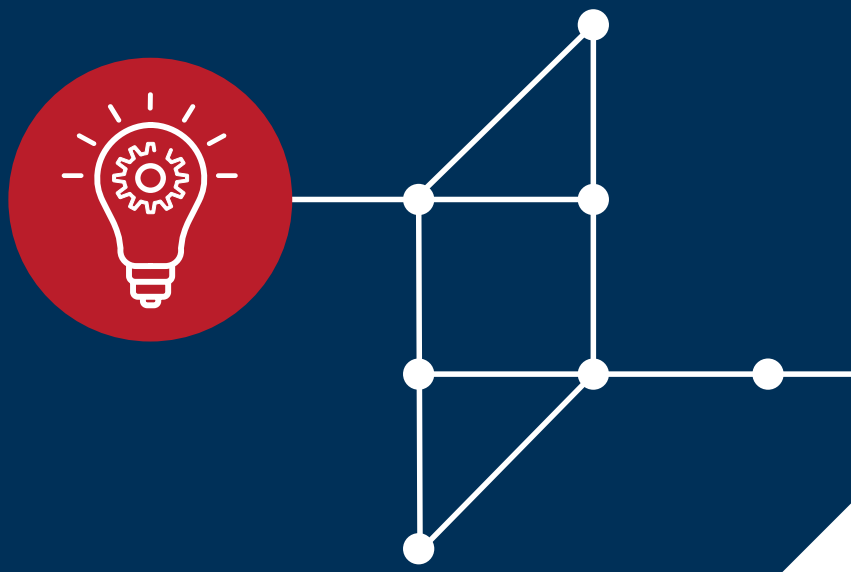
Adventurous collaborations: EdTech models from experimentation to application

Supporting the EdTech innovation process in higher education



Acceleration plan
Educational innovation with ICT

EdTech

Adventurous collaborations: EdTech models from experimentation to application

Supporting the EdTech innovation process in higher education

Werkgroep EdTech voor onderwijsinnovatie
Versnellingsplan

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Contents

Introduction

Connecting ways of working

Universities and universities of applied sciences across the Netherlands have become immersed with technologies, both digital and physical. The technologies used in these educational organizations are there to guide, mentor, collect information on and innovate the learning processes they are involved in. These many technologies came from the ideas, minds and processes of EdTech, or educational technologies; companies which try to capture learning practices and educational exercises in technological devices, applications and simulations. With support and idea generation from Dutch educational institutions, EdTech in the Netherlands has become much more prominent; with more than 406 EdTech startups, the Netherlands comes in 7th in Europe for EdTech economies in terms of valuation.[1] For these new educational technologies to make it into the hands of learners and instructors, they must be screened, procured, experimented with, and refined for the educational context they are used in. But how do institutions go through this process? What are the several ways Dutch institutions review and screen new educational technologies? How do some organizations foster communities for EdTech development and experimentation? What are the different obstacles educational institutions in the Netherlands face? How are they similar? By looking at the way universities have created an innovation process for experimentation, technological and functional procurement and implementation models used across the Netherlands, we can begin to answer some of these questions. If we are able to answer these questions, we can come to a better understanding of what a mature innovation process looks like for a university.

This report is the first publication in the project 'Supporting the EdTech innovation process in higher education' initiated by the Werkgroep EdTech voor onderwijsinnovatie of the Versnellingsplan, that wants to capture and improve the way Dutch universities cooperate with EdTech companies. This report is a collection of various EdTech innovation models that range from focusing more on experimentation and innovation to implementation and scaling technological adoption. This assemblage of models contains walkthroughs and additional analysis of each scheme, in turn creating a general overview of the current landscape of Dutch Higher Education EdTech adoption. The gathering of information on various models and their processes started in the winter of 2021 and was developed through February of 2022.

[1] *'The State of Dutch EdTech Ecosystem' Report Is Live! | Growth Tribe*, accessed February 24, 2022, www.growthtribe.io/blog/the-state-of-dutch-edtech-ecosystem-report-is-live.

This report stands as a compendium to the following subsequent publications in this project that will also be developed by the EdTech Werkgroep. The publications to follow will build on the audience and research collected during this model overview report to produce a general maturity model for EdTech innovation in Dutch universities. A maturity model will allow for new ways of templating, focusing, and hopefully shed some new light on how educational organizations in the Netherlands can become more prepared for EdTech experimentation, innovation, implementation and scaling. Moreover, it allows educational organizations to see the signposts or signals of where their own administration or work culture stands currently through a user-friendly model. Finally, with the results of the first two publications, we will develop building blocks and instruments for universities that want to improve parts of their EdTech innovation process. These building blocks will be part of an instrument kit that universities can access when they are building their new procurement processes or developing new innovative approaches in their institution.

This project was created with the help of our EdTech Community members. Members were sent a list of standard questions that they answered voluntarily. In addition to the standard questions, members were also sent 'Spotlight Questions' that allowed them room to explain the particularities or unique features of their model and or model. Spotlight questions varied and were used to give a more in-depth understanding of communities, processes and stakeholders that revolve around the model and its use. Members were then interviewed for more analysis and a deeper understanding of their institutions' situation.

This report showcases a total of five Dutch higher education institutions models and two narratives that describe how a university is taking the first steps in innovation with EdTech. Based on their answers we created a list of case studies. We ordered them based upon their focus more towards experimentation versus scaling. The list of case studies is the following:

- Erasmus University Rotterdam
- Hogeschool Inholland
- Fontys Hogescholen
- Wageningen University and Research
- Utrecht University

While all the models discussed in this report are subject to change over time due to situations, values or context, some institutions are just getting started. This report examines two examples of these starters, Avans and Hogeschool Utrecht. Both are in the early stages of developing their EdTech communities, such as VONK at Avans, and a first model, such as Hogeschool Utrecht. These examples are a great way to see how these institutions begin adventuring into an EdTech innovation processes and what obstacles they face.

Reading guide

To start, the report jumps into the model overview, its walkthrough and consequent discussion. The observant reader will notice how each model has its own distinctive characteristics that most likely were inherited from its institution. Like their unique designs, each model overview also has a particular analysis that allows for more in-depth understanding and questioning.

The overview reports are in 5 parts:

1. Introduction
2. Model Overview and Walkthroughs
3. Analysis, Points of Concern
4. Discussion
5. References

While all the models discussed in this report are subject to change over time due to situations, values or context, some institutions are still trying to get their feet in the water. This report examines two examples of these starters, Avans and Hogeschool Utrecht. Both are in the early stages of developing their EdTech communities, such as VONK at Avans, and a first model, such as Hogeschool Utrecht. These examples are a great way to see how these institutions begin adventuring into an EdTech innovation processes and what obstacles they face.

1. Erasmus University Rotterdam

Introduction

With new ideas for both EdTech design and educational pedagogies, Erasmus University Rotterdam (EUR) looks to the team of ErasmusX. ErasmusX helps faculties in developing educational innovations, focused on helping the students at Erasmus University to develop themselves in the best way they can. Their mission is to challenge the status quo by creating radical educational innovations and working on the institutional innovation engine to accelerate the improvement educational quality. Pushing existing or developing new EdTech is one of the means to do so. The department is funded by the HEQA funds (Higher Education Quality Agreements) from the Ministry of Education from 2020 until 2024. Other departments and faculties are also funded by this budget, and they are in line with the themes of the Strategy 2024 of Erasmus University.

ErasmusX's early education supplies affordable and quicker validation for innovation projects by using processes, several tools and methods of startups. The team at ErasmusX favors a LEANER approach to its experimental work. They believe that having earlier checkpoints for validation of assumptions with a target audience results in an iterative process. This leads to novel discoveries, and helps to define the goal as well as the deliverable during the innovation process.

The LEAN approach compared to a more traditional Waterfall approach is understood by the ErasmusX team as:[2]

- Lower risk
- Budget is progressively increased once hypotheses are validated
- Validation through multiple experiments
- No clear deadline or fixed deliverables

[2] Danielle Ceulemans, *Innovation Process ErasmusX*, accessed February 17, 2022

Stages List:
1. Strategy Fit
2. Discover
3. Test & Learn
4. Define
5. Develop
6. Test, Evaluate and Learn
7. Deliver

Phases walkthrough:[3]

1. Strategy fit
An idea is brought into the ErasmusX team for exploration. The goal for the first phase is to reflect on if the project needs to fit viability (should we do this?) and feasibility (can we do this?). This activity has the aim to obtain the basic idea of the project using the available sheets and its questions. This first phase also asks the initiator of this project to contact the first relevant stakeholders if the project fits the ErasmusX , or the project selection criteria process. The deliverables for this phase are a 'Project sheet' and 'Project selection criteria assessment'.

Regarding the strategy fit stage, the most crucial thing is to pass the selection criteria for the project. It needs to fit the vision and mission or ErasmusX and fit in the project portfolio. Next to that, they assess if there is the capacity and budget to execute the new project.

2. Discover
The next phase tries to discover and make note of the problem area and existing solutions. This means identifying the assumptions of the (possibly hidden) needs of users and finding a gap or opportunity for improvement or solution.

The discovery stage may be desk research such as literature reviews or market research with the goal of finding out information so that you do not try to 'reinvent the wheel'. This activity also asks you to write down and evaluate your assumptions, hypothesis and any other notes that communicate what you could not discover. Another activity may be mapping out and contacting the first relevant stakeholders as well as a plan of approach and overview of assumptions, which the latter serve as deliverables in this phase.

A problem statement needs to be formulated to fit the EdTech and backed by qualitative and quantitative information. If ErasmusX works with an existing EdTech tool it needs to pass privacy and security regulations. Depending on what features are in the EdTech it requires stricter rules (e.g., integration of Osiris into an app or student ID or a platform with audio and video only).

The Discover phase may also include suppliers. In the Discover phase the suppliers can send evidence-based data and information to help the ErasmusX team make informed decisions in whether to collaborate with them. In the develop phase there are pilots' set-up together with the suppliers so that they can offer the right products and services. With the feedback resulting from the pilots, the ErasmusX team hopes to actively co-create with the EdTech startups, but that is currently still in development.

3. Test & learn
Test & Learn as a phase means testing and learning from your assumptions with the stake-holders planned to be a part of the experiment. Activities here can include:
- Interviews from user research
- Focus groups
- Surveys to discover problem area(s)
- Writing down new assumptions and researching them
- Additional online research

The expected deliverables in this phase include user and market research reports in order to move forward to defining more explicitly the problems and descriptions in the project. Moreover, there should be interviews and surveys with real-life stakeholders.

4. Define
The Define phase requests the experimenter to define the supported explicit description of the problem (and idea) definition to find a relevant focus. The gap or opportunity of the relevant focus in the project should still fit within ErasmusX mission and vision. Activities that help to achieve the Define phase include:
- Analyzing the discovered information into a specific problem definition
- Gathering support from the EUR community such as sponsors and ambassadors.
- Looking at the quality metrics to realize the outcomes to focus on.

[3] Danielle Ceulemans, *Innovation Process ErasmusX*, accessed February 17, 2022, docs.google.com/document/d/17wxNbOdXHa5Rtzh9Cfk_5EWTN9V_asmEO_d3AGQc1F8/edit?usp=drive_web&ouid=107253188765509481238&usp=embed_facebook.

This phase has deliverables needed to move forward that include:
- List of minimal requirements
- Riskiest product assumptions
- Defined problem statement

To move to the next phase, this phase requires:
- Evidence informed defined problem/opportunity statement
- Key insights and decisions
- >40% of the target audience recognized the specific problem.

5. Develop

The Develop phase incentivizes the development of ideas designs and concepts of prototypes in co-creation with the stakeholders and EUR community. Here the MVP is developed with an affordable and quick way through the riskiest assumptions made before. This will be the tangible MVP used for the testing.

In the Develop phase it is crucial to 'co-create' with stakeholders (users, buyers, educational vice, deans, facilitators, policymakers, IT etc.) to make sure it fits their needs as well and that they have a feeling of control and ownership. Every faculty has different decision lines and can take time to unravel. This phase is crucial because if the stakeholders don't feel a sense of ownership over the innovation, then they are not accepted.
The Develop phase requires multiple deliverables including:
- Solution statement
- Written concept documentation
- MVP to full working prototype

These deliverables are expected to:
- Be supported by the co-creation and design of stakeholders and confirmed with (end) users
- >%40 of the target audience would be disappointed without the solution

Suggested activities that can stimulate and accelerate this phase include:
- Solution statement form assumption mapper
- Co-creation workshops
- Customer journeys and user stories
- Experimentation and learning cards

6. Test, evaluate & learn

With the assumption of success, this phase means executing and confirming the prototypes. This is followed by evaluating if the final project or design was a success and if impact was made. Validating both the work for the EUR and sharing insights to improve as a team is also important in this phase.

This phase is focused on testing ideas, concepts and prototypes while making iterations that lead to growth. Measuring the outputs with the quality metrics leads to reflections on the innovations as well as the team's process. Multiple evaluations will be performed based on research.

Deliverables that are expected in this phase include:
- In-between user research reports
- End of project reports

This includes meeting the expectations of:
- Evidence of impact based on Quality Metrics
- >40% has significant impact

More activities for this phase, including testing, are:
- Quality Metrics surveys
- Outputs and outcomes

7. Deliver

The final phase is delivering and disseminating the successful solution and outcomes to the community by facilitating a smooth transition. To pass the Deliver phase it is assumed that the team needs to deliver the innovations to multiple faculties to make sure the institutional ownership is shared and after that accelerated organically or facilitated by other innovation departments such as Community for Learning Innovation and the maintenance and support is taken over by IT support.

Research has become a big part of the ErasmusX team. Researchers confirm the educational outcomes of the innovations to confirm if it is viable. Setting up such educational research takes time and can slow processes down. In the end the ErasmusX team needs to think about a financial and organizational plan to make sure there will be enough support in the future.

Currently the Deliver phase focuses on scalable solutions that work and supply support documentation and or training. This is followed by sending the work through events, workshops and or conferences.

Deliverables for the Deliver stage include:
- Scalable models
- A blog on the project or new spin-offs

There are currently no expectations beyond these deliverables.

Suggested activities for this phase include:
- Stakeholder maps
- Community readiness levels

Analysis/points of concern

Where are the students?

Students are included in the ErasmusX community and throughout these processes described in the walkthrough. Students are involved in other ErasmusX teams as student assistants, where they help setup and do the user/market research. Students are also involved in the user research itself. There are students involved with co-creation sessions that are invited as relevant stakeholders. Student assistants supplied input and feedback into the concepts discussed. Finally, the ErasmusX team tests the EdTech with the students during the pilots themselves

Why innovation processes? What is the benefit of LEANER processes used at ErasmusX?

The innovation process is used by ErasmusX is designed for new projects and ideas and not necessary on EdTech tools. It's based on the typical double diamond process. It is rather fluid and is appreciated by a team that does not like strict rules and regulations in the way they work. Moreover, the ErasmusX team does not have strict gateway criteria and that makes it sometimes hard to iterate, pivot or kill projects. The selection criteria too, is not always followed for new projects. The team is new and has only existed for two years. Therefore, the team does not have all the processes and protocols in place yet to be fully 'mature'. Besides this, they try to create more radical and non-traditional innovations and try to work outside the university boundaries to accelerate the process. For the future, they are currently setting up a taskforce to focus specifically on EdTech to design, modeling and processes that will allow for scouting and pushing EdTech into our institution.

What apps have failed to make it through all the phases? What phases did they fail?[4]

- **KIBO-app** – An app where you can get advice on your future career via answering a couple of MCQ questions in the form of duo-lingo. The app revealed questions and job descriptions that were not relevant for the target audience. The app revealed many bugs and flaws and the ErasmusX team felt the application was too immature and that it was not viable to work together with them. The ErasmusX team did not reflect on the desirability or feasibility and did not want to co-create with them as it also did not fit with the educational innovation focus fully.
- **X-cube** – A programmable physical escape room for 6 people where you can design gamified educational learning experiences. The design and maintenance had to be eased by the ErasmusX team or externally by a company and that would take too long and was too complex. Although the room could autonomously be played, the scalability was limited.
- **Unilife** – A digital student community app focused on events for universities to increase student engagement. This app was already implemented in Erasmus which made it easy to use their architectural infrastructure. However, the ErasmusX team focus and value proposition were different than the developers and the company was not opened to alter or co-create their app into something bigger and broader as it changes the 'social niche' they want to focus on.

Feedback and discussion

The ErasmusX team has created an utterly unique and ambitious model. The processes are focused and yet allow for creative freedom with clear expectations at the end of each phase. Even though the team is new, they have already implemented both a new way of thinking about EdTech implementation and testing in higher institutions. From the analysis above and the investigatory research done on this model, it seems that there is a need for both more freedom from institutional standards and a prioritization of educational innovation for this team to continue their more work proficiently. This could be possible by adding educational innovation testing and experimentation to the actual assessment of staff performance, or through more training in educational innovation for interested faculties. Incentivizing experimentation with EdTech suppliers and interested students is a continual golden thread through many higher education institutions in the Netherlands.

[4] Danielle Ceulemans, *Questions and Comments ErasmusX*, January 4, 2022.

2. Hogeschool Inholland

Introduction

The importance of experimenting with EdTech ties in directly with the ambitions of Inholland concerning innovation of education and research; aiming for flexibility in learning, interdisciplinary work and learning linked to professional practices. Digitization and digital media play a crucial role in realizing these ambitions. Whether it concerns sharing data and information, being able to communicate and collaborate remotely, analyzing trends or promoting self-management skills of students – in all these examples digital media are not only indispensable, but they are also often the driving force behind innovations. In addition, today's students have grown up and are in many ways intertwined with digital media. Society now expects young professionals to make a valuable contribution to the evolving 'smart society'. EdTech can make a most valuable contribution to this endeavor.[5]

Stages List: 10 Phases

1. Proposal Experiment
2. Intake
3. Assessment
4. Preparation
5. Execution
6. Monitoring
7. Collection Data
8. Evaluation
9. Advice
10. Share

[5] Ton Gloudemans, *Questions and Comments Inholland*, January 12, 2022.

Stages walkthrough[6]

1. Proposal experiment

In order to start an experiment, there needs to be an idea or defined need within the university. These ideas usually come from teachers, students and especially the EdTech Incubator, Start-up Campus Haarlem (SUCH). SUCH is a meeting place of Inholland Haarlem where enterprising students, teachers and the business community come together to create, share ideas and make new experiments. Other experiments are aimed at confirming existing EdTech products. Some of them are fully functional commercial products, others are in a premature stadium of development. There can be different starting points that each experiment has to address accordingly. From its core, the experimentation step is there for experiencing new tools and working methods within a real and existing educational setting while exploring their added value for teaching and learning.[7] The very latest ideas that have no product or service yet are matched to internal and external expertise services that then begin to enable the next step in Intake. Inholland also tries to work with prototypes or semi-product/first releases. These are matched to initiators in education and develop partnerships that can help set up the education experiment. Not all projects start at SUCH, but they do all start with an inspired team or people, namely teachers, that want to try something new.

2. Intake

Intake is considered a crucial step in this process. In this phase, many things are figured out including:

- Goals of the experiment
- Necessary conditions for the experiment
- Frameworks or approaches for the experiment
- Identifying key research questions
- Required people
- Resources needed including hours, costs, and pre-requisites
- A timeframe

Experimenters and participants need to agree on important questions like the ones described above before moving further into assessment.

[6] Ton Gloudemans, *Questions and Comments Inholland*, January 12, 2022.

[7] Ton Gloudemans, *Inholland Onderwijsinnovatie Met EdTech*, docs.google.com/presentation/d/1dtwP-1zFHvxt3_p9zweNiVoU672gkumMq.

3. Assessment

Here the experiment is assessed by looking at viability, feasibility and added educational value found in the classroom or a business case example.
This phase also requires a panel of educational experts to review the proposed experiment before the preparation phase can be stepped into.

4. Preparation

The preparation phase arranges many parts before the execution phase including:

- Licenses for the experiment
- A light version of the privacy and security review
- Create accounts
- Involving participants of the experiment
- Planning training
- Figuring out any support needed and any other resources

Assessing new ideas for experiments is not set in stone. The Inholland working method is evolving through learning along the way and making adaptations if necessary. Moreover, not every initiative has the same starting point. The important thing is that Inholland creates a process in which all stakeholders, education as well as services, are involved and can bring in their knowledge and requirements for execution of the experiment and potential future scaleup.[8]

Social friction can also occur in the preparation up to the execution phase. Friction may result from internal discussions on budget, security and FTE allocation for accounting, functional management and support, as well as legal issues related to security rules, Confidentiality and Procurement (European)

5. Execution

The experiment is executed in a real or realistic educational context. Experiments can take a few months to half a year to finish.

A successful experiment does not necessarily lead to a successful implementation later. Still, suppliers may be involved in this phase and the preparation phase to help answer questions and setup. Startups and new tools need to be discussed in greater depth than established vendors and tools.

[8] Ton Gloudemans, Interview with Inholland, February 25, 2022.

Notably, students are involved here as well in the execution and collection of data for the evaluation phase.

6. Monitoring

The monitoring phase includes the arrangement of 2 or more meetings with participants of the experiment to discuss how progress is coming along and make new adjustments when necessary. Some experiments do not make it to the end of experimentation processes, due generally to not enough participation or data. Trying to catch these obstacles or pitfalls is important for all experiments.

7. Collecting data

Collecting data requires participants and experimenters to collect the user experience and measurable results. Inholland uses questionnaires, user data and if available, interviews. The first results will be used to adjust parts of the experiment to hopefully make it more likely to be successful.

8. Evaluation

The evaluation phase evaluates the data from the earlier phase and allows for experiences to be exchanged about the experiment. Inholland has developed the 'Inholland Innovation Index'. This model helps the evaluators to tie the experiences and insights from all involved stakeholders together. The index is the basis for advising on future actions regarding the EdTech solutions: scaling up, further experimentation or ending activities.[9] Here conclusions are drawn and prepared for the next advisory phase.

9. Advice

Advice can take many forms including:

- Whether or not to continue the technology use
- Whether to begin scaling up initiatives and purchase
- If it is applicable to create a drafted business case for the scaling up process.

10. Share

In the final phase the experimenters are asked to share their findings within and outside of Inholland. Sharing findings means sharing knowledge as broad as possible but is not aimed at a decision process. The Inholland Innovation Index provides the information to set up a business case which in the end is decided upon by management. This stage is not part of the experimentation itself but plays as the important follow-up of the experimentation process.

[9] Ibid.

Experimenters should discuss their conclusions as well with the EdTech suppliers and other important stakeholders such as:

- Core team on educational innovation with EdTech (IVT, OWB, TLT).
- This team consists of educational advisors, info managers, portfolio managers, teacher researchers, and the head of IT development
- Budget for initiatives, experiments, pitches, meetups
- EdTech ambassadors
- SUCH (Start Up Campus Haarlem) EdTech Incubator
- TLT research group (Teaching Learning & Technology)
- Community EdTech for educational innovation
- Enthusiasm of teachers, students and EdTech

Analysis/points of concern[10]

Can experimenters re-apply to do their experiments again?

If an experiment is not conclusive, it is often extended, but always with added questions to research within the experiment. New topics must be addressed in the continued experiment. In general, a positive outcome of an experiment does not depend solely on the quality of the tool itself, but also on the pioneers involved and their goals. Experiments usually take a few months to half a year. Currently, the implementation process which may follow a positive evaluation will take weeks to a few months in case of a specialized tool for a small user group and more likely up to a year or more for a full institution wide implementation.

Where is Inholland heading with this current experimentation process?

Inholland is working on a website to make their activities and results visible within the institution, but also for other institutions and EdTech entrepreneurs. Moreover, Inholland is working on the processes which lead to upscaling following the experimentation phase of a successful tool. This also means that there is an increasing need for developments in Inholland regarding the decision-making process for EdTech procurement and experimentation.

[10] Ton Gloudemans, Interview with Inholland, February 25, 2022.

Where is there currently room for improvement?

For Inholland, discussions about privacy and security take a lot of effort and time and don't contribute to a culture of innovation and experimentation. Inholland thinks that institutes of higher education in the Netherlands would profit if an expert group within SURF would evaluate tools and could assign them an 'approved by SURF' quality mark the like. This would take away a lot of pressure and uncertainty within each institution and speed up the process of innovation and experimentation tremendously. Also, beneficial will be a national platform on which experiences with new technologies within education can be shared and discussed.

What is the SUCH Program?

Start Up Campus Haarlem is a community and a meeting place of Inholland Haarlem where entrepreneurial students, teachers and the business community come together. The atmosphere of the actual meeting place is calm and informal, allowing for open meetings to happen. Participants discover workshops, events and organized efforts in learning new entrepreneurial skills. The real-life issues that are discussed here find support and mentoring from the community both from Inholland teachers and EdTech industry coaches.[11] Find out more here.

Discussion

Inholland's EdTech strategy has recognized the indispensable role that technologies have begun to play on both a strategic level and practical level. By turning to the community, Inholland has begun to foster engaging conversations and opportunities between students, staff and EdTech companies with the SUCH program. Inholland is another institution that is interested in the development of better culture around EdTech experimentation and the mindset to do so. Experimenting as a mindset means harnessing better communication between disconnected stakeholders and having a long-term vision or understanding of scaling educational technologies in the future. The EdTech community consists of more than just fully fledged software products and Inholland has developed space for new voices in their own institution.

[11] *OOO – SUCH*, accessed February 17, 2022, startupcampushaarlem.nl/ooo/.

3. Fontys Hogescholen

Introduction

Fontys's 'Experimenten proces' model is currently motivated by experimentation and speed. With their QuickScan, the process to get new EdTech into the classroom has been reduced from 16 weeks (about 3 and a half months) to 1 week. The process for the Regulier IM Process is 5 stages, while their innovation process is 7 stages. The Innovation Process will be reviewed with a brief mention of how the Regulier IM process is decided on later. Going forward, Fontys wants to improve their model in multiple ways such as accounting for privacy parameters in QuickScan, publishing TAFE (a new 'TripAdvisor' for EdTech) and scaling up successfully tested EdTech tools.

Phase List:[12]

1. Experiment setup process
2. Experiment Contract Agreement
3. Experiment Begins
4. Experiment Ends – Evaluation/Lessons Learned report and shared in the TAFE
5. After is positive evaluation a Regular IM process can start for purchasing the tool

Phases/Stages Walkthrough:

1. Phase one begins with an idea or question from a teacher or student; anyone can run an experiment in the Fontys process. This is now being sent straight to the QuickScan page for Fontys, which is a process tool discussed later.[13]

In the first stage, either stakeholder brings to the table an innovative technology that would deliver a possible solution to their existing problem. It is also possible that a recent technology arises in the EdTech market that is so interesting that a teacher would like to test it in the classroom. Just to see if the technology works.

They will bring to the first phase of the Fontys model a technology that they want to experiment with. With the help of many teams, a technology must first pass through a multitude of questions. Fontys also has the possibility of a QuickScan process, which will be discussed later in the Analysis.

[12] *Producten – EdTech - Fontys*, accessed February 17, 2022, EdTech-fontys.nl/producten/.
[13] *QuickScan: Het beste idee – EdTech*, accessed March 1, 2022, edtech-fontys.nl/quickscan/.

The solution brought to the table is questioned first by the Experiment Manager. They ask questions such as.

- Is there already an MVP or a prototype that is ready to be used?
- Does the teacher have time for the experiment?
- What labs are needed to experiment?
- Can the experiment be run in isolation?
- Will the experiment last longer than 6 months?
- Does the experiment require more or less than 100 students?
- Can the technology be modular or dismantled?
- Is it new within Fontys?
- Is the cost of the experiment more or less than 10k?
- And finally, what is the didactic vision for this new tool in the classroom?

2. If the Experiment Manager is satisfied, the Information Manager will be informed about the new experiment. This is followed by an ISP checklist for security, and a Question Articulation Template to be filled out by the Experiment of Information manager. The experiment process is implemented and accepted by Procurement, the Process Owner, Data Governance and Information, Security and Privacy Officer, and the Information Manager. This means that with the 'gates' defined experiments can start quickly. For instance: if the experiment is temporary (maximum 6 months), and the cost is less than 10k, there will be no need for formal approval from the purchase department. This can speed up the process considerably.

3. The experimentation process begins, being led by the teacher or students interested in implementing the tool. The expectation is for experiments to be set up within one month depending on its size, ease of applicability and how complex the experiment may be. The experiments are then allowed a maximum of 6 months to run before they must end and report their results. Normally, 6 months is enough to be used in a full course period. Experiments have been known to be rejected as well, such as EdTech technologies that host their data on servers in the USA.

4. After the experiment, the results need to be accounted for and reviewed. A 'Lessons Learned' sheet is filled out by the experimenters (this can be anyone involved in the experiment, teacher, students or project managers). These results will be shared in a TAFE as well.

This evaluative stage also raises questions around if the tool was successful didactically in the classroom or in the institution, how it interacted with students and their experience of it, and if it should be added to the Trip Advisor for Education (TAFE) (See Analysis for more on TAFE).

5. At the final stage, 'Kick Start Question Articulation', the Information Manager can be brought back into the conversation to review the experiment's progress and conclusions. The results raise questions about if the technology is ready for implementation on a larger scale, if it met expectations didactically. The scale up process for new EdTech tools is planned to be implemented in 2022.

'Reguliere IM - proces' used by Fontys.

An important distinction to be made is that the EdTech experiment process is to test and run innovative technologies through a course. This results in an experiment that is reviewed and possibly moved to the Reguliere IM process, which implements the technology on a larger scale. The Regulier IM Process can take over a year (when there is a Tender process involved) to move through completely.[14]

Analysis/points of concern

Quickscan

Quickscan was developed by Fontys as an answer for speeding up the review process of EdTech technologies for implementation in the institution. Quickscan allows faculty and students to submit EdTech technology proposals any time of the year. Quickscan is still considered experimental but has shown to be successful in reducing the amount of time it takes to review new EdTech. A point of improvement Fontys is looking for with Quick–scan is that there are still a limited number of parameters in privacy and security asked in this process. The Quickscan process currently asks for related questions as the Regulier IM – Proces, but also asks for the submitter to write out their ideas for the EdTech tool, if they need help from the Fontys IT services for set up, and tougher questions about data collection and institutional policy.

Quickscan helps develop a quicker implementation process by allowing for certain experiments to pass through lower gates, for instance, if the new technology does not affect more than 100 students, then it agreed that less risk is taken in experimenting with the new application.

[14] Ibid.

Trip Advisor for Education (TAFE)[15]

Fontys is working toward a new 'TripAdvisor' like app for EdTech tools. The project is currently being developed as a possible hub for educators and IT audiences alike to be able to find and review new EdTech tools. After the pilot with the Fontys, students on the project were 'on hold' to see is the functionalities could be implemented in the Surf project 'Educative platform'.[16] TAFE may allow for EdTech tools to bypass certain checks, such as security/privacy reviews based on reviews of other trusted institutional reviews, saving time in the long term for others. Moreover, TAFE could have a review system that allows for both 'public' reviews and 'professional' reviews that help create both a trusted source of information as well as a community of EdTech reviewers. The application TAFE has been built by Fontys students but has not developed to its full potential.

Discussion

The model and processes that Fontys has put forward to tackle EdTech are helping many students, teachers and innovators. Their tools have not only started to accelerate the process of innovating EdTech for practical use, but they have also developed new ways of experimenting for the future scalability of EdTech tools. One must acknowledge the speed at which Fontys has set for finding new tools through their Quickscan tool. The Quickscan tool has not only allowed for more the acceleration of gathering tools, but it has also lifted some of the burden of deciphering, managing, and sharing multiple projects between stakeholders, departments, and groups. Other institutions should have a look at this tool and the development of TAFE, both of which will be truly needed in the coming years of figuring out which EdTech tools will reach the scalability and network of Dutch Higher Ed Institutions. TAFE is still in need of a host to take on its development and management, perhaps there is a future collaboration opportunity for institutions like SURF to help build on the pilot. Moreover, the development of an EdTech minor in Fontys ensures that future students can implement, test, and have an informed opinion about the tools they will be handed in to the classroom.

[15] Ibid.
[16] Frans Mouws, Interview with Fontys, January 21, 2022.

Starting on the EdTech Trail

A. Avans Hogeschool

EdTech

Transforming education with EdTech at Avans is a community movement. Avans has developed an ICTO community of researchers and coaches. When you have a cool new idea or find inspiration in your work to bring recent technologies into the classroom, you can do just that with the help of this community. By implementing a proper model in which teachers can test their ideas, they help Avans to innovate and in the end improve the learning experience for the students.

Coaches and Researchers

Avans has put together a small team who focus on advising and inspiring new ways of integrating technologies into the classroom.[17] For example, they are looking at what digital assets we can best link to the student experience of today and tomorrow. Flexible education and new ideas are realized in this team's efforts. ICTO coaches also support teachers with questions, wishes and challenges with digital education. Their core tasks help teachers with digital teaching in a didactically responsible way. They also work in a 'Community of Practice' to share knowledge and experiences with each other, creating a support network, and developing a vision within the institution for new digital possibilities.

Part of the vision of Education and ICT is inspired to realize ambitions and visions of the potentials that lie within technology.[18] Their central question is: What contributions can technology make to education? This opens a pandora's box of research questions. Avans focuses on using technology as a means to contribute and improve education while still being in line with developments in professional practices and society.

[17] *ICTO Coaches*, accessed March 1, 2022, lic.avans.nl/service.lic/introductie/ict-in-onderwijs/icto-coaches/index.
[18] *VONK Onderwijsinnovatie | Onderwijsinnovatie Community*, accessed March 1, 2022, onderwijs-innovatie-avans-nl.translate.goog/introductie/onderwijsinnovatie-community/index?_x_tr_sl=nl&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc.

VONK: Educational Innovation

In brief, VONK is a place where innovation and education can come together, where people make a new change or difference by sharing different and innovative ideas.[19] They experiment, learn and fail together, trying to realize new and beautiful innovations for Avans. One goal for VONK is stimulating the actual climate around education innovation in Avans. The community is a part of this; teachers, students, and employees come together to bring in the latest ideas for innovating education. The VONK Innovation Research community is part of a Microsoft Teams team that you can be a part of.

You share your ideas with this community and get advice from the platform. If the community likes your idea, Innovation Coaches will help you! The innovation coach organizes everything necessary to further develop the idea (for example, organizing hours for teachers, hiring students, organizing extra expertise, finances, etc.). This begins the experiment process, where on a small scale, you can experiment with innovative technology. At the end of the experiment, the results are reviewed and ideas of scalability within the program and institute may come up. VONK may also be able to fund some of your work as a teacher or student and find the right stakeholders to talk with during experimentation.

VONK is all about innovation in the broadest sense of the word. ICT applications are a small part of that. At Avans, it is believed that it is best to let the ICTO community work together with EdTech vendors because ultimately, they also figure out whether a certain tool is interesting enough and will be used at the academies. VONK is only a catalyst in this and not an initiator of its own.

Learning and Looking Forward

Avans has learned from past tools that did not allow teachers and students to fully use the possibilities it provided.[20] Some tools had features that were not fully utilized because the system and management of it did not allow teachers to innovate/experiment with it. Having learned from this, now after a final implementation with a tool that is used at a larger institutional level there is an entire process of getting users to use the product to its full ability.

At this time, the teams at Avans are also improving the process in which teachers ask if they can 'aankopen' a new tool. Avans wants teachers to experiment and to standardize the landscape of tools which are used in the organization. Current requests for use and funding of new tools goes through a funnel directed to the RIV (Regiegroep Informatie Voorziening) within Avans. This is a sizable process with many steps.[21]

Regarding EdTech companies, the team at Avans hopes that the companies can be more transparent about how they handle privacy-sensitive information. For instance, an AVG check always needs to be done on an innovative technology and it takes some time to finish this necessary scan; Avans hopes that maybe EdTech companies can help them find a way to get through these checks more efficiently in the future.

[19] Roel Steendijk, *Bottom-up innovaties bij Avans*, docs.google.com/presentation/d/1nL_70Jo74RrxFL-wxmBT0My-zuj1x-csq.
[20] Roel Steendijk, Interview with Avans, January 21, 2022.
[21] Roel Steendijk, *Bottom-up innovaties bij Avans*, docs.google.com/presentation/d/1nL_70Jo74RrxFL-wxmBT0My-zuj1x-csq.

B. Hogeschool Utrecht

Introduction

Embracing and actively developing digitalization in Hogeschool Utrecht plays an important role in their strategic plan for 2026. The strategic plan recognizes a need for EdTech in the way that students and teachers alike have begun to change the way they work and look for information.[22]

Students look for knowledge and meaning in different ways and want to choose their own route more often. This requires a different approach from teachers. Their work therefore becomes more varied and multifaceted. In addition to teaching, it will then be a matter of supervising or coaching, for example. For teams of instructors, the transitions mean that they must not only be firmly rooted in professional practice and well-versed in research, but also have digital skills.[23]

In developing digital skills, Hogeschool Utrecht has begun to realize that they can be successful in terms of digitalization by focusing not only on the technologies themselves, but also on the people and culture of their institution. From this, Hogeschool Utrecht has started to create new ways of experimenting with and applying educational technologies.

Phases:[24]

1. Ideation
2. In Vitro
3. In Vivo
4. Scaling Up

Phases walkthrough

At the Hogeschool Utrecht, the idea phase is set up to flesh out what the idea is and how it will be executed as an experiment. Research is often done in this phase to ensure that the tool is ready for a classroom environment and use at Hogeschool Utrecht in theory. This leads to conversations with the project or experiment owner who may need to help develop a proof of concept, or minimal viable product, which includes using it in the experiment. In the 'in Vitro' phase, there is some emphasis on expectations of the EdTech tool for scaling up. If the tool seems likely to be easily scalable, then it is more likely to have a favorable outlook later. These experiments are often developed by smaller parties that are interested in a specific tool, and the experimentation time varies a lot currently. EdTech tools that are not purchased through procurement may not even be serviced by the IT of the department and may only receive supplier support.

Teachers leading the experiment can apply for some funding in order to manage the project. The teachers are also able to have students help with the experimentation as well. EdTech tools that are purchased 'off-the-shelf' will go through a standard privacy and security check; it is assumed that the tool is easily scalable.

Successful experiments are often moved to a pilot project after the 'In Vivo' stage. This pilot project could lead to a discussion on how the tool could be scaled to the entire school and whether it is manageable within the current ICT organization strategy.

Currently, the timeline for implementing EdTech tools at Hogeschool Utrecht looks like the following:

- Request (2 weeks)
- Research: This depends on how quickly the applicant can start, but it is usually between 16 to 25 weeks (about 5 and a half months). This is also research of functional requirements or wishes, the selection of a supplier, and what IT resources are needed.
- POC phase (16 weeks (about 3 and a half months))
- Pilot phase (16 weeks (about 3 and a half months))

*Keep in mind these times still vary per project

When the pilot phase is considered finished, teachers and experimenters need to share their results with those interested. Unfortunately, this is still an obstacle for the HU on how best to do this for the broadest outreach.

Learning and looking forward

The current process recorded at Hogeschool Utrecht is creating both a space for experimentation, but also long-term consideration for what EdTech means for their institution. There is still a need for understanding more of who and which roles have responsibility for new technologies, as well as standardizing certain experimentation processes.[25] In order to achieve the latter, the HU will have to continue to find ways to incentivize and reward

[22] Sandra Broekman and Maja Bekkers, *Questions and Comments Hogeschool Utrecht*, January 4, 2022.
[23] *HU in 2026 by Hogeschool Utrecht*, pg. 26, July 2019, bit.ly/3pp4UJj
[24] Ibid.
[25] Maja Bekkers, Sandra Maja, Interview with Hogeschool Utrecht, January 17, 2022.

experimentation being done by both students and teachers. Learning and exploring what questions to ask experimenters and when to include the right people at the right time between phases is something even more mature institutions struggle with today.

4. Wageningen University & Research

Introduction

At Wageningen University and Research (WUR) the Community for Education Innovation with EdTech currently proposes an 11-step model that encourages the people of WUR to experiment with innovative technologies. Their model works to 'un-burden' teachers with the paperwork and complicated matters of experimentation and instead catalyze the on-the-ground, bottom-up approach of using the technology for the betterment of their class overall. The processes are reviewed below followed by a walkthrough of each step. The experimental nature of this model aims to prepare for not just successful use in the classrooms, but also the scale up of successful EdTech tools within WUR later.

Steps/Stages List:[26]

1. Idea
2. Draft
3. Intake
4. Enhance
5. Submit
6. Review
7. Support
8. Test
9. Evaluate
10. Share
11. End

[26] *Community for Education Innovation with EdTech*, WUR, March 19, 2020, www.wur.nl/en/Education-Programmes/Community-for-Education-Innovation-with-EdTech.htm.

Model walkthrough

Step 1: Idea

Ideas for a new tool can be proposed from almost anyone within WUR's community including teachers, students, concepts from conferences, or the Redesign Lab.[27] These ideas are drafted in a short proposal and submitted to the Community for Education Innovation with EdTech (here after referred to as 'Community'). Requests to experiment can be submitted through the community's website.[28] New tools do not need to be useful to the entire university but do need to be tools that are aimed at supporting teachers that desire experimenting with new EdTech tools in their education.

Step 2: Draft

The proposal drafted and submitted will go through many questions to be reviewed later by multiple committees. Questions such as: which courses are involved in the experiment? What part of the academic year does the experiment happen? Number of students involved. The aim of the project, and why the project is experimental.
The reviewed proposal should meet certain conditions regarding the subsidy used for these experiments. These conditions include:

- Does the project aimed at innovation not yet found in WUR?
- Does the project plan contain strategy found within the evaluation and dissemination standards at WUR? Have you involved the program directors?
- Will you cooperate with the Education Support Centre (ESC), the Education and Learning Sciences (ELS) group and the Community for Education Innovation with EdTech during the realization of the project?
- And finally, does the pedagogy aim of the experiment work with or against the WUR vision for Education?

From the proposal submission, the Community for Education Innovation with EdTech meets with the submitter in step 3.

[27] The redesign lab is a method that brings together teachers, educational experts and other stakeholders, to collaboratively (re)design a course or a set of courses, such as a specialization, learning pathway, or study program. *The Redesign Lab Collaborative Learning for Educational Redesigns*, WUR, June 22, 2021, www.wur.nl/en/show/ELS-thesis-topic-The-Redesign-Lab-Collaborative-Learning-for-Educational-Redesigns.htm.

[28] *Request an Experiment at WUR*, WUR, March 19, 2020, www.wur.nl/en/Education-Programmes/Community-for-Education-Innovation-with-EdTech/Request-an-experiment.htm.

Step 3: Intake

The submitter and a representative from the Community meet to discuss the proposal. Questions are often answered in this meeting, and the next steps are proposed.

Step 4: Enhance

After meeting in Step 3, both the submitter and Community EdTech begin to take on responsibility for the experiment proposal and review of the new EdTech tool. The submitter is invited to meet and brainstorm with the Education Support Centre (ESC), the Education and Learning Sciences (ELS) teams to enhance their proposal and gain insight on how the EdTech tool can work within pedagogical theories and in classroom teaching. The ESC and ELS teams look at how 'large' or how big of an impact the new EdTech tool will have on the student body of the university and the experimentation process for the new project.

The Community begins to discuss the proposal with Procurement, Privacy & Security, IT and Communications; lifting some of the burden from the teachers to have to sift through paperwork and more meetings.

From here, the proposal should be ready for submission to the Innovation Board.

Step 5: Submit

The proposal feedback and insights are gathered and sent to the Innovation Board. The Innovation Board decides whether a proposal will continue onto the experimentation steps or be stopped.
The innovation board consists of:

- Dean of Education (chair)
- Head of Education Support Centre
- Policy officer (secretary)
- Program Director Online & Open Learning
- Professor Education and Learning Sciences

Step 6: Review

The Innovation Board reviews and may approve a proposal. The Community returns to the submitter with feedback from the board.

Step 7: Support

If the proposal is accepted, the Community creates a team that supports the experimenter/submitter in the experimental process.

There are many kinds of support that are offered to the experimenter including:

- Financial support.
- Pedagogical support (ESC).
- Evaluation support (ELS).
- IT support.
- Support regarding Privacy & Security.
- Support of Procurement.
- Support on Contract Management.
- Support about Communication
- Hiring a student assistant to support the execution of the experiment
- Compensation for teacher work hours during the entire process
- Experimentation with different teachers in different semesters

Step 8: Test

Here the experimentation is run. The process is shaped by all stakeholders involved including the Education Support Centre, the Education and Learning Sciences, the Innovation Board, and the Community. There is still no standardized time on how long experiments may last.

Step 9: Evaluate

A report is generated at the end of the experiment with the help of ELS team to be reviewed by interested parties across the WUR community. How did the new tool perform? What was the expected outcome and was it met? What are the pitfalls of the new technology? These questions are often answered in the report.

Step 10: Share

With the newly generated report the vendor or EdTech supplier may be sent the results of the experiment by the Community for analysis and perhaps discussion. Other teachers at WUR and educational coordinators may also be notified of the results and the experiment is shared on the Community for Education Innovation with EdTech website.

Step 11: End

The new EdTech tool has now either met, exceeded, or fallen short of the expected results. If the tool met or exceeded expectations, the Community helps draft a proposal for possible future implementation of the tool in WUR. Successful experiments may also need more research and repeat experiments over several courses before being accepted to the WUR community.

Analysis/points of concern

Obstacles

The problems WUR still faces are common amongst other EdTech driven teams. There is still no exit strategy in the model so the WUR still wonders about questions like; how does one cancel an ongoing experiment or take out current technologies that shouldn't be used? There is also very little control over teachers or professors that use tools not accepted by the WUR institution, making it difficult to break bad habits formed with established technologies.

For obstacles about the actual tools themselves, WUR often turns to the 'customer success managers' or development teams on the supplier's side for help. The team at WUR has found ways to open tough conversations about dilemmas with the tools and even give direct feedback to the developers; creating possible solutions to obstacles faced in the classroom during experimentation. By being open about the obstacles teachers face in the experimentation process, WUR enables developers to have a lens into the classroom through feedback.

Model assumptions

Some noteworthy assumptions are made in the WUR model. One assumption is that teachers would concern themselves with reaching out to a supplier for (technical) help. This assumption means that if the experimental tool the teacher wants to use has fundamental issues in application, it would need to be noted in the experimentation notes and not solved during the process. Unfortunately for the teacher, this could lead to an extended amount of time before the issue is resolved, and an even longer experiment time.

A second assumption made by this current model is that the standards of procurement and privacy are set, with no room for discussion and it is not known what values in this are prioritized. For EdTech suppliers, this means not knowing where to put time and effort into the actual development of the tool when building for (re-)entry into higher education institutions. Unfortunately, even if the standards of privacy and procurement were found, there is still another team to face, the innovation board. For teachers, the board's approval comes before the experiment work is set up, so working with their standards becomes crucial. Moreover, the work found in the experimentation process isn't supposed to be secret; the EdTech team at WUR has often sent reports and findings to suppliers on what has happened during the experiment time with a tool.[29] This is not always a two-way street

[29] André Groenewoud, Interview with WUR, December 10, 2021.

though, often EdTech companies do not come back or ask for more feedback beyond the first report given to them.

EdTech vendors

In the current WUR model, EdTech vendors are not mentioned at all.[30] While this is not a necessary change, it would be a welcome one to include the vendors in the process of experimentation and possibly alleviating questions that arise during the use of the new EdTech tool. Additionally, EdTech vendors are only (sometimes) sent the results of the experiment conducted at WUR, a 'one-way street' of information. There is room for opportunity here as well, for vendors to be not only the recipient of information, but also a stakeholder in the actual progress or interpretation of the experiments data and results. It should be noted that the Community allows vendors to reach out to teachers for more information and that they appreciate these relationships.

[30] *Community for Education Innovation with EdTech*, WUR, March 19, 2020, www.wur.nl/en/Education-Programmes/Community-for-Education-Innovation-with-EdTech.htm.

5. Utrecht University

Introduction

There is a presence of constant change in education and the ways in which we teach students. Both internal and external push, pull and shape the new and innovative technologies used in education. Utrecht University's (UU) model tries to capture many factors of this change. Their model wants to make sure that innovations in education are not only new, but are also sustainable, scalable, and quick to implement. To meet these values, the innovation process is considered a living process that is constantly evolving and is successful through involving all stakeholders at the right time within the right process. For the UU, this living, changing process means evaluating technologies both old and new to make sure that teachers are still utilizing older technologies and get the most from their new instruments. Moreover, it means reviewing on an iterative basis, older technologies that may not meet changing privacy and security requirements.[31]

Phase list:[32]

The innovation process has 4 phases.

(1) Pre-pilot phase
(2) Pilot phase
(3) Growing phase
(4) Integration

Model Walkthrough

1. Pre-pilot phase

The UU model begins with a pre-pilot phase that creates a check for the new experiment before it starts. The pre-pilot's focus is on preparation in both expectations and understanding of the experiment. There is first an intake interview with the experiment initiator, usually a teacher, that meets with an educational advisor and coordinator of the Innovation Pathways. This first interview will raise questions about the value-added regarding didactics and potential deployment of the application. In other words, the first meeting raises questions about how this technology will already be deployed and used after the experimental

[31] Daan Fraanje, *Questions and Comments Utrecht University*, January 27, 2022.

[32] Daan Fraanje, *Onderwijsdagen EdTech*, docs.google.com/document/d/1C4KdIpejORZV2zG3TUH2-XqO2O0dPiRxJ1b120afFbQ/edit?usp=drive_web&ouid=107253188765509481238&usp=embed_facebook.

process. Other questions may be: How much assistance is needed? Is it scalable? This also may lead to discussions regarding expectation management with the teacher, that the tool may fail or not meet expectations right away, especially regarding later implementation.

There are also multiple checks that begin in the Pre-Pilot phase, these are:
- AVG check
- information security
- positioning within DLO
- These checks and experiment intake are intended to be finished and ready to start within 3 weeks.

2. Pilot phase

The Pilot Phase focuses on experimentation and preparing for the obstacles for implementation later. This phase gathers initial trial licenses and begins agreements suppliers according to UU's guidelines for purchase. The experiment will then most likely be implemented in a realistic classroom or educational situation with real students. To shape the experiment with education in mind, there is an evaluation by Educational Quality and interested researchers, including students and other teachers.

Depending on many things, the timeline length changes for this phase. With little support needed for a technology, the timeline for the Pilot phase can be as short as 4 weeks; or as long as 12 weeks (about 3 months) for technologies that require more in-depth support structuring.

New questions are raised in the phase, such as:
- What educational advice is needed?
- What functional management is needed?
- Who will the key users be?

3. Growing phase

Shifting more towards implementation but still focused on experimentation, the growing phase organizes the support needed to grow the project beyond its current one-classroom experiment. The Growing Phase keeps experimenters looking for if the tool meets the needs of the teacher, if there are newly discovered blind spots for implementing the technology and if new contact with the supplier is needed because of this. Support, such as Educate-it, will help develop growing demand for technology and begin involving ITS (Information and Technology Services) functional management as well as train key users that were defined in the previous stage. The technology will also be added to the 'tool guide' at this stage if successfully implemented. Here too, students are incorporated in the pilot phase and growing phase where they are asked with questionnaires to show how satisfied they are with the tool.

The growing phase tries to develop a sustainable purchasing of licenses and trying to foresee what that will be and implementing a Multiple Private tenders or MOA limit of fifty thousand euros.[33]

There are also reviewal pre-conditions for the growing phase as well, they are:
- Classification of Data
- IS Advice
- A privacy Quick scan
- Anticipating a flawless takeover of technology and what to do with that situation

The growing phase is considered a key to a successful tool later, in this phase the question is whether it is going to grow enough to continue. Scaling is an important value in the UU. Also, in this phase it will become clear whether it is possible to purchase this sustainably for the long term (e.g., a campus-wide license). It will also be clearer whether the support is ready. Moreover, in this phase more will become clear about the privacy and security of the supplier, for instance, does this tool comply with the policy of the university?

4. Integration

The Integration phase will fully move towards implementation and the steps needed to do so. There is then a move towards full integration into the education work at UU wide. From this phase, there is less concern about innovation from this technology and the goal is to make room for new innovations and new experiments. Various activities take place in the UU organization, such as making a license from the ITS, or Information and technology services, budget or defining the setup documents of ITS in functional management. Educational advice may become relevant as well from teachers and the evaluation of the experiment still is with Educate-it.

Analysis/points of concern

The UU model for educational technology procurement and scaling has become a university-wide operation. Still, the processes and developments made for educational technologies in UU are not easy. There is a need for understanding better why so many technologies fail at the door, or pre-pilot phase of this model.[34] Thus, a critic might challenge

[33] Daan Fraanje, Interview with UU, February 9, 2022.
[34] ibid.

the UU process by asking why the pre-pilot phase is so strict? Moreover, the pre-pilot phase is nearly imaginary, analyzing the technology without putting it into practice yet (and giving it a fair chance). This can lead to a slippery slope of assuming the worst case about any technology and is perhaps a cause for so much friction in the pre-pilot phase between stakeholders. This fallacy can be a cause of much friction during the pre-pilot phase between stakeholders.

A response to the critique is to consider the entire UU educational technology as a network of devices and services. Like other networks, the technologies found on this campus are part of a history of use cases and relationships. In other words, these technologies are constantly being re-used or removed for various purposes and recently developed technologies may not be sufficiently useful or replacement-worthy of an earlier implemented technology already in the UU.[35] Moreover, earlier implementations of technologies may be more scalable than bringing in a new technology and met all security measures; making it difficult for start-up tech to enter this university. A conversation then develops around what the limits of innovation in UU are and what are the future goals of the institute with EdTech in mind could be.

Educate-it[36]

What is it?

Developed in Utrecht University and embraced throughout the university is a program that helps teachers improve and make their courses more sustainable for long-term development. Working from an evidence-based position, Educate-it offers technical support for IT tools that are used in educational contexts, or have educational value that needs to be understood in implementation. The Educate-it team also offers re-designing of course material and in turn allows for more opportunities for teachers wanting to move towards blended learning.

Why is it important?

The Educate-it team not only takes part in the work being done with educational technologies at UU, but also gains from learning about the technologies use and in turn can become a better ally later for teachers and students alike. Teachers will always need support when experimenting with or implementing innovative technology in their course work and having teams like Educate-it requires the institution at large to recognize the importance of that support. The bottom line is that by having teams like Educate-it, educational institutions recognize the crucial need of support for teachers.

[35] ibid.
[36] *Educate-It-Homepage*, Educate-it, accessed February 17, 2022, educate-it.uu.nl/en/.

Concluding Remarks

The overview of EdTech innovation, models in this report sheds a light on many interesting aspects of how EdTech is approached by Dutch universities. After synthesizing the many comments, answers and models there is important work to be done. This report was not intended to analyze or make any specific comparisons between models, but instead organize and derive insight from what information is already available for these continually changing models and innovation processes.

From this overview, there are important considerations for both common struggles and shared resources of innovative thinking amongst Dutch universities. The following section reviews these various aspects and reveals the next project(s) that this team regards as important follow-ups to this report.

Sharing earned praise

A lot of effort goes into navigating, adjusting, and curating administrative tasks and people to regulate, tune and make efficient processes. Innovation and experimentation are discussed amongst the various models reviewed in this report; all these models are developed by people trying their best to work with what is already there in their institutions. Moreover, much of the work being done now is during a time of constant fluctuation between necessary people in and out of the office; creating a new dynamic for institutions to consider in their process creation and technological management.

From this, it is important to acknowledge and appreciate some features and consequences due to the development or structuring of these models. Praise should be given to how some of these model discussions have begun to foster real community involvement in education technology development. The institutions cultivating these EdTech communities within their own organizations often learn much more about innovation practices, in turn allowing for a much clearer understanding of how EdTech is developing on their campuses or in their communities. Moreover, some of these institutions have gone as far as to develop entire curricula around the subject of EdTech. Minors and courses enable the future and current users of these educational technologies to start developing them on their own. Here too, new opportunities arise for the future of these innovation models to be shaped by informed, skilled stakeholders such as these students.

Another consequence of these model conversations is the need to recognize that innovative designs and implementations of educational technologies will only be as effective as the teachers and people needing to use them are able to. In other words, many institutions are rightly trying to capture what level of digital literacy their organizations contain

amongst their faculties and teaching staff. This is partially being achieved by trying to backlog or account for what technologies are not being used anymore or enough to justify the continuation of their subscriptions. Additionally, digital literacy is being discussed more widely amongst organizations to account for the procurement of new technologies. By developing experimental classrooms and checking pedagogical needs of teaching staff, educational technologies inspire conversations about their effective use in universities.

Sharing Common Struggles

Many Dutch education institutions still face a problem involving the 'right people at the right time.' There are many stakeholders involved in processing, reviewing, purchasing and using recent technology in education. A common struggle right now amongst nearly all institutions is that certain stakeholders or community members are brought in too early or too late to decide regarding EdTech technology. In turn, the phase or stage in the model takes longer or requires a review later in the procedure to make sure all stakeholders are satisfied. These interruptions end up slowing down completion of experiments, implementation of recent technologies and upsetting people who have been involved in the entire process.

Another common struggle amongst the models reviewed in this report is regarding organizational readiness for recent technologies. Technologies enter higher education institutions at different moments in time and lately technologies have been implemented out of crucial need. When technology enters the organization, it can be hard to know whether people have the skills, insight, or use for the new tool at that moment. In turn, a common struggle that both Dutch higher education institutions and EdTech vendors alike face is whether the technology will be ready for implementation now or in the future. This struggle is so important to understand and prepare for some, that institutions will ask from the first phase of their model whether the technology could be implemented right after an experiment. In other words, educational professionals that govern these innovation models often try to capture from the first step how soon the technology as it is can be implemented. These educational professionals often are one person, or a small team that have a consensus of whether the technology is ready to be applied in an educational scenario. A struggle of readiness which can impact multiple parts including whether modern technology will be used effectively and when it is implemented, how or what other modern technologies are also ready to come next.

A third common struggle amongst the organizations that were examined in this report concerns the tools necessary to improve or advance these innovation models. This struggle resides in educational institutions across the Netherlands all being in quite various positions on the road to organizational readiness for new or experimental EdTech. Currently, educational professionals that can capture what their needs are for their organization and know what steps need to be taken, often still struggle to find ready-made tools that make this development less arduous. From the investigations in this report, it is clear that educational institutions in the Netherlands could benefit from many different 'off-the-shelf' tools. There are three that warrant the attention of this analysis which are discussed in the following section.

These common struggles have been identified during the many conversations, interviews, and investigations by the EdTech Werkgroep team. Of course, each institution has their own contextually sensitive situations, yet many common threads are still identifiable that lead to future research and opportunities.

Forthcoming research and outlook

This publication is the first part of a three-part series. Through the various institutional accomplishments and struggles identified in this report's investigation and review of procurement models, new prospects for the next two parts can be recognized.

Maturity model for EdTech processes

Both the first and second common struggle discussed in the previous section can be tackled in many ways. One direction is the development of a universal, or general maturity model on the organizational readiness for EdTech procurement. This model's purpose would be to develop practical and clear guidelines that Dutch higher education institutions can use to make informed decisions regarding where they are as an organization with EdTech processes and procurement. The goal is to research and develop such a model in the next few months.

Instruments for EdTech Innovation

With similar focus as the maturity model development, the struggles that Dutch higher education institutions are facing may be eased with access to instruments for EdTech innovation processes. The toolkit's instruments, as was discussed in the previous section, should try to ease the difficulties of specific challenges in innovation.

Instruments in the toolkit may vary from being able to help educational professionals ask the right questions to their privacy officers, to aiding in the development of new procurement models.

Discussion

The EdTech community of the Netherlands has found itself in a unique position. The conditions have never been better for digital technologies to be experimented with-in higher educational institutions, with both the desire for new innovations as well as a critical need for new forms of connection between the organizations and their students. We also see a blossoming number of Dutch and European EdTech startups on the rise and it is great for the maturity of the ecosystem that such companies also join forces in initiatives like Dutch EdTech and the Dutch School.

However, the innovation level and out of the box ideas that could make a great positive impact remains quite low. Or as Shinav Navas of Emerge, a European EdTech VC, puts it:

> *'while copycats and minor twists on old and existing ideas will continue to dominate EdTech and future of work, we could definitely use more innovative ideas.'*[37]

To really create this next level of EdTech, we do feel that it is important for universities to play a bigger role in creating truly public-private partnerships with companies, rather than just being a buyer of the technology or tool that is provided. We see good steps being taken on this by frontrunner institutions, but we need more of this to really challenge new companies in what they are building. For a final consideration, while Dutch higher educational institutions should continuously foster a relationship to their local EdTech community, they should also be working closer together on the common struggle s they all face. It is clear that educational professionals are talking about or facing remarkably similar struggles that can be overcome together. Universities need to share their resources, knowledge, and understanding of EdTech procurement with smaller institutions. Smaller institutes should also begin to share how they are able to experiment with new technologies and how they foster communities based on innovative ideas and exploration. While there is no one model to 'rule them all,' educational organizations should consider that their situation may not be completely unique or only resolvable internally. Being open about what we need with others is difficult, but it is the only way in the long term to work together on the future of education and research.

[37] Mario Barosevcic, *The Future Unicorns of Edtech, Intro: New Article Series Forom Emerge*, Medium, January 20, 2022, medium.com/emerge-edtech-insights/thinking-outside-the-edtech-box-new-article-series-5daf5e526413.

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