. Figure 4 introduces 11 successful and unique pilot examples for each of the extended theme groups.

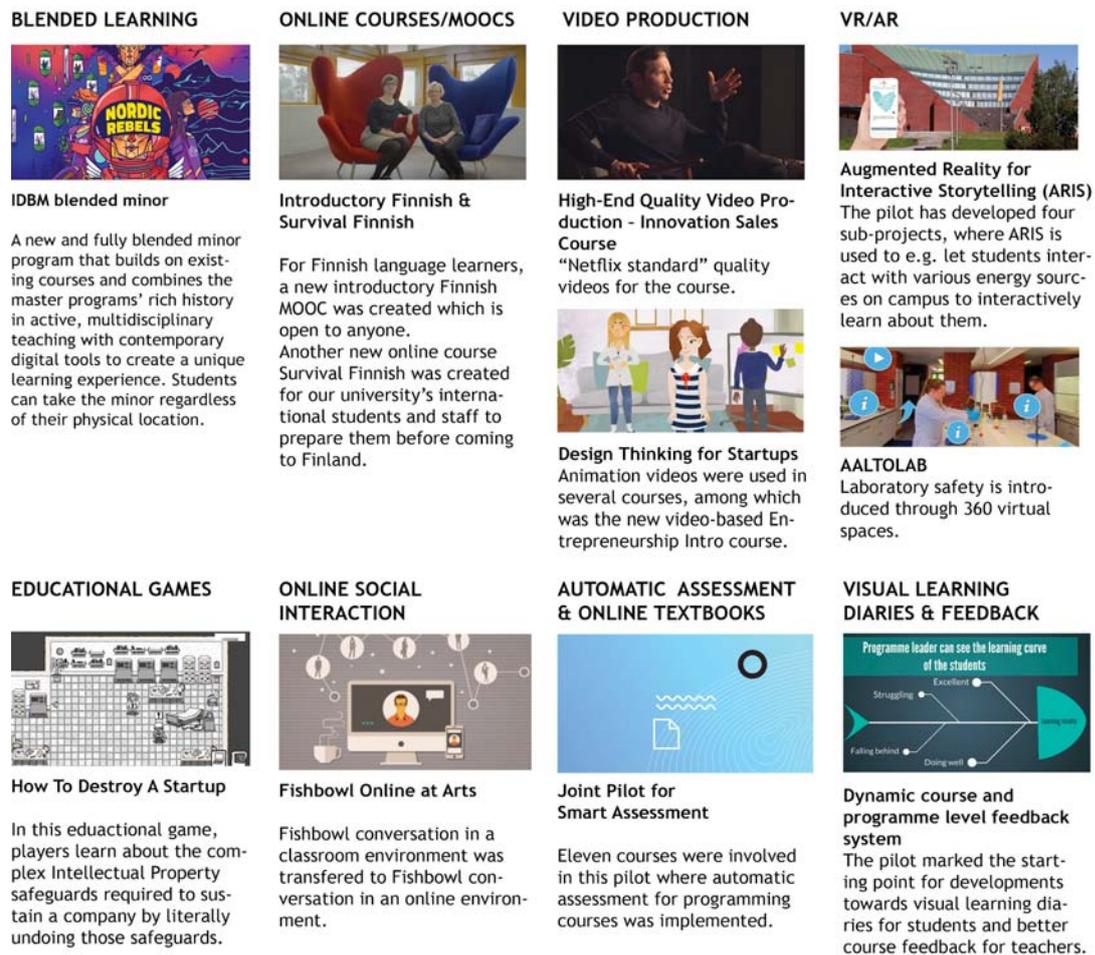


Figure 4. Aalto Online Learning pilots that have pioneered unique blended and online learning concepts.

## 5.4 A wide range of online learning activities and formats

Figure 5 shows an overview of the variety of online learning activities that were undertaken within the Aalto Online Learning initiative. There are a number of ways to represent information and knowledge for learners, for instance. However, the production of professional videos, which is one way to introduce information, requires a model. A video production model should include training, pre-production, recording, post-production and sharing (Guseva and Kauppinen, 2018).

Similar designs are needed for all different categories, for student inquiry, knowledge testing, knowledge application, reflection/documentation and feedback. Sometimes they can also be creatively combined, like in the case of the dynamic and visual self-assessment tool (see Kivimäki et al., 2018) or playable concepts (Kultima et al., 2020). Having an overview of the range of online learning activities already in use today, allows for critical evaluation and spurs new creative ideas on how to transform what exists into even better experiences for learners, as well as teachers in the future.

## Learning activities & formats utilized in Aalto Online Learning pilots

Course level

KNOWLEDGE INTRODUCTION	INQUIRY	KNOWLEDGE TESTING	KNOWLEDGE APPLICATION	REFLECTION/ DOCUMENTATION	FEEDBACK			
Teacher and guest lectures (re-recorded/live) Online textbook Interactive textbooks Digital Blackboard Learning Glass Video-based stories Video conferencing Video tutorials Interactive visualisation Micro learning format Podcasts Ebooks Articles	Self-Inquiry Community of inquiry Decision-making practices Voting	Online/mobile quizzes (also during lectures) Online exams Board Games	Group projects Individual project Problem-based learning projects Portfolio development	Learning Diary/Journal (digital/online) Student reflection videos Collaborative reflections Reflection papers Blogs Vlogging	Teacher feedback (to individuals or the group) Peer feedback Personal guidance Dynamic feedback exchange between teachers and students			
		Discussion forums Online live discussions Face-to-face discussion Facilitated sparring/peer discussions Fishbowl conversations				Peer instruction		
Pre-assignments		Free form assignments	Structured assignments	dynamic and visual self-assessment				
Continuous assignments (no final exam)								
Virtual Reality	Mixed Reality	Augmented Reality (2D/3D)	Storytelling	Games	Playable Concepts	Gamification	Experiments	Simulations

Behind-the-scenes teacher activities/decisions

COURSE DESIGN	ASSESSMENT	AUTOMATISATION
Create blended learning Flipped classroom Purely online courses Inclusive course design together with students (Digital) learning environment design Pedagogical improvements to courses	Assessment by Teacher Peer assessment Essay/text assessment Automatic assessment Continuous assessment Interactive self-assessment form Online automated exam	Attendance Assessment Conveying knowledge Documenting and archiving methods Learning system development for easier student (input) management

Figure 5. What kind of activities should support learners online, and improve learning? An overview of online learning activities utilized in Aalto Online Learning pilots.

### 5.5 A shift to online teaching during the COVID-19 pandemic

The historical COVID-19 pandemic has forced teachers to immediately move all their teaching online. Aalto Online Learning pilots have reported that they have been in a favorable situation because they had already produced and used the videos and related materials before in their courses. Thus, the transition from both face-to-face and blended teaching to fully remote teaching was rather smooth.

Having the videos in place has enabled pilots to benefit from both synchronous and asynchronous teaching during the pandemic. According to teachers, the videos have made the teaching more personal and they have been especially useful in implementing flipped classroom as well as for revision. Teachers also reported that asynchronous teaching allowed for more flexibility for the student.

### 5.6 Quotes from participants of events and trainings

L@A gala participants:

*"Interesting and inspiring day! Great chance to meet people from all Aalto schools in a positive, forward-looking atmosphere"*

*"Bright educational minds come together, bridging disciplines and exploring the innovations in the field with the focus on online learning"*

*"A nice environment to network and learn on different aspects of education with innovative approaches"*

*"Very engaging with a lot of positive spirit"*

Monthly studio days participants:

*"I like that there was a rather clear schedule that helped us drive our process."*

*"I like the easiness of the booking and working there."*

*"I like the welcoming and inspiring atmosphere and helpfulness I experienced."*

*"I like doing these videos with help, so it goes more smoothly."*

Quotes from the video training participants:

*"Very well designed and planned. Very effective. We got inspired."*

*"I liked the detailed and spot-on comments from the presentation skills coach. They helped me a lot to prepare my video presentation."*

## 5.7 Award from Aalto Student Union

An important evaluation of all learning experience designs and learning development is the feedback from learners themselves. Aalto Online Learning has invited students from early on to join development activities, for instance by organizing workshops with student guilds and welcome idea proposals from all people at our university, thus from students and staff alike.

In May 2017 our actions and project received a distinct recognition from Aalto Student Union (AYY): *"The 2016 Learning Contribution Achievement Award was given to Tomi Kauppinen and Lauri Malmi, who had headed the Aalto Online Learning digitalization project in an exemplary manner. The contributions of Kauppinen and Malmi created operations models used to develop teaching in Aalto. Also, thanks to their work, the digitalization of Aalto's teaching advanced leaps and bounds in a very pedagogically sound manner."*

## 6. DISCUSSION AND FUTURE WORK

Since 2016 we have followed basic principles of creating a community of our educators and educational developers via calls for idea proposals and organizing events, in many ways according to what we reported in early phases of Aalto Online Learning (Kauppinen and Malmi, 2017). We have created online and blended learning elements to 244 distinct courses, which is almost 10% of all of the courses at Aalto University. Our theme groups (video production, games, augmented reality, virtual reality, online social interaction, online textbooks) have been active sub-communities and networks of educators, creating connections that are crosscutting traditional borders between departments and schools.

The timely question is how to scale up our operations in the future? Many of our units and programs are preparing for large-scale digital transformation to meet the requirements of learners. Lifelong learning, for instance, calls for approaches to enable time and space independent learning for our alumni already active in their working life. Organizational capabilities need to match these learning experience and production needs. For the research and development agenda of the years to come, we have identified a key set of actions.

Firstly, we build on what we have already: the online and blended courses in production. We improve them, and tailor to different target groups. We also take the ready courses, and discuss them with program directors and department heads as inspiration, and as building blocks to extend offering to a wider set of courses in a given program, or department. Secondly, we wish to steadily grow the community and network of educators, and actively link them to both internal and external experts of respected fields, and online learning themes. This happens via online events, face-to-face events, podcasts, workshops and training. Thirdly, we plan to establish a permanent team to research and develop online learning and implement best identified practices to help educators to create learning experience designs that improve learning and benefit learners.

How might our approach work in other universities? Aalto University itself is a merger of three universities, and has six schools, so there is evidence that the approach works with quite a few different disciplines and learning settings. This suggests that the approach can also work in other universities, having a transdisciplinary agenda and where design, science, business and technology are all present.

Aalto University has recently (early 2020) announced a new strategy called "Shaping a sustainable future"<sup>6</sup>, to come into force in January 2021. The strategy has three areas of development. They are 1) research: driving excellence, 2) education: future-led learning and 3) impact: inspiring ecosystem. These areas are supported by three crosscutting approaches: 1) finding solutions for sustainability, 2) radical creativity, and 3) an entrepreneurial mindset. Among the educational development, with the goal of future-led learning<sup>7</sup> there is a strong emphasis on "elevating student experience" and "taking greater societal responsibility in degree education and continuous learning". For Aalto Online

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<sup>6</sup> <https://www.aalto.fi/en/node/171431>

<sup>7</sup> <https://www.aalto.fi/en/our-strategy/education-future-led-learning>

Learning, the planned actions of “renewing educational offering, developing our digital and engaged learning environment, integrating sustainability and multidisciplinary studies into programs, advancing learning-centricity and focusing on holistic wellbeing” are very well in line with the basis we have iteratively built in the past few years and that guides our future plans.

## 7. CONCLUSIONS

In this paper we presented our approach to designing digital higher education via the tangible case of Aalto Online Learning, a strategic development initiative from Aalto University between 2016 and 2020 (as of writing this paper). We described the surrounding and motivation for developing online and blended learning approaches to create more impactful learning through enriched learning experiences, and essentially to allow for time and space independent studies, accordingly. We further presented different elements of the approach: the call for idea proposals and our pilot program, community-building efforts, clinics, training events, workshops, demo events, our Cloud Reachers podcast, and models for educational video production.

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## 9. AUTHORS' BIOGRAPHIES

Tomi Kauppinen is a project leader and docent at the Aalto University School of Science in Finland. He holds a habilitation (2014) in geoinformatics from the University of Muenster in Germany, and a title of docent (2014) and a Ph.D. (2010) in media technology from the Aalto University, and M.Sc. (2004) in computer science from the University of Helsinki. From April 2014 to September 2014 he was appointed as the Cognitive Systems Substitute Professor at the University of Bremen in Germany, and since 2015 he is a Privatdozent in geoinformatics at the University of Muenster. His passion is to create, study and teach information visualization, spatial thinking, cognitive systems/artificial intelligence & blended learning design. Since 2016 Tomi is the project lead of the Aalto University wide strategic development initiative, Aalto Online Learning, which covers activities ranging from blended learning to fully online textbooks and exercises, and from video production to online social interaction, from artificial intelligence- based recommendations and assessment to interactive visual simulations, and from augmented/virtual reality to games and gamification. Tomi hosts the CloudReachers.com podcast. Contact: [Tomi.Kauppinen@aalto.fi](mailto:Tomi.Kauppinen@aalto.fi)

Yulia Guseva is an online course producer at Aalto University. Yulia leads the video production theme group of Aalto Online Learning to advance and offer training and productions for our educators. Yulia holds a Master of Science in Economics and Business Administration from Universite Paris 12 - Val de Marney. Contact: [Yulia.Guseva@aalto.fi](mailto:Yulia.Guseva@aalto.fi)

Sara Gottschalk is a Learning Experience Designer at Aalto University and a Junior Consultant at Leapfrog Projects. She holds a Bachelor of Arts in Interactive Media Design from University of Applied Sciences Darmstadt and a Master of Arts degree in Collaborative and Industrial Design, with minor studies in Creative Sustainability from Aalto University. Sara has 10 years of international study and work experience and is passionate about understanding human nature and utilising this knowledge as well as design and technology for contributing to the sustainable development of our societies. Contact: [Sara.Gottschalk@aalto.fi](mailto:Sara.Gottschalk@aalto.fi)