

## **Enhancing student engagement in reflecting on professional skills development using digital tools for data collection and distribution**

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### ***Abstract***

*Tutors at NHL Stenden University in Leeuwarden, the Netherlands were challenged to enhance student participation in reflecting on professional skills development e.g collaborating. Using the living labs method, researchers set up research together with tutors and students. The living labs process consists of iterative design and evaluation cycles, involves endusers in all phases, and has evaluations carried out in real-life settings. In four iterations, we found that digital tools for collecting, merging and distributing data enhances student participation. Google Workspace for Education and Autocrat was used in this paper, a similar tool is Microsoft Office and Power Automate. Privacy of student data turned out to be one of the critical key elements and needs further discussion.*

**Keywords:** *Student engagement; Google Workspace; Living lab; professional skills, Autocrat.*

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## **1. Introduction**

Students are easily distracted nowadays, since there are many temptations inside and outside of the classroom. The most common distractions for students who struggle with focus and concentration are their smartphones, intensive social media use, family and friends and their thoughts and worries (Schmidt, 2020). One's attention is diverted from the task or thought at hand and turned to another unrelated thought or activity. Students are multitasking while doing schoolwork, which has a detrimental effect on student learning and performance.

At NHL Stenden University in Leeuwarden, the Netherlands, tutors were challenged to get students engaged in reflecting on the development of their professional skills. In the first class in a series of eight classes during a semester, students formulate their professional goals for the semester on paper. After eight weeks, students reflect on their skills development. It turned out that some of the students lost their piece of paper. Others did a poor job in the reflections. Moreover, students who were well prepared were demotivated in talking to badly prepared peers about personal development.

The challenge was: how to engage students in reflecting on the development of their professional skills?

## **2. Design Based Education**

The educational concept of NHL Stenden is Design Based Education (DBE). NHL Stenden University of Applied Sciences in Leeuwarden offers higher professional education programs which prepare students for their future profession. Students who complete the programs are awarded an associate, bachelor or master's degree.

This research was done in the Personal Development Program of the Bachelor Communication, using the professional skills collaborating as an example. Outcomes can be transferred to other educations and accompanying professional skills, e.g. bachelors degree in nursing (skill: communicating professionally with patients and their family) or a bachelors degree in teaching (skill: maintaining order in the classroom).

Design Based Education implies that students work on real-life issues. Collaborating with industry is inspiring and motivating for all stakeholders. Students differ from each other in terms of their qualities, experiences and cultural background. By working together on practical issues, they make use of these differences and learn from each other. With DBE, NHL Stenden University creates a learning environment in which students develop as a person and a professional. Lecturers are professionally competent and pay attention to a student's learning process. They coach students and give frequently feedback. Students, lecturers and the professional field form a learning community and learn from each other.

Working on real life issues, students use the six design thinking stages: empathize (research your users needs), define (state your users' needs and problems), ideate (challenge assumptions and create ideas), prototype (start to create solutions) test (try your solutions out) and implement. The design process is an iterative process, the practice of refining and improving a product or process through multiple iterations.

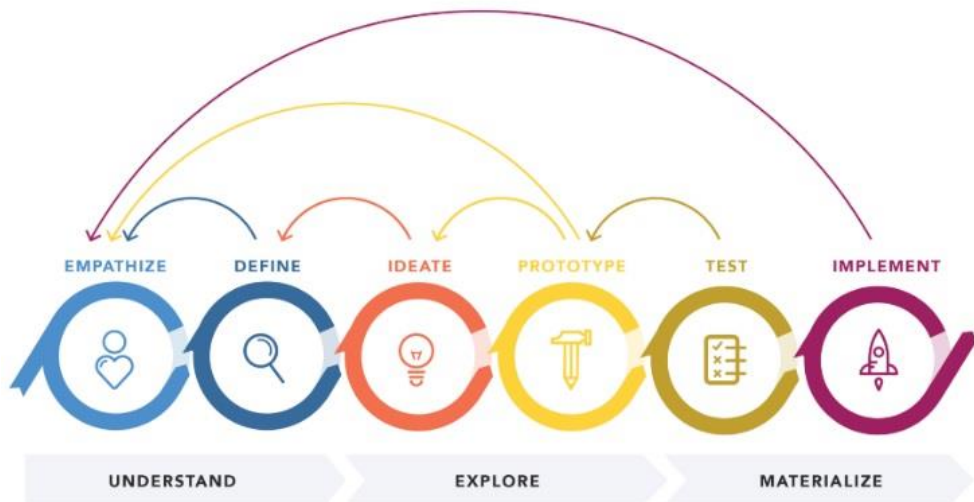


Figure 1. The six stages of Design Based Education

We followed the stages of DBE. It is attractive for tutors to practice what they preach.

### 3. Living lab method

We use the living labs design method for our research. The living lab design and evaluation approach refer to the methodological principles involved in the development process of new products/services. This process consists of iterative design and evaluation cycles, involves end users in all phases and has evaluations carried out in real-life settings with minimal obtrusiveness caused by measurement (Feurstein et al., 2008). Tutors work closely together with students and researchers on longitudinal knowledge media studies.

Action research in higher education is defined as a *critical collaborative enquiry by reflective practitioners who are accountable in making the results of their enquiry public, self-evaluative in their practice, and engaged in problem-solving and continuing professional development* (Zuber-Skerritt, 1992).

The major justification for the use of action-research is that (a) teachers have to plan the use and effects of each of their ICT-based projects, (b) during a project they have to collect data about its use and effects, (c) after the project they have to reflect on this by analyzing their

data, and (d), by doing so, they bridge their daily educational work with broad academic theory (Venkatesh et al., 2003).

#### 4. The challenge to enhance student engagement

The challenge was to engage students in reflecting on the development of professional skills that are needed to become a communications officer. Seventeen Communication courses at universities in the Netherlands established nationwide six qualifications, seven professional skills and the body of knowledge that a student needs to obtain to graduate. In this paper, we use the skill collaborating as an example.

**Table 1. Qualifications and professional skills of a communications officer.**

<i>Six qualifications:</i>	<i>Seven professional skills:</i>
Context & strategy	Collaborating
Target group & behaviour	Innovative power
Concept & creation	Examining power
Planning & organization	Reflective capabilities
Persuasion and commitment	Emphatic capabilities
Connection & facilitation	Ethical beliefs
	Agility

Students work in small, interdisciplinary groups on assignments from external clients, e.g. write a corporate communications plan (qualification: context and strategy). By working together to reach this goal, students need professional skills (skill: collaborating). Finally, the body of knowledge describes declarative or procedural knowledge about all aspects of the profession and the (scientific) domain.

At the beginning of each semester, students reflect on one of the professional skills during the Personal Development Program (PDP). They start with a baseline measurement in the first week, a discussion in small groups in the second week and close with a reflection on the obtained progress in the last week. The baseline measurement of the professional skill Collaborating consists of seven questions. Before each question, students rate themselves on a Likert scale (1-5) and substantiate their rating. We also ask students to write down two personal learning goals on this semester's skill, in our example: collaborating.

**Table 2. professional skills rated from 1 to 5 and learning goals**

<i>rate</i>	<i>Professional skill: collaborating</i>	<i>My personal learning goals for the professional skill: collaborating</i>
<i>1-5</i>	I show interest in other group members.	By the end of this semester, I want to listen without prejudice to my group members and to react openly and constructively to their input.
<i>1-5</i>	I make work agreements with group members and keep them.	
<i>1-5</i>	I listen to others and are open to their input.	
<i>1-5</i>	I take responsibility for process and product and you also speak others to it.	By the end of this semester, I want to mention three good points of each member and one point that could be improved and keep the relationship on a good level.
<i>1-5</i>	I contribute effectively to dealing with differences of opinion and solving problems within the group.	
<i>1-5</i>	I ensure a clear division of tasks.	

## 5. Connecting digital tools with an educational assignment

In the first stages of DBE, we did research on the usability of using digital tools for data collection and distribution. We used Google Workspace for Education and Autocrat, which is a document merge tool that takes data from a spreadsheet and merge it into a document via a template and send it to designated recipients. Microsoft Office and Power Automate offers the same functionality. We found valuable research on the use of Google Workspace, but no research was found on the use of Autocrat.

Google Forms is often used to gather, analyse and interpret information from various stakeholders (e.g. tutors, students, future employers). Teaching at Bangalore University in India, researchers found that Google Forms provides a good way to enhance collaborative stakeholder engagement in a wide country (Sandhya et al., 1970).

Google Forms can be used for daily course evaluation; as evaluations often come at the end of a course, they are summative in nature: they measure what has occurred (Gehringer, 2010). It would be better to get (formative) feedback during the course instead of at the end. Google Forms provide a flexible tool, to perform frequent evaluations, whereas Google sheets is helpful for flexible, detailed and fast analysis.

Google Forms can be used to increase active learning and as an instrument of formative assessment (Djenno et al., 2015). Google Forms provides an easy and inexpensive way to incorporate both active learning and assessment in library instruction sessions.

Tutorials on Youtube show some examples of tutors using Autocrat to gather data from students (e.g. name, date and course taken) and merge it into a certificate which is automatically sent to the student after passing a course (Johnson, J. 2021) or to merge test results into school reports and send it to students as a pdf (The EdTech Spot, 2020).

## 6. Four iterations to develop the new learning goal process

In the next phase of our research, we performed the DBE stages ideate, prototype and test. The living lab method gave us the opportunity to test in the real life setting of NHL Stenden university, using evaluation cycles with end-users (tutors and students). We performed these DBE stages four times, as we used test results to improve the prototype and to test again.

The **first** iteration was that students wrote the rating, their explanation and their two learning goals on a piece of paper, which they kept for themselves during the semester. It turned out that students lost their pieces of paper and that others poorly reflected on those, due to the fact that they did not take the assignment serious. A minor change was to hand in the paper to their PDP-tutor, but this turned out to become a time-consuming activity for the tutor: collecting, registering and handing back the papers, warning students that had forgotten the assignment and trying to hand back the assignments to students who were absent that week.



Figure 2. Collect data in Google Forms, displayed in Google Sheets.

The **second** iteration was to create a Google Form to collect the reflections of students. creating a Google Form is easy and costs little time. Once the Google Forms-questionnaire is created, it can be used multiple times. The data from Google Forms comes automatically in a Google Sheet, which can be read by the tutor. The link to the Google Forms was sent to students using the Learning Management System of NHL Stenden University.

Tutors were stunned by the amount of effort and the in-depth analyses the students had written, reflecting on their personal professional skills. The average student worked for about 45 minutes on the questionnaire. Most of the tutors had the students fill in the Google Forms-questionnaire in class, but in times of COVID-19, students did the work at home. We learned that our students also often shared personal remarks, therefore the tutors decided to add a disclaimer: *This questionnaire will only be used by your mentor and will not be further distributed. The information will be deleted at the end of the academic year.* The disclaimer is important. The information is private and must remain private.

The Google Forms questionnaire had disadvantages. The data in Google Forms is almost unreadable. Tutors were not able to use it during group discussions. In addition, students did not receive a copy of their answers, so they could not reflect on their learning goals.



Figure 3. Collect data in Google Forms and via a process mailed to student and tutor.

In the **third** iteration we collect data using Google Forms, which is automatically put in Google Sheets. Using the tool Autocrat, we merge data in a Google Docs-text document, convert it to a PDF document and automatically mail a copy to the student and his tutor. This iteration turned out to be the best as students work focused on their professional skills and actively participate in the group discussion in the second week. Both the tutor and the student receive copies of their questionnaire, which makes it easier to discuss the answers.

Tutors evaluate the third iteration positively. *Students are stimulated to actively think ahead, therefore consciously shaping the learning process with pleasure (tutor A). In the first years, students practice methodically with their professional skills using the questionnaire. After two years, the method is internalized, no forms and questionnaires will be needed (tutor B).*

Students also reacted positively. *I think it is a well-arranged document, you clearly know which parts you will be working on, easy to find, but difficult questions sometimes because you have to substantiate (student A). I think it's great that we do that, because then you can see later how much you have grown. You set clear goals for yourself. Later you can see whether you have achieved those goals. If so, it gives a sense of satisfaction. If you didn't make it, you know what to spend more time on (student B).*

In the **fourth** iteration, we discovered that Google Workspace for Education is not part of the application white list of privacy proof systems at NHL Stenden University in the summer of 2021. The Dutch Personal Data Authority (AP) stated that the identified risks relate to fundamental principles that apply to the processing of personal data which falls under the Dutch General Data Protection Regulation (AVG). Due to the lack of clarity about the processing of personal data by Google, this processing is not lawful. Google stated in a response that they are committed to the GDPR and that Google is working on solutions in order to facilitate Dutch Universities to use Google Workspace for Education. This will be different at other universities in other countries. Privacy is important, therefore we monitor the situation. Microsoft Power Automate is on the white list of privacy proof systems.

## 7. Conclusion

The living lab method is valuable and delivered fine results due to collaboration in a real-life setting. Students and tutors were motivated to adapt to new processes, because they were

involved during the complete process. The six DBE stages with iterations and frequent feedback by tutors and students gave the researchers valuable information to continuously improve the prototype. Google Workspace for Education + Autocrat is a free tool to easily and free of cost collect data, merge data in a new document and distribute it to designated users. Microsoft Office and Power Automate offers the same functionality. Dealing with personal professional skills, privacy is important. Students need to be absolutely sure that their data is safe and will only be used for the right demands.

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