

Designing for Adoption

Using User-Centered Design and Lean Innovation Strategies to Develop a Collaborative Narrative Game Creation Platform for Education



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Abstract

This bachelor thesis explores how design and innovation strategies can support the creation and adoption of a collaborative educational game platform among teachers. In collaboration with SLATE, the project targets early adopters in the education sector, and examines their needs through interviews, participatory workshops, and user testing. Building on the eLuna framework, the project team developed Nova Luna Studio, a prototype empowering teachers and developers to co-design narrative learning games. Findings suggest that tools for educational game creation must lower the technical barrier for teachers, support pedagogical relevance, and be financially tangible, to support adoption. A Lean Canvas approach is used to analyse business viability, and teacher interviews highlight critical adoption factors such as timesaving, ease of use, and the integration of curriculum.

***“The creative and financial dimensions need each other,
like yin and yang.”***

- Lars Nyre et al., 2025, Ch. 2, Sec. 3.

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1. Introduction

Most of us have vivid memories from our elementary school days. For some, it was a place of joy and discovery, where we made our first friends and experienced our first learning moments. For others, it may have been a place of confusion and frustration. Regardless of these experiences, our early years of education shape how we engage with learning throughout life.

In 2024, over 79 000 teachers in Norway are working to educate the next generation (Statistisk Sentralbyrå, 2024). Many of them successfully use traditional teaching methods. However, there is a growing need for more engaging and diverse tools, especially for students who do not thrive in lecture-based environments. Game-based learning is one approach that has shown potential to increase motivation and support deeper learning (Adipat et al, 2021). Still, few teachers have access to the tools or time needed to create meaningful educational games on their own.

This bachelor thesis examines how a collaborative narrative game-creation platform could be adopted by teachers to enhance teaching practice. The platform is designed for joint use by teachers and developers, providing a shared space for designing learning experiences through storytelling. The goal is to close the gap between pedagogical ideas and technical implementation, enabling teachers to bring their concepts to life with support from developers. The collaboration not only fosters more inclusive and engaging education but also lays the foundation for a tool that could be viable in practice.

1.1 Research Question

The goal of this thesis is to investigate what it takes to design a co-design tool for educational games that teachers not only *can* use but *want* to use. The focus extends beyond usability to include sustainability and adoption. This means moving past the question “Does it work?” and instead asking: “Is it realistic to use in practice, and does it provide value over time?”

Throughout the spring semester, the bachelor course has emphasized business development and sustainable innovation. Lean Model Canvas was a recurring theme, reinforced through lectures and workshops with an invited industry expert. This foundation has directly

influenced the methodology used in this thesis, particularly in evaluating whether the proposed solution, Nova Luna Studio, can become a viable tool in the real world.

Based on this, the thesis addresses the following research question:

“How can design and innovation strategies support the creation and adoption of a collaborative educational game platform among teachers?”

The thesis assumes that strategies from Ries’ Lean Startup, Norman’s User-Centered Design, Rogers’ Diffusion of Innovations, and Maurya’s Lean Model Canvas can support the creation of a tool that teachers want to use. The frameworks are expected to guide usability and long-term adoption.

To answer the research question, I will combine insights from iterative design, qualitative interviews, and user testing. The thesis examines how innovation theories, such as Lean Startup methodology, User-Centered Design, and Diffusion of Innovation can guide the development of a tool that is usable and desirable. The thesis also explores the conditions under which teachers are likely to adopt such a tool in their work practice.

1.2 Thesis Structure

The thesis starts by presenting the relevant context, including national digital strategies, SLATE, the eLuna framework, and Nova Luna Studio. The theory section outlines Lean Startup, Lean Model Canvas, User-Centered Design, and adoption theory. Methodology covers data collection and design methods. The analysis connects theory and data into a Minimum Viable Product and a business model synthesis presented in a Lean Model Canvas. The thesis concludes with reflections and answering the research question.

2. Background

The background section provides the contextual foundation for the thesis, outlining the national digital education strategy, SLATE, and the eLuna framework that inspired the design of Nova Luna Studio. It also introduces target user groups.

2.1 Strategy for Digital Competence and Infrastructure in The School

The digitalization of Norwegian schools has undergone several phases since digital technology first entered classrooms in the 1980s. Building professional digital competence among teachers has been a time-consuming process, and further development of these skills remains an ongoing goal. In recent years, municipalities across Norway have strengthened their digital infrastructure by increasing the availability of tools and resources (Kunnskapsdepartementet, 2023, p. 5). Recent data shows that 99% of Norwegian secondary school students had access to a personal digital device while studying (Meld. St. 34, 2023-2024).

The Norwegian Ministry of Education has outlined several ambitions for digital practice in primary and secondary education (Kunnskapsdepartementet, 2023, p. 23). Two of which are:

The use of digital solutions and media should be knowledge-based and support the students' learning, learning-motivation, and learning-environment.

Digital practice, competence, infrastructure, learning-environment, and digital solutions is integrated in the school comprehensive plans.

Digital technology offers students greater flexibility in how they engage with subjects. It can create a more relevant, practical, and varied learning experience, better tailored to individual needs (Kunnskapsdepartementet, 2023, p. 24). It is important that the digital practices in schools are teacher-led, pedagogically grounded, and aligned with learning goals (Kunnskapsdepartementet, 2023, p. 27). However, digital solutions come with different cost models than traditional textbooks. While books typically involve a one-time upfront cost, digital tools often require subscription-based licenses. The digital learning market is also largely dominated by a few large suppliers, limiting diversity in available tools (Kunnskapsdepartementet, 2023, p. 46). This underscores the importance of financial viability for Nova Luna Studio. As the government promotes practical and motivational digital learning, there is a clear opportunity for such innovations (Kunnskapsdepartementet, personal communication, May 15th, 2025).

2.2 SLATE

As part of our bachelor group project, we collaborated with the Center for the Science of Learning and Technology (SLATE) to develop a prototype aimed at transforming theoretical ideas into practical solutions. SLATE is a leading research center focused on developing knowledge about how educational data can be used to support knowledge, learning, and teaching processes (SLATE, n.d.). As of 2024, the center employed 27 staff members with multidisciplinary university backgrounds (SLATE, 2024). Initial discussions with SLATE led to serious conversations about creating a platform to support and bring to life a game creation framework developed by SLATE's head of education, Fredrik Breien during his PhD research. SLATE expected us to deliver a functional prototype that could potentially emerge in the educational game-creation market. In return, they contributed with data from previous research.

2.3 eLuna

eLuna is a game creation framework developed by Breien. The framework builds on research by Anne Kahr-Højland (2011) and Nils Petter Hauan (2017) and aims to support educators and game developers in the methodological co-design of narrative digital game-based learning (DGBL). A key feature of eLuna, is its support for cross-curricular games that foster interdisciplinary learning across science, technology, engineering, art, and mathematics (STEAM).

To create DGBL experiences that are academically meaningful, engaging, and interdisciplinary, teachers and game developers must collaborate closely throughout the design process (Breien, et al., 2022). Developers typically contribute technical expertise, while teachers often bring storytelling skills and pedagogical insight. The core objective of eLuna is to facilitate a co-design process where developers and educators are equally empowered and involved.

The eLuna framework method (Figure 1) structures the development process into distinct but interconnected phases: preparation, co-design, co-specification, and implementation. In the initial phase, educators define curriculum goals and learning objectives. In the final phase, developers implement the game based on a collaboratively defined blueprint. The co-design

and co-specification phases are where the two groups work together to align pedagogical and technical requirements.

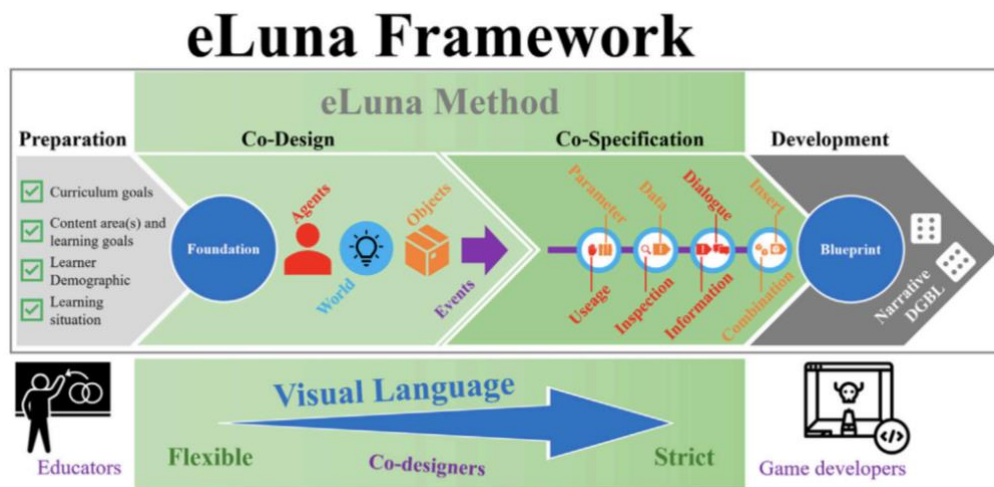


Figure 1: Visualization of the eLuna Framework (Breien et al, 2022).

The collaboration is intended to produce narrative learning games that are both pedagogically grounded and enjoyable to play.

2.3.1 Background Literature to Understand eLuna

To understand the theoretical foundations of the eLuna framework and its relevance to narrative game-based learning, four academic articles were reviewed. These include two articles that present the eLuna framework in detail (Breien & Wasson 2022; Breien et al., 2022), one article focusing on categorization in DGBL (Breien & Wasson, 2020), and one broader systematic review on serious game design approaches (Gurbuz & Celik, 2022). These sources provided important theoretical context for understanding co-design strategies and STEAM but were not used as primary data in my analysis.

2.4 Nova Luna Studio

Building on the theoretical foundation provided by the eLuna framework, we designed the Nova Luna Studio prototype, a web-based tool that enables teachers and developers to co-design narrative games collaboratively. While the original eLuna approach was implemented using pen and paper, Nova Luna Studio translates this into a digital environment. The platform enables teachers and developers to co-create educational games using the eLuna building blocks.



Figure 2: The building blocks of eLuna and Nova Luna Studio.

Users can design games digitally, test interactive demos directly in the platform, and collaborate in real time. The interface makes it easy to track who is working on a project and what contributions are made, whether it's on the storyline, the XML and JSON files, or in the platform's visual canvas. Users can also modify existing building blocks or create new ones to suit their pedagogical goals.

2.5 Target Groups

Designing a meaningful solution requires a clearly defined user group, a principle embraced even by global tech companies like Facebook in their early stages (Maurya, 2012, p.24). The eLuna framework was originally developed to support collaboration between teachers and game developers. Three initial target groups were identified for the Nova Luna Studio project.

- Employees at SLATE
- Game developers
- Teachers with technical experience

To ensure the prototype addressed a genuine need, the target group had to be narrowed down (Nordbø, 2017, p. 100). While the project team explored all three groups during the design process, this thesis narrows the analytical focus to a specific segment: *early adopter teachers*.

The term *early adopters* refer to individuals who are among the first to embrace new products and technology (Cambridge Dictionary, n.d.). In the case of Nova Luna Studio, early adopter teachers are users that are both willing and able to explore and adopt new digital tools to improve learning outcomes. Early adopters were chosen due to their ability to inspire potential adopters (Rogers, 2003, p. 264).

3. Theory

The theory chapter presents the design and innovation frameworks that guide the analysis of Nova Luna Studio. It includes Lean Startup methodology, Lean Model Canvas, User-Centered Design approaches, and Rogers' Diffusion of Innovations theory.

3.1 Lean Startup Methodology

Lean Startup is an innovation methodology that favors iterative development, customer feedback, and continuous design over traditional development (Blank, 2013). Rather than following a rigid plan, the Lean Startup approach treats products as a series of experiments aimed at validating whether a product should be built and how it could evolve into a sustainable solution. Key practices include building a *minimum viable product* (MVP), measuring user responses, and learning from them, rather than waiting to perfect the product internally (Ries, 2011, p. 93). The *build-measure-learn* loop allowed my project team to test whether our ideas were right or wrong based on real user feedback, enabling educated pivots or iterations to better meet user needs. As Nyre et al. (2025, Ch. 10, Sec. 3) point out, the method encourages teams to fail fast to minimize resource waste and redirect efforts. Validated learning is evidence-based insight into what creates future value for customers, and was central to the process (Ries, 2011, p. 38). For this project, Lean Startup methodology meant building and testing a prototype early, gathering data from user testing, and iterating based on that feedback. By focusing on solving real problems and adapting rapidly, Lean Startup provided a foundation for designing a solution that was both useful and adoptable in education.

3.2 Lean Model Canvas

Lean Model Canvas is a business model tool for validated learning developed by Ash Maurya as a startup-friendly adaption of Alexander Osterwalder's (2010) original Business Model Canvas. It serves as a one-page framework for documenting, testing, and refining a business model in uncertain environments (Maurya, 2012, p.19). Unlike the traditional Business Model Canvas, the Lean Model Canvas emphasizes key elements such as the *problem*, *solution*, *key metrics*, and *advantages* (Nyre et al, 2025, Ch. 8, Sec. 3). By forcing clarity about who the users are (e.g. teachers), what their pain points are, and how the proposed solution addresses them, the Lean Model Canvas ensures that development stays aligned with user needs and viability.

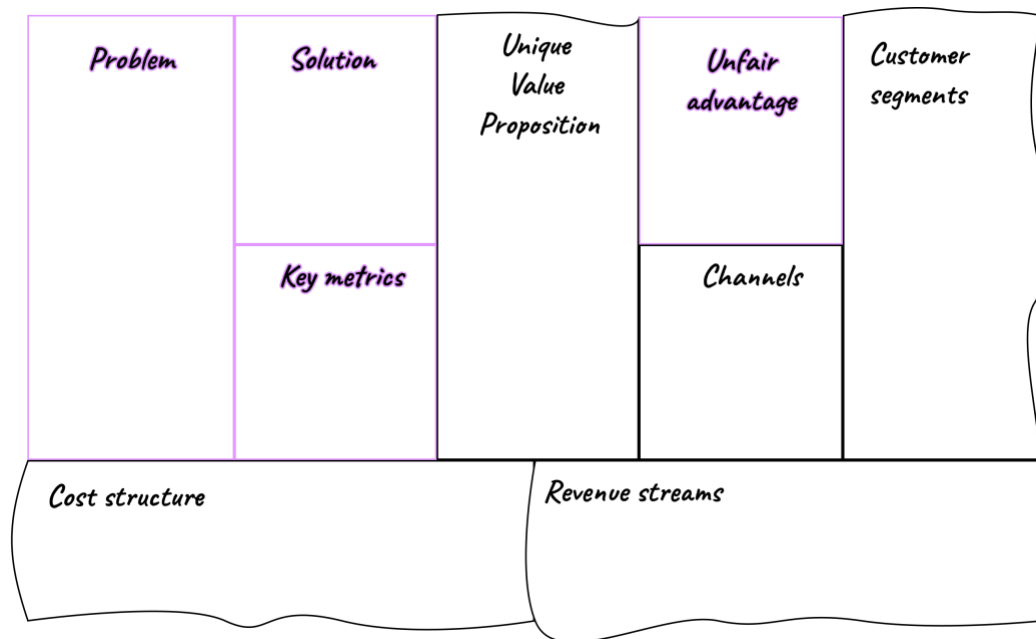


Figure 3: Lean Model Canvas.

For Nova Luna studio, applying the Lean Model Canvas involved asking, “What teacher problem are we solving, and what is our solution’s value?” The approach aligns with User-Centered Design by ensuring the project begins with a validated understanding of teachers’ challenges before development begins.

3.3 User-Centered Design

User-Centered Design (UCD) is a design philosophy that prioritizes the needs, interests, and experiences of users. According to Don Norman, the goal of UCD is to create products that are both usable and understandable (Norman, 2013, p. 9; Nordbø, 2017, p. 31). In practice, UCD involves users throughout the design process, using their input not only as inspiration, but as a measure of success (Preece et al, 2019, p. 48). For Nova Luna Studio, applying a UCD approach involved gathering requirements from teachers’ experiences, testing early prototypes, and refining the platform based on their feedback. Involving teachers in the process may increase the likelihood that the platform will be perceived as intuitive and valuable to out intended user group. To evaluate the usability of interactive design, Norman outlines six design principles: *affordance*, *signifiers*, *mapping*, *feedback*, *constraints*, and *conceptual models* (Norman, 2013, p. 9). The principles help designers understand how users interact with interfaces and how design can guide user behaviour. They are especially useful when analysing interface decisions and interpreting results from user testing.

Affordance refers to the relationship between an object's properties and the user's capabilities. For example, a scroll bar on a website affords dragging. *Signifiers* are cues that indicate possible actions, such as a cursor changing to a hand icon when hovering a clickable element. *Mapping* refers to the relationship between controls and their effects. For example, placing a send button directly below a text field. There is also cultural mapping, which is based on conventions and procedures. *Feedback* refers to functions that communicates the results of an action. For example, a confirmation page after placing an online order. *Constraints* are design limits that prevents users from taking invalid actions. For example, a send button being greyed out until all mandatory fields are filled. *Conceptual models* are explanations to how something works and lets the user predict what is about to happen. For example, a trashcan-icon gives a clear indication on deletion.

3.4 Technology Adoption in Education

Rogers Diffusion of Innovations (2003) offers a macro perspective on how new ideas and technologies spread within a social system. According to Rogers, five attributes influence the rate of adoption: *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability* (Rogers, 2003, pp. 207-209).

The adoption potential of Nova Luna Studio increases when these conditions are satisfied. Teachers must perceive the platform as clearly better than existing solutions (relative advantage), aligned with their values and work practices (compatibility), easy to understand and use (low complexity), possible to test on a small scale in their classrooms (trialability), and capable of producing visible, positive outcomes (observability).

To support diffusion, strategies such as pilot programs and the sharing of success stories from early adopter teachers can be effective in communicating the platform's value.

4. Method

The method chapter presents the methodology used to gather and analyse data, as well as the design practices that shaped the prototype. While the previous chapter outlined theoretical perspectives on adoption, design, and innovation, this chapter turns to the practical steps taken to explore the research question in context. The development of Nova Luna Studio was rooted in empirical insight and iterative experimentation.

4.1 Methods for Data Collection

This section outlines the data collection techniques used to gain insight into teachers' needs, expectations, and work practices. The methods include participatory observation, informal expert interviews, and semi-structured interviews with mainly teacher students.

4.1.1 Participatory Observation and Informal Interviews at SLATE

To better understand how the eLuna framework functions in practice, a participatory observation was conducted during a co-design workshop at SLATE, led by Fredrik Breien. Participatory observation is a qualitative method where the researcher actively engages in a social setting while observing interactions and processes as they unfold (Grønmo, 2016, p. 138).

During the workshop, Breien facilitated a five-phase co-design process based on the eLuna framework. Each phase involved approximately 25 minutes of brainstorming and group discussion to develop a concept for a time-machine-themed educational game. As participants, we were able to experience the process firsthand.

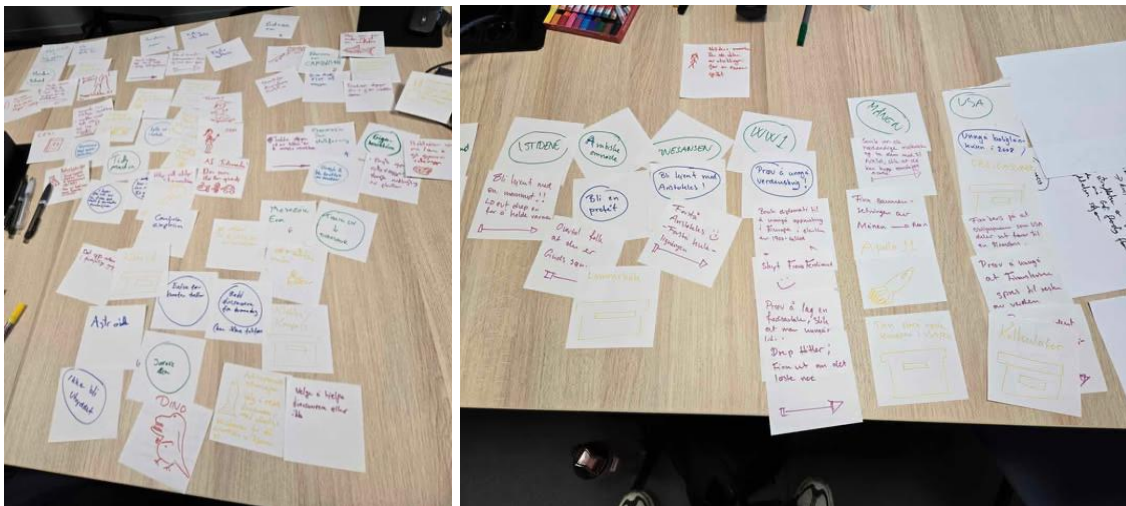


Figure 4: Results from a co-design workshop at SLATE.

Alongside observation, we conducted informal interviews with Breien. Informal interviews are conversational in nature and do not follow a strict guide, though some topics of interest may be predefined (Grønmo, 2016, p. 141). These discussions provided valuable insights into how SLATE envisions the collaboration between teachers and developers within the eLuna

framework. In particular, the session offered input on how the framework's phases could be translated into a digital interface.

4.1.2 Qualitative Interviews

Qualitative interviews are especially useful when the researcher(s) do not know much about the research question or simply wish to understand more nuances of it (Andersen et al, p. 121, 2012). Semi-structured interviews consist of both open and closed questions, combining features from structured and unstructured interviews (Preece et al, p. 269).

A semi-structured interview usually follows a guide but allows for the conversation to go wherever it is needed in order to gather richest possible data (Nordbø, p. 82). In relation to Nova Luna Studio, semi-structured interviews were conducted with teachers and "experts". We conducted interviews with 18 participants:

- 9 fifth-year teaching students at the Western Norway University of Applied Sciences, with practical teaching experience.
- 5 fifth-year special pedagogy students at the University of Bergen, also with practical teaching experience.
- 1 full-time contact teacher at an elementary school in Bergen.
- 3 experts: one game developer, one educator from VilVite, and one researcher from SLATE

Separate interview guides were used for teachers and experts (Appendix 11.1 & 11.2), and questions were adjusted based on the participants background and role. The focus was on digital habits, experience with educational games, and co-design.

4.2 Methods for Design

This section describes the design methods used to translate user needs into solutions. The methods include iterative design, creative ideation techniques, storyboarding, and prototyping. It also describes the user testing, which provided important data for later analysis using Norman's design principles and Rogers' Diffusion of Innovation.

4.2.1 Iterative Design

The development of Nova Luna Studio followed an iterative design process, in which insights from interviews and user testing were continuously used to refine the prototype. The iterative design process followed four steps: discovering requirements, prototyping, testing, and evaluation (Preece et al., 2019, p. 50; Nyre et al., 2025, Ch. 2, Sec. 3). Rather than aiming for a complete solution in a single attempt, the process focused on continuous improvement. The iterative design approach aligns closely with principles from Lean Startup and User-Centered Design. For Nova Luna Studio, iterative design was essential for aligning the platform's features with the users' needs. Feedback from user testing and interviews was integrated at multiple stages.

4.2.2 Ideation - Crazy 8's

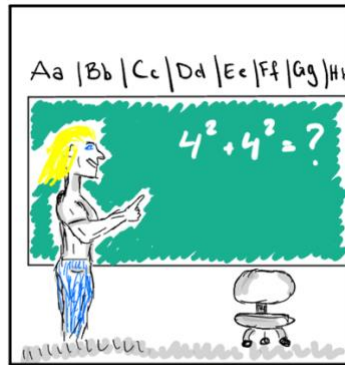
Crazy 8's is a fast-paced sketching method where each participant sketches eight distinct ideas in eight minutes (Google, n.d). It encourages creative thinking and help avoid sticking to the first idea. In the ideation process, crazy eights were used to generate a wide range of interface and feature ideas. After sketching, ideas were shared and discussed, and the group voted on which ones to develop further.



Figure 5: Crazy eights early in the design process.

4.2.3 Storyboarding

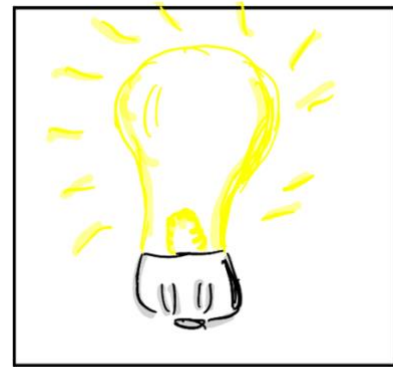
A storyboard represents a sequence of actions showing how a teacher might progress through a task using the prototype to achieve a goal (Preece et al, 2019, p. 447). A storyboard makes it possible for stakeholders to evaluate the value proposition by going over and see how believable the actions are (Nyre et al, 2025, Ch. 5, Sec. 3).



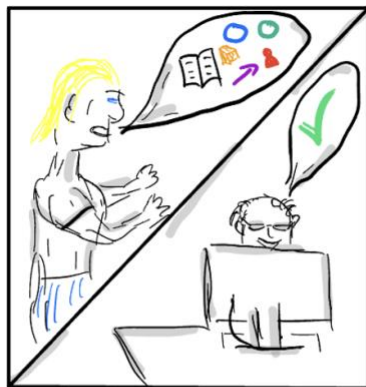
A teacher stands in front of a blackboard, presenting a math problem. A student trying to understand, looks disconnected and unfocused. The teaching method is not engaging him.



The teacher holds her head, clearly frustrated and mentally stuck. She struggles to find a way to reach the student with the material.



The teacher gets a sudden idea! She realizes the topic could be taught in a more engaging way, perhaps through a game.



The teacher implements her educational idea into Nova Luna Studio where she can work closely with a developer, using visual elements to design her idea. The developer implements her idea into Nova Luna Studio, and the game is done!



Back in the classroom, the student now interacts with the educational game. He is visibly engaged and expresses excitement. The teacher watches with a smile, satisfied that her idea has come to life and helped The student.

Figure 6: Storyboard – Teacher using Nova Luna Studio.

One storyboard used in the design process shows a teacher who is frustrated that her teaching does not engage a student. To improve the situation, the teacher uses Nova Luna Studio to co-design a game with a developer. The story ends with both the teacher and the student feeling more satisfied and engaged. Introducing a believable user with a believable problem, and a solution that makes the users' situation better, helped simulate a situation where a teacher might want to use Nova Luna Studio.

4.2.4 Prototyping

The prototype was developed through several iterations. From low-fidelity prototypes on paper, made in the beginning of the design process to test ideas (Nordbø, 2017, p. 149), to high-fidelity prototypes in Figma. A coded version was also prototyped. The Figma version prototype was used to explore user interface design, simulate interactions, and communicate the structure of the workshop process. In contrast, the coded prototype focused specifically on implementing key functions of the map-based canvas component in Nova Luna Studio. Both prototypes were used during testing.

4.2.5 User Testing

Informal user testing sessions with early prototypes were conducted to gather feedback on usability and concept alignment. User testing is essential for identifying flaws in existing solutions and guiding early design iterations (Nordbø, p. 159). To gather relevant user test data, we reached out to the three target groups: educators, developers, and SLATE employees. Well-established theory mentions that five user tests uncover 85% of flaws in the design (Nielsen, 2000). We user tested the prototype on five fifth-year teacher students at the Western Norway University of Applied Sciences, which led to great discoveries on how the platform should be designed to be intuitive for teachers. Then, we user tested the prototype on five third-year information science students at the University of Bergen and gathered useful insight from the perspective of a developer. Lastly, we user tested the final prototype on the project's main stakeholders, SLATE.

The user tests had a mean duration of 15 minutes and were observed by group members from another room by using screen sharing. The test users were given multiple tasks to perform in the given interface and were encouraged to give feedback and ask questions. The tasks were formulated to create a real scenario where they had to create a game in Nova Luna Studio, to make it feel more natural for the user. The test leader also asked questions like “why did you do that?” and “how do you think that went?” under the user testing. The group members observing from the other room took notes, while also trying to notice if the test person had any non-verbal struggles (striving to find a button without explicitly saying so). The data gathered in the user testing were used when altering the prototype to try to meet the target group's needs.

4.2.5.1 Guerilla Testing

In between iterations, and towards the end of the design process, I deployed guerilla testing. Guerilla testing is a less thorough user test, and basically means I picked random persons and let them test Nova Luna Studio (Nordbø, 2017, p.170). Guerilla testing gave useful feedback on smaller changes, like if a button or a small part of the interface worked and felt as intended. To collect user data, I guerilla tested the prototype at the Western Norway of Applied Sciences, to try and better understand the needs of that target group.

4.3 Methods for Analysis

Qualitative analysis focuses on the nature of something and can be represented by themes, patterns, and stories (Preece et al, 2019, p. 309). All interview data were analyzed using thematic analysis, which is a technique that aims to identify patterns in data (Braun et al, 2006: Preece et al, 2019, p.322). I read through the transcripts, noted recurring topics, and grouped them into themes such as “easy”, “hard”, “motivation to use games”, “technical confidence” just to name some, using *Taguette* (a free, open-source qualitative analysis tool) (Appendix 11.3). These themes helped shape both the prototype and the strategic evaluation in the Lean Model Canvas. For design activities and user tests, we used observation notes and reflection notes to track what worked, what caused confusion, and what users responded positively to.

4.4 Ethical Considerations

Participants were informed about the project and gave verbal or written consent before taking part (Appendix 11.4). All participation was voluntary, and participants could withdraw at any time. No sensitive personal data were collected.

5. Analysis

While the previous chapter outlined how the platform was developed and evaluated through interviews, prototyping and user testing, the analysis chapter analyses how design and innovation strategies shaped its developments and contributed to its potential for adoption among teachers. The analysis examines how Lean Startup methodology shaped the development process, how User-Centered Design addressed teacher needs, and how adoption

theories informed the business model. The insights culminate in a Minimum Viable Product (MVP) and a Lean Model Canvas that demonstrates Nova Luna Studio's viability.

5.1 Building Through Iteration

Lean Startup principles drove an iterative development approach for Nova Luna Studio. As Ries (2011) emphasizes, pursuing validated learning requires systematic iteration and rapid iteration (Nyre et al, 2025, Ch. 3, Sec. 3). Accordingly, my project team structured Nova Luna Studio's development around quick Build-Measure-learn cycles fueled by user feedback rather than extensive up-front planning.

5.1.1 Build-Measure-Learn in Practice

In the first build phase, we developed a minimal prototype focusing on the core eLuna framework phases rather than polished features. The goal was to produce a true MVP capturing essential functionality. The initial prototype included a low-fidelity paper prototype, and a basic digital wireframe implementing eLuna's narrative building blocks. An important question was whether translating the successful pen-and-paper co-design process into a digital environment would maintain its collaborative nature. By keeping the prototypes without any extra features, the project team could test quickly without creating unvalidated features.



In the measure phase, we conducted user testing to gather immediate feedback on the prototype. Using guerilla testing methods, 5 teacher students from the Western Norway University of Applied Sciences were recruited to try the early Nova Luna Studio prototype. The rapid testing yielded valuable insights. One participant noted, **"I like the idea, but where do I start?"** Feedback highlighted navigation issues that weren't apparent in initial design assumption. Test users struggled with knowing how to begin and proceed, indicating that the interface lacked clear entry points and guidance. Such feedback revealed pain points in real time and challenged



design assumptions. By observing where users hesitated or became confused, the project team identified concrete areas for improvement (e.g. clearer start buttons and instructions).

The learn phase involved analysing feedback from each test and refining the design accordingly. Learning must be guided by findings (Nyre et al, 2025, Ch. 3, Sec. 3). Each testing round generated validated learning. The results indicated a clear pattern: if something was too complex, teachers wouldn't try it. If a task seems too difficult, many teachers will not even begin. This insight led to significant simplifications of the interface in later iterations. Non-essential features were trimmed, and workflows were streamlined to reduce cognitive load. Over successive Build-Measure-learn cycles, Nova Luna Studio evolved in direct response to user input. The result of these iterations was a refined prototype that better matched teachers' expectations. By the end of the iterative process, the project team had developed a functional MVP.



5.2 Designing for Teacher Adoption

In parallel with the lean iterations, the project applied User-Centered Design (UCD) to ensure the platform would fit teachers' needs. Qualitative interviews with 15 teachers were conducted to uncover user requirements, barriers, and motivators. These findings were used directly in the design process, following the UCD philosophy of involving users in shaping the product.

Teachers repeatedly emphasized time constraints. This raised a reflection on whether focusing on early adopters, mainly student teachers, might have influenced the findings. The fact that this group is not yet working full-time suggests that time pressure is likely an even greater barrier for experienced teachers. This reinforced the need for tools that genuinely reduce pressure. The interface was therefore designed to streamline the game-creation process. For example, the platform guides users step-by-step through the eLuna phases and automates technical processes like code handling, allowing teachers to focus on pedagogical content.

Another recurring challenge was clarity of workflow. This challenge highlights the need for signifiers and clear mapping, as described by Norman. Both interview and test participants

expressed uncertainty about how to navigate the tool, especially in early prototypes. To address this, the interface was redesigned to provide clear step-by-step guidance. Visual clues and progress indicators now show users their current stage and what remains. Using eLuna's building blocks to map the journey. The improved orientation supports both onboarding and continued use. To further refine the user experience and systematically address usability issues, I applied Don Norman's six principles of interaction design. These principles served as an analytical framework for interpreting user feedback and shaping interface decision throughout development.

5.2.1 Prototype Analysis Using Don Norman's Six Design Principles

To systematically improve usability, the project team applied Don Norman's six interaction design principles to the platform. Each principle provided a lens to interpret user feedback and change the interface accordingly.

Affordances

Teachers needed to immediately understand what actions were possible at each stage. Nova Luna Studio has clear visual affordances to highlight interactive elements and available actions. For instance, the "add agent" button uses iconography and colour contrast to suggest interactivity. In user testing, participants quickly recognized these buttons as actionable elements, confirming that the buttons met their expectations. Affordances were kept consistent across the entire game-creation path to avoid cognitive overload and increase learnability.

Signifiers

While affordances suggest possible actions, signifiers point to where and how those actions can be performed. After test users expressed, "**I'm not sure what to do next,**" signifiers were added (e.g. directional arrows, progress indication, instructions). For example, after completing the game-creation phase, a "next" arrow now directs the teacher to the next phase.



Figure 7: Arrows, directing users.

These signifiers help reduce ambiguity by communicating the next possible actions in the interface. Micro-interactions like buttons changing colours were also employed to reinforce where interaction should happen.

Mapping

The layout of controls and information on each screen was organized to feel intuitive. Nova Luna Studio base the interface mapping on user feedback. For example, arranging the sequence of the tasks from left to right (or top to bottom in the side-menu) to mirror the natural narrative flow of game creation. This was important given the target users' limited time and patience for exploring unfamiliar interfaces. Feedback from teacher interviews emphasized the need for predictability.

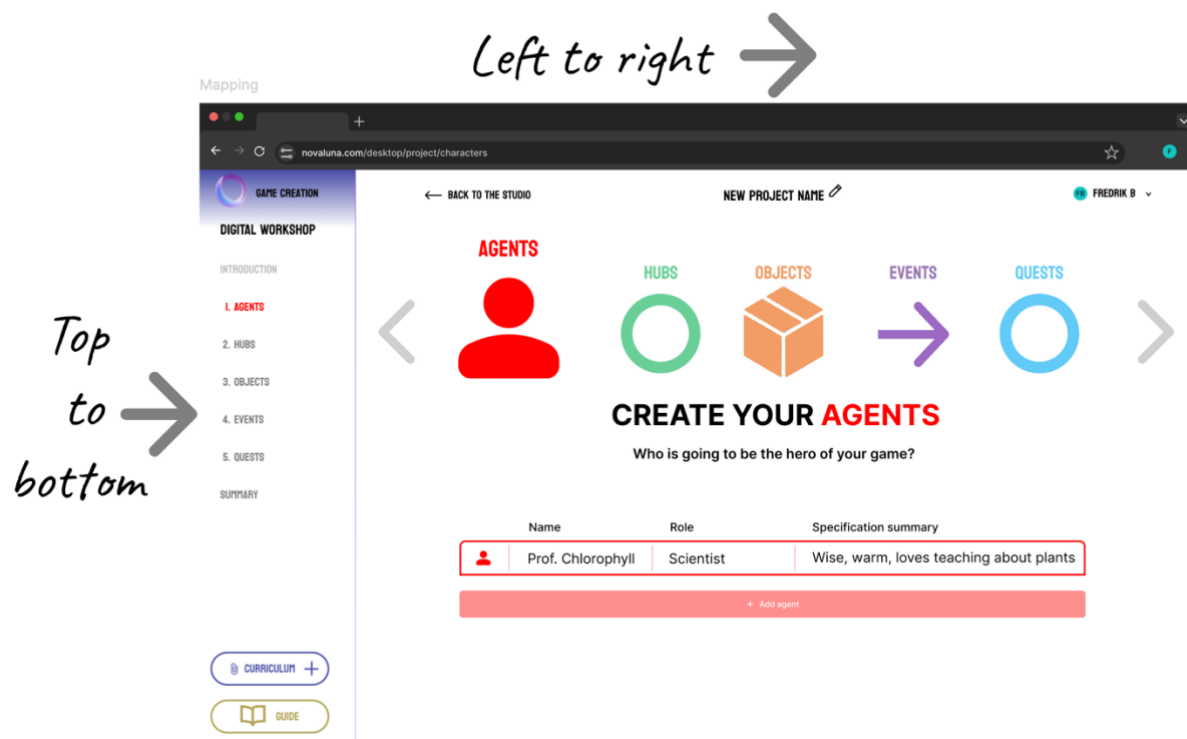


Figure 8: Mapping in Nova Luna Studio.

Feedback

The platform provides immediate and continuous feedback for user actions. All buttons in Nova Luna Studio change colour when a user is hovering their cursor. Canvas elements react clearly to user actions, reinforcing interactivity through intuitive feedback. When a teacher completes an eLuna phase or adds a new building block, the system gives clear confirmation about what has already happened. When clicking the “Add quest” button, a layover opens where the user is allowed to add a new quest. In the layover the user must choose where on

the event line it should be placed. After clicking the “Add quest” in the layover, another quest is added to the interface.

Name of quest	Order on eventline	Specification summary
Collect flowers	→ First quest	Gathering, biology, teamwork

+ Add quest

Name

Add a quest description

E.g. Inspect these flowers, and separate poisonous flowers from edible flowers...

Order on eventline

Quest added

Close

Add quest

Name of quest	Order on eventline	Specification summary
Collect flowers	→ First quest	Gathering, biology, teamwork
Collect sun beads	→ Second quest	Collect across valley

+ Add quest

Figure 9: Adding another quest being added in game-creation.

At the end of the game-creation, the user also gets an entire page confirming the choices made in the game-creation phase. Another example is if the users download the JSON or XML files, they will get a confirmation “zip downloaded”.

Constraints

To prevent overwhelming the users, Nova Luna Studio imposes sensible constraints on what can be done at each step. The interface limits the choices in context. For example, when adding another agent, a teacher will only have a few options: add agent, proceed to next phase, go back to last phase, delete agent, edit agent, open guide, add curriculum, or go back home. Constraining possibilities reduces the chance of error and lowers the entry barrier for less tech-savvy users.

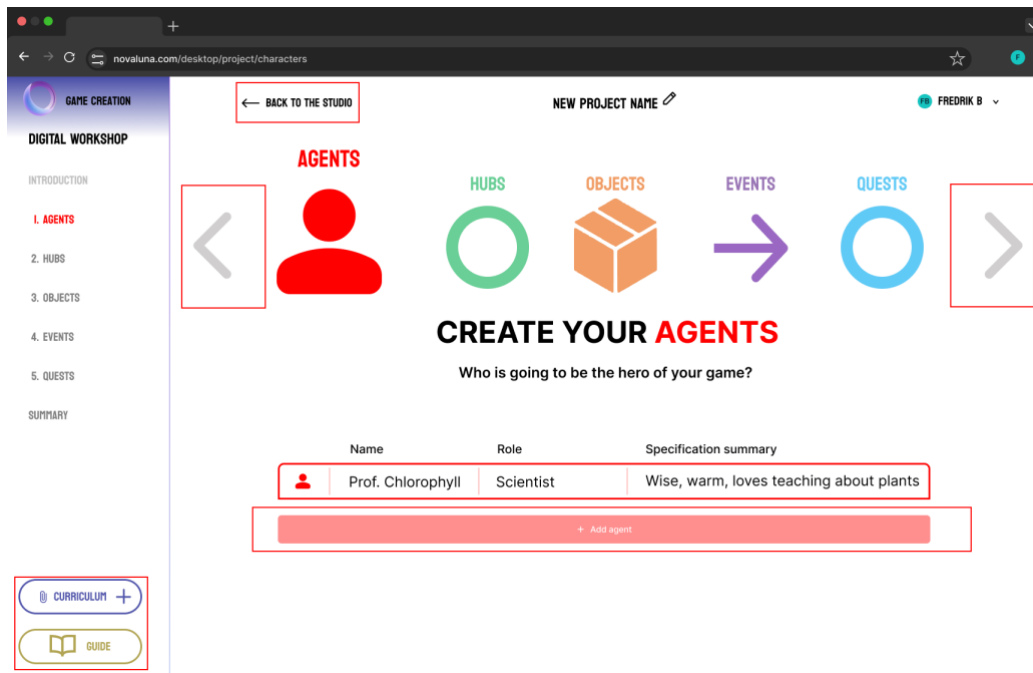


Figure 10: Constraints in game-creation (marked with red rectangles).

The platform was deliberately designed to exclude any features that did not contribute directly to the Minimum Viable Product. A common tendency is to add more and more features, but that can lead to a team having to do more complex, user testing (Maurya, 2012, pp. 144-145). The features have been added through insights from interviews and user testing.

Conceptual Model

A good conceptual model lets the user predict the effects of an action before it is completed (Norman, 2013, p. 24). When something works well, it means that the designers and users conceptual models comply well. If a user makes an action in Nova Luna Studio, it should be apparent what happens next (e.g. the click of an arrow takes you somewhere). In Nova Luna Studio this is handled by using arrows to navigate the game-creation phase but also using familiar icons to make the platform intuitive.

By applying these User-Centered Design changes, Nova Luna Studio became more intuitive and aligned with user needs. Each design decision was validated by evidence from interviews or tests, ensuring direct response to their input. As a result, the final prototype was not only functional but also addressed key barriers to teacher adoption. While the prototype became easier to use, simplicity does not alone guarantee for long-term engagement. Further testing will be needed to uncover whether the streamlined interface fosters creativity or just lowers the entry threshold.

5.3 Evaluation Adoption Potential

Rogers' Diffusion of Innovation provides a structured lens for analysing how both the platform's characteristics and teachers' perceptions may influence adoption. The model outlines five key attributes that affect whether an innovation is likely to be adopted. The attributes are *relative advantage* over existing tools, its *compatibility* with current practices, perceived *complexity*, *trialability*, and the *observability* of results.

By mapping the findings onto these attributes, this section assesses Nova Luna Studio's adoption potential among early adopter teachers.

5.3.1 Relative Advantage

Relative advantage refers to the extent to which an innovation is perceived as an improvement over the current situation (Rogers, 2003, p. 29). Teachers who participated in interviews and testing generally identified potential benefits in using Nova Luna Studio, both in comparison to traditional teaching methods and to the absence of game-based learning altogether.

While a few participants voiced concerns increasing digitalisation of schools, others highlighted how the platform could enhance student engagement and foster **“The joy of learning”** through interactive storytelling. Nova Luna Studio was seen as promising for motivating struggling students, which is a clear pedagogical advantage. However, teachers also stressed that the advantage must be obvious in practice. One teacher warned that, **“If the games we make just end up being boring, they'll just start scrolling again.”** In other words, if the end product does not clearly engage students better than a standard lesson, the effort of using the tool is not justified.

This feedback implies that for Nova Luna Studio to demonstrate a relative advantage, it must be able to visibly improve student engagement or learning outcomes. The design of the games should clearly reflect curriculum goals and captivate students' interest. That is why the user of the platform can add curriculum (files) in every step of game-creation, to ensure that the games being made follow real learning objectives.

5.3.2 Compatibility

The compatibility attribute concerns how well the innovation fits with potential users' existing values, past experiences, and current needs (Rogers, 2003, p. 29). A recurring theme in the

interviews was that the platform had to integrate smoothly with teachers' existing work practices and skill sets. If using Nova Luna Studio required teachers to acquire significantly new technical skills (like programming) it would conflict with their professional comfort zone. As a teacher put it, **"We're not here to code and build the game."** This quote highlights that teachers see their role in content creation, pedagogy, and design of learning activities, but not technical development. Nova Luna Studio's co-design strategy directly addressed this compatibility concern by allowing teachers to focus on the narrative and pedagogical design, while developers handle the technical implementation.

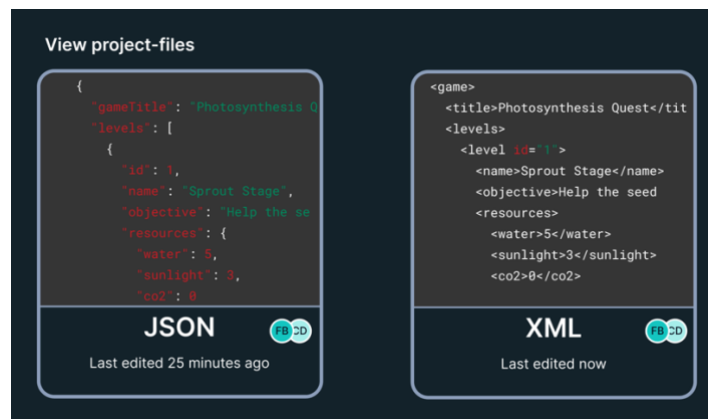


Figure 11: The code in the prototype is handled by developers.

The tool was designed to complement teachers' workflow, for instance, by allowing them to integrate the games into teaching plans. By aligning with teachers' pedagogical goals and not forcing them to gain a new skill, Nova Luna Studio is compatible with the everyday reality of teaching. The closer the platform matches teachers' practices, the closer the platform is to adoption.

5.3.3 Complexity

In Rogers' theory, lower complexity increases the likelihood of adoption (Rogers, 2003, p. 30). Complexity emerged as perhaps the most critical factor for Nova Luna Studio's adoption. Teachers were very clear that the platform must be easy to learn and use. Many of them voiced some variations of the phrase **"Keep it simple, even stupidly simple,"** suggesting that any unnecessary complexity would likely prevent them from adopting the tool altogether. This statement underlines how sensitive adoption is to any perceived difficulty.

Observations during user testing supported this insight. Minor usability issues could become major barriers if not addressed. The design team took this to heart by continually simplifying the interface and eliminating unnecessary steps.

By the final MVP, the platform was far more streamlined than the initial prototype, directly because of teacher feedback. Nova Luna Studio doesn't demand extensive training or technical knowledge, which improves its likeliness of being adopted, especially among the many teachers who are not tech-savvy.

5.3.4 Trialability

Trialability refers to how easily people can experiment with the innovation on a limited basis before fully committing (Rogers, 2003, p. 30). Engagement with teachers indicated that they value the ability to try out new tools in a low-risk way. In the context of Nova Luna Studio, trialability means a teacher should be able to test the platform in a single lesson or create a small demo game without investing an excessive amount of time or resources. This is not addressed that well in the prototype. Future iterations could include example projects or pre-made templates that allow for experimentation.

5.3.5 Observability

Observability is the extent to which the results of an innovation are visible to others (Rogers, 2003, p. 30). In educational settings, this can mean teachers being able to observe improvements in student engagement or learning outcomes, as well as teachers seeing or hearing about successes from their peers. Findings suggest that teachers are more inclined to adopt Nova Luna Studio if they can clearly see positive outcomes from it. Some interview participants expressed that if a tool leads to obvious student enthusiasm (like Kahoot!), it gains credibility quickly. To enhance observability, real demo projects were implemented in the platform's project interface.

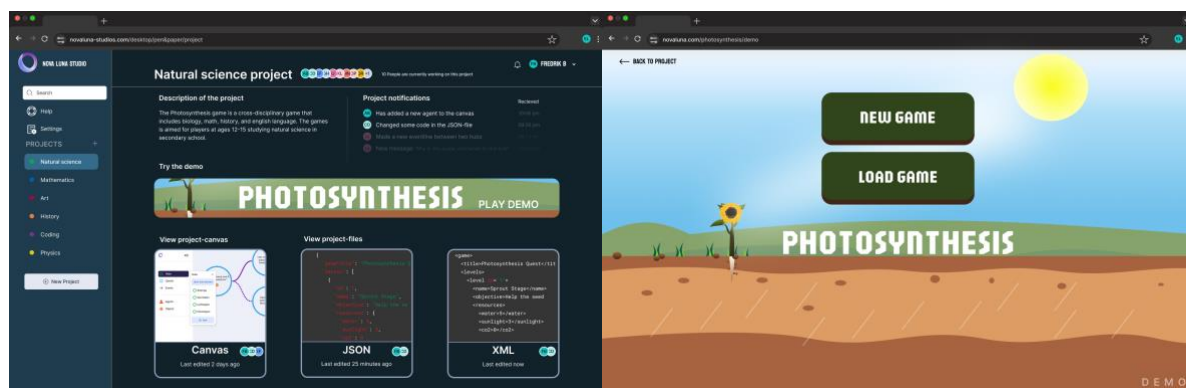


Figure 12: Demo-game to enhance observability.

One teacher emphasized the importance of visible outcomes, stating tangible results were necessary before fully committing to a new tool. Additionally, by targeting early adopters in

the teaching community to pilot the platform, their experiences may become observable to others through presentations at staff meetings or informal sharing of success stories. Such observability can support diffusion.

Rogers' five attributes suggest an encouraging picture for Nova Luna Studio's adoption potential, provided that the platform continues to demonstrate clear advantages, remains simple and compatible with teachers work, and is easy to try. The thesis's focus on early adopter teachers ensures engagement with users who are typically open to exploring new innovations and influencing others within their professional networks. Feedback from participants has played a central role in maximising the relative advantage and reducing complexity.

6. Analysis Synthesis: MVP and Lean Model Canvas

The previous analysis highlighted strong adoption potential for Nova Luna Studio. According to Rogers' Diffusion theory, the platform must continue to offer clear advantages, remain easy to use, and fit well with teachers' existing work. Feedback from users plays an important role in making the design simpler and more relevant.

To bring these insights together, I used the Lean Model Canvas to summarize the key ideas behind Nova Luna Studio's development and strategy. While the platform was designed for several user groups, this thesis focuses on early adopter teachers. They are the most likely to try out new tools and share them with colleagues. Their feedback suggests that the MVP can become both useful and meaningful in a real classroom setting, which suggests further iterations can make Nova Luna Studio ready for real-world use.

The three factors that stood out as most important for adoption was ease of use, fitting into teachers' schedules, and supporting teaching goals. Lean Startup methodology served not only as a framework for testing ideas quickly, but also for prioritising features based on user value. The development followed a short Build-Measure-Learn cycle, where each design decision was validated. The MVP is the product of the continuous learning.

At the same time, Don Norman's six design principles were used to evaluate and improve usability. Norman's principles helped interpret usability issues uncovered through user testing

and guided specific refinements. Design decisions were made to reduce ambiguity, simplify navigation, and signal available actions more clearly.

The findings also highlight that co-creation with developers needs to be supported by a common language. Teachers emphasized their willingness to contribute pedagogically but not technically, which is exactly what eLuna was developed for. With this structure in place, Nova Luna studio can potentially increase interdisciplinary collaboration and support more meaningful digital education design.

The Lean Model Canvas below gives an overview of the prototype's main values focusing on problem, solution, unfair advantage, and key metrics, and that is what I am going to discuss here.

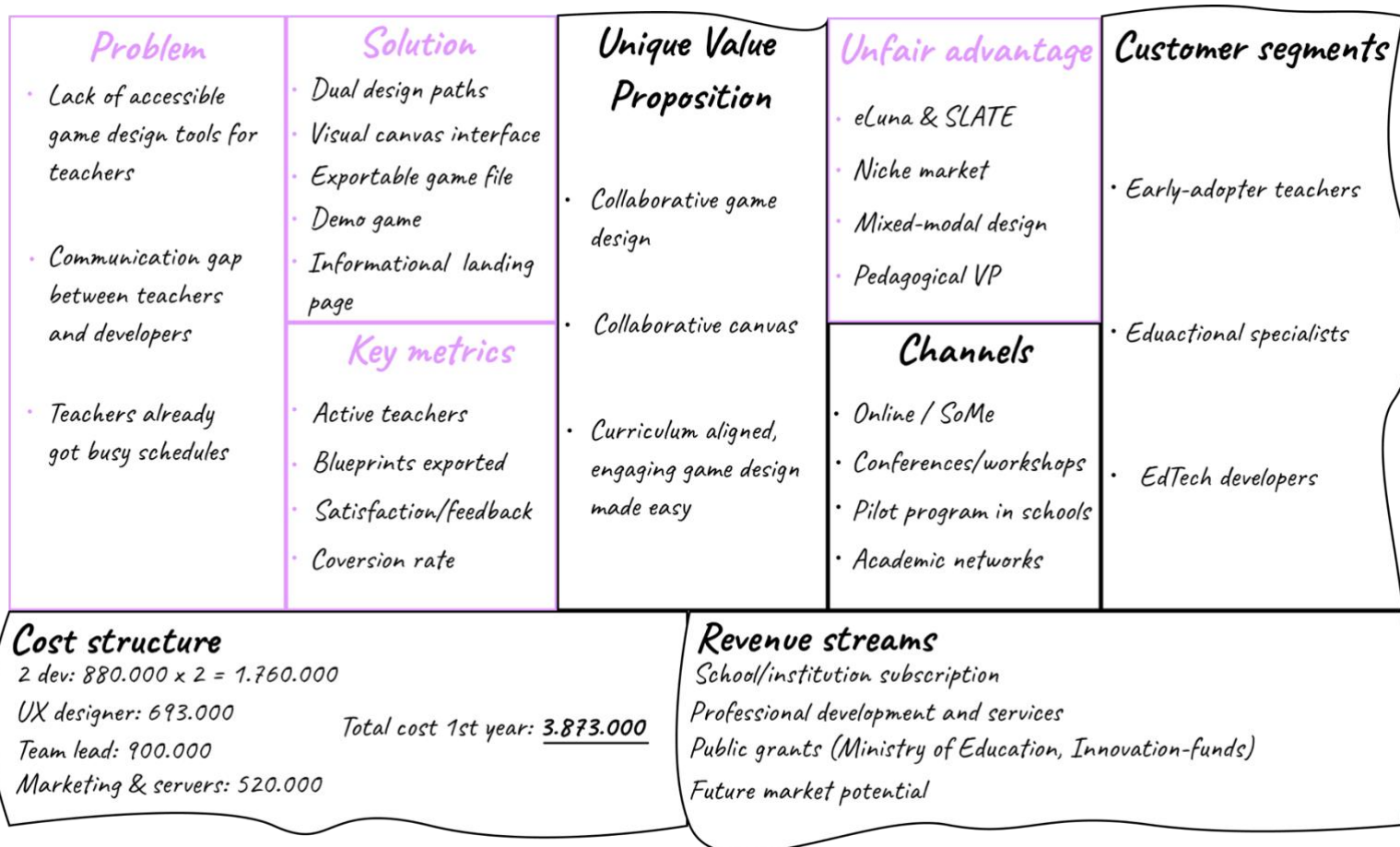


Figure 13: Lean Model Canvas of Nova Luna Studio.

6.1. Problem

The first element of the Lean Model Canvas is the problem definition. Through extensive interviewing and user testing, three core problems were validated.

Teachers lack accessible game design tools.

While game-based learning is widely recognized for its motivational potential, most existing creation-tools require either technical competence or time, both of which are rare commodities for a regular teacher. Interview data made it clear that teachers want to create games tailored to their own teaching.

Communication gap between teachers and developers.

While teachers have deep curriculum knowledge and developers bring technical expertise, collaboration between the two is often hindered by the absence of a shared platform or common language. This misalignment can result in educational games that are either pedagogically weak or technically impractical.

Time constraint.

One of the strongest findings from the interviews was that teachers are unlikely to adopt a tool that is time consuming or extends their working hours. Ease of use is a requirement. The platform must be “**Easy to operate**,” as several interview participants put it.

6.2 Solution

The MVP designed in response to these problems is intentionally minimal but strategically targeted. Nova Luna offers five core features. The platform supports **two creation pathways**, one offering a fully digital workflow, and the other providing a pen & paper option that enables teachers to run workshops before formalizing their ideas in the digital tool. This dual pathway supports flexibility and meets teachers where they are, whether they prefer digital tools or traditional methods. A **collaborative canvas** using eLuna’s visual language, making it intuitive for teachers to map out stories, characters, and challengers. **Exportable XML/JSON** files that serve as exportable blueprints for the developers. A **demo game** that is updated when the developers push new code. This is to show progress and to foster testing in classrooms. An **informative landing page** where users can see live notifications on projects, information about the projects, and who the collaborators are.

6.3. Key Metrics

Nova Luna Studio's success rests on impact. Lean Startup methodology emphasizes validated learning, and that required actionable metrics. Four key metrics have been defined:

Active teacher-users

This tracks initial adoption and serves as a good measure for early awareness and interest. If teachers are registering and returning to the platform.

Number of completed game blueprints

This measures whether teachers are engaging with the full process. A game blueprint means that the platform has successfully facilitated idea development.

User satisfaction and feedback

Surveys, interviews, and observational data during testing will help Nova Luna Studio understand whether users find the tool intuitive, effective, and aligned with their needs. High satisfaction scores will correlate with long-term use and recommendations.

Conversion rate (free to paid usage)

While the initial version targets early adopters, the goal is to scale. Tracking how many schools or districts transition from the free version to paid institutional licenses helps validate the business model.

6.4. Unfair Advantage

One of the most difficult elements in Lean Model Canvas (usually) are to identify the “unfair advantages”, which is the part of the solution that competitors cannot easily replicate. The unfair advantages of Nova Luna Studio stems from its academic origins.

Validated methodology (eLuna)

The platform is built on the eLuna co-design framework, which was tested and iterated within research environments. This gives Nova Luna Studio legitimacy and a strong pedagogical foundation. The research foundation represents a sunk cost advantage, as competitors likely would need years of equivalent research and development to match it.

SLATE

SLATE's involvement gives eLuna credibility and access to networks of educators, researchers, and developers.

Niche market

Nova Luna Studio targets a niche market, specifically the collaboration between educators and game developers.

Digital and pen & paper

While not fully integrated in the MVP, the vision of supporting both analogue and digital game-creation gives Nova Luna flexibility that few platforms offer. This positions it well for broader use across different contexts and preferences.

Pedagogical alignment as core value

Finally, the strongest unfair advantage may be Nova Luna Studio's tight integration with real teacher needs. By making curriculum-integration the foundation of the design, the platform appeals to teachers who are not just early adopters, but also others that would want to go the extra mile.

In conclusion, the Lean Model Canvas provides a strategic overview of Nova Luna studio's market position and viability. The alignment between teacher needs, the structured co-design solution, relevant success metrics, and unique competitive advantages all suggest that the platform has potential not only as a prototype but as a viable tool for educational opportunities. It is important to acknowledge the complexity of this plan into adoption. The unfair advantages, grounded in validation and niche focus provides a strong foundation but may face challenges when scaling in a market dominated by larger established providers. Furthermore, despite the iterative process's success in simplifying the interface, trialability remains an area requiring further attention. For teachers to truly embrace Nova Luna Studio, the barrier to experimentation must be minimal, fostering low-risk engagement that demonstrates the platform's relative advantage without demanding too much of their already limited time.

7. Conclusion

This thesis has explored the following research question:

“How can design and innovation strategies support the creation and adoption of a collaborative educational game platform among teachers?”

The analysis of the Nova Luna Studio design process demonstrates that combining *User-Centered Design* and *Lean Startup methodology* offers a strategy for developing tools that align with teachers’ needs. By involving teachers in the design process through primarily user testing, the platform evolved in direct response to real challenges. Interviews and observational data revealed consistent concerns around time constraints, technical complexity, and curriculum relevance.

Don Norman’s principles and Rogers’ Diffusion of Innovation provided further structure for understanding what drives or stops teacher engagement with new technologies. The resulting MVP and Lean Model Canvas illustrates a potentially viable concept: a digital co-design platform that enables teachers and developers to collaboratively create narrative learning games without teachers requiring technical advanced skills.

However, the findings also raise broader questions. The consistent focus on timesaving suggests a systematic challenge in Norwegian schools, one that may hinder new innovations to integrate into a market with big companies. This aligns poorly with the wishes of the Ministry of Education. While the thesis successfully addressed many user-centered barriers, further research and testing are needed to assess whether Nova Luna Studio can be viable (and maybe even profitable), and potentially scale.

This thesis contributes to the field of educational technology design by identifying barriers and motivators among future and current teachers in Norway. By combining Lean Startup, User-Centered Design, and Rogers’ Diffusion of Innovations, it proposes design and innovation strategies for how educational tools can be created and adopted among teachers. The insights related to time pressure, desire for curriculum alignment, and the importance of intuitive onboarding are highly relevant for future developers. The Lean Model Canvas may serve as a blueprint for educational innovators targeting educational fields.

8. Constraints

This project has some limitations that I will address. The participants of the interviews and user testing was generally homogenous, consisting primarily of teacher students. The lack of full-time teachers or a more diverse range of educators limits the generalizability of the findings. A student teacher may have different technical skills, constraints, and perspectives compared to a teacher that have been working for 10 years. The theory applied in the thesis could also have included the Technology Acceptance Model (TAM) and participatory design to bring more nuances to the analysis. Another limitation is the absence of quantitative data. This thesis relied of qualitative methods and did not include surveys to quantify teachers' perception.

These limitations suggest that the conclusion should be interpreted with caution. Future research could address these issues by involving a more diverse set of participants and using a set of mixed methods to validate and generalize the findings.

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10. Figures

Figure 1: Visualization of the eLuna Framework (Breien et al, 2022).

Figure 2: The building blocks of eLuna and Nova Luna Studio.

Figure 3: Lean Model Canvas.

Figure 4: Results from a co-design workshop at SLATE.

Figure 5: Crazy eights early in the design process.

Figure 6: Storyboard – Teacher using Nova Luna Studio.

Figure 7: Arrows, directing users.

Figure 8: Mapping in Nova Luna Studio.

Figure 9: Adding another quest being added in game-creation.

Figure 10: Constraints in game-creation (marked with red rectangles).

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Figure 13: Lean Model Canvas of Nova Luna Studio.

11. Appendix

11.1 Experts interview guide in Norwegian

Intervjuguide eksperter

Block 1: Ice Breaker

Introduser oss selv

Spør om samtykkeskjema om det ikke er blitt signert enda.

Spør evt om vi kan ta opp møte for transkribering. Vil bli slettet etterpå.

- Hva er favorittstedet ditt i og utenfor Norge?
- Alltid måtte nyse uten å få det til eller alltid noe i øyet uten å få det ut?
- Hvem er du og hva jobber du med?
- Har du et yndlingsspill?
- Har du jobbet med eLuna før og i hvilken grad?
(hvis ikke, gi en kort forklaring på eLuna)
- eLuna: et rammeverk som lar utviklere og pedagoger jobbe sammen får å lage lærespill.
Kort fortalt, så kan man lage et diagram med

Block 2 - Lærerspill og spillutvikling

- Hva ønsker du i et lærespill? Hva syntes du er dårlig med lærerspill
- Har du noen gang spilt læringsspill du har likt? Hvilke spill er dette?
- Hvis du allerede har jobbet med eLuna, er det noe du ikke har likt med rammeverket så langt? Eller noe du mener de kan gjøre bedre?

Block 3 - For Pedagoger

- Hvilke digitale læringsplattformer liker du å bruke? Hvorfor?
- Hva er viktig for deg å ha med i et eLuna rammeverk som pedagog?
- Hvilke potensielle utfordringer kan eLuna være med på å skape i et samarbeid mellom utviklere og pedagoger?
- Hva føler du er største utfordringen med å jobbe med utviklere?
- Føler du at lærespill er et viktig verktøy for læring?
- Har du brukt læringsspill i undervisning før?
 - Hvordan har det fungert?
 - Er spillene engasjerende eller blir de kjedelige?
 - Hva er elevenes opplevelse?

Block 4 - For Utviklere

- Hva vekket interessen din for å jobbe med eLuna? Om du har noen?
- Ser du/dere noen utfordringer med å implementere eLuna i allerede fungerende arbeidsmetoder?
- Hvilke potensielle utfordringer kan eLuna være med på å skape i et samarbeid mellom utviklere og pedagoger?
- Hvordan er det å jobbe/fungerer samarbeidet med folk utenfor bransjen som for eksempel pedagoger?
- Hva trenger eLuna for å bedre samarbeidet
- Hva er viktig for deg å ha med i eLuna for å kunne utvikle et bra lærespill?

Block 5 - Avslutning

- Er det noen tanker du vil dele med oss som du ønsker å dele med oss rundt eLuna eller vårt prosjekt?
- Tusen takk for at du ville bli intervjuet
- Er du åpen for at vi tar kontakt igjen om vi trenger svar på flere spørsmål?
- Vil du være med på workshops og eventuell brukertesting i løpet av utviklingen av prototypen?

11.2 Teacher interview guide in Norwegian

Målgruppe: Pedagog- og lærerstudenter

Formål: Utforske pedagogiske perspektiver på læringsspill, tverrfaglighet, motivasjon og samarbeidsprosesser, samt få innsikt i hvordan et verktøy som eLuna kan bidra til design av læringsspill.

Presentasjon av intervjuet:

- Takk for at dere vil delta! Dette intervjuet handler om læringsspill og hvordan de kan brukes i undervisningen. Vi vil også diskutere et verktøy kalt eLuna MRVL, som er utviklet for å hjelpe med design av slike spill.
- Vi ønsker å høre deres tanker og erfaringer – det finnes ingen riktige eller gale svar.

Kort presentasjonsrunde:

- Kan dere fortelle litt om dere selv?
- Hvilke erfaringer har dere med læringsspill, enten som studenter eller i praksis?

Tema 1: Erfaring med læringsspill

- Hvilke erfaringer har dere med bruk av læringsspill i undervisningen?
- Har dere eksempler på læringsspill som har fungert bra? Hva gjorde disse spillene vellykkede?
- Har dere opplevd utfordringer med læringsspill i undervisningen?

Tema 2: Motivasjon og engasjement

- Hva er deres tanker om hvordan spill kan motivere elever?
- Hvordan kan man sikre at læringsspill fører til reell læring, og ikke bare underholdning?
- Hvilke spilldesign-elementer tror dere er mest effektive for å holde elever engasjerte?
- Hvordan balanserer man utfordring og mestring i læringsspill?

Tema 3: Tverrfaglighet og STEAM

- Hvordan kan man integrere ulike fagområder i et læringsspill, for eksempel realfag, kunst og samfunnsfag (STEAM)?
- Har dere erfaring med tverrfaglig undervisning? Hvordan fungerte det?
- Hvilke fag ser dere som mest naturlige å kombinere i spillbasert læring?

Tema 4: Mixed reality og fysiske læringsmiljøer

- Hva er deres tanker om å kombinere fysiske læringsmiljøer (f.eks. et vitensenter) med digitale spill?
- Hvordan kan man utnytte ressurser i et vitensenter eller museum i læringsspill?
- Har dere erfaring med VR/AR i undervisningen? Hvordan fungerte det?

Tema 5: eLuna MRVL spesifikt (Kort introduksjon av verktøyet før spørsmålene)

- Hva tenker dere om at lærere selv kan være med på å designe læringsspill?
- Hvordan tror dere et verktøy som eLuna MRVL kan bidra til designprosessen av læringsspill?
- Hva tror dere er de største fordelene og utfordringene ved å bruke et slikt verktøy i praksis?
- Hva må til for at et verktøy som eLuna MRVL blir intuitivt og enkelt å bruke for pedagoger?

Tema 6: Samarbeid og medvirkning

- Hvordan kan man sikre et godt samarbeid mellom lærere og spillutviklere i designprosessen?
- Har dere erfaring med samarbeid mellom pedagoger og spillutviklere? Hva fungerte/ikke fungerte?
- Hvilken rolle ser dere for dere at elever kan ha i utviklingen av læringsspill?
- Hva ville vært den ideelle måten å involvere elever i spilldesignprosessen på?

Avslutning

- Er det noe vi ikke har spurt om, men som dere mener er viktig?
- Har dere noen siste refleksjoner rundt bruk av læringsspill i skolen?
- Tusen takk for deltakelsen! Dersom dere kommer på noe senere, er det bare å ta kontakt.

11.3 Screenshot from Taguette

The screenshot displays the Taguette interface. On the left, there is a sidebar with tabs for 'Project info', 'Documents', and 'Highlights'. The 'Highlights' tab is active, showing a list of 15 highlights. Each highlight has a number in a blue circle and an 'Edit' button. The highlights are: 'vr' (3), 'vanskelig' (4), 'utfordring' (33), 'tverrfaglighet' (36), 'samarbeid' (17), 'reell læring' (13), 'motivasjon' (27), 'mixed reality' (7), 'intuitivt' (18), 'gevinst' (6), 'fordeler' (6), 'erfaring' (32), and 'eluna' (18). The 'vanskelig' highlight is selected. On the right, the text of the selected highlight is shown, along with a list of other highlights from the same document.

Project info Documents Highlights

Create a tag See all highlights

vr	3	Edit
vanskelig	4	Edit
utfordring	33	Edit
tverrfaglighet	36	Edit
samarbeid	17	Edit
reell læring	13	Edit
motivasjon	27	Edit
mixed reality	7	Edit
intuitivt	18	Edit
gevinst	6	Edit
fordeler	6	Edit
erfaring	32	Edit
eluna	18	Edit

Umiddelbare tanker er at det er kjempebra.

Kjempegøy.

Og det er jo noe i hvert fall vi som unge lærere ... Kanskje vi har jo på en måte digital kompetanse, da

Mer enn de som har jobbet i yrket i 40 år.

Så det er jo kjempegøy.

Det eneste er jo ...

Hvordan skal lærere få tid til det?

Når skal vi ha mulighet til det?

Er det etterarbeid?

Er det istedenfor noe annet?

Skal vi ha mindre undervisning?

Ofte så har de jo utviklingsarbeid på skolen hvor alle samles.

Skal det skje da?

Så det er sånn umiddelbar tanke.

Kjempekult, kjempegøy.

Sånn personlig.

Men når?

Hvordan skal man få det til?

intervju 8 vanskelig

11.4 Consent scheme in Norwegian for our initial project name “UI Luna”

Vil du bidra til designprosjektet “UI-Luna”?

Vi ønsker din hjelp til et designprosjekt hvor formålet er å designe en prototype på en digital tjeneste for vår oppdragsgiver SLATE og deres brukere. Prosjektet utføres på bachelorkurset MIX250 Bacheloroppgave i medie- og interaksjonsdesign ved Universitetet i Bergen våren 2025. I dette skrivet gir vi deg informasjon om prosjektet og hva det innebærer å delta.

Formål. Vi vil spørre deg om ulike tema som er relevante for designprosjektet, f.eks. hva som er nyttige funksjoner, hvem målgruppen bør være, og mange andre ting. Vi er interessert i alt du kan si som kan hjelpe oss videre med designarbeidet. Vi har faste spørsmål, men er også interessert i generelle kommentarer. Vi vil bruke dine innspill både til å forbedre den løsningen vi allerede har utviklet og utvikle nye funksjoner for den. Å lage designet utgjør den praktiske delen av vår bacheloroppgave.

Hvem er ansvarlig? Universitetet i Bergen er ansvarlig for prosjektet. Bachelorstudentene har ansvar for å utføre intervjuer, spørreundersøkelser, og deltakende observasjoner i form av brukertester. Professor [navn] har det overordnede faglige ansvaret for prosjektet.

Hvorfor får du spørsmål om å delta? Vi ønsker å intervju folk med erfaringer og kompetanse som er relevante for utforskning av designmuligheter for vår oppdragsgiver. Vi tror du har verdifulle perspektiver og kompetanser, og kan bidra til en faglig styrking av prosjektet.

Hva innebærer det å delta? Vi samler informasjon til designprosjektet ved hjelp av flere metoder. Ved å krysse av i samtykkeskjemaet nedenfor, takker du ja til å delta i en eller flere av dem.

1. *Intervju.* Personlig intervju og gruppeintervju vil vare i omtrent 45 minutter. Intervjuene vil foregå ved at vi møtes fysisk på et sted som passer deg eller digitalt over Universitetet i Bergens Zoom-tjeneste. Dersom det er ønskelig, er det mulig å få tilsendt intervju spørsmålene på forhånd. Vi vil ta lyd- og/eller skjermopptak i tillegg til at vi transkriberer, slik at vi vil kunne gå tilbake å se over intervjuene senere i analysen og evalueringen av dataene.
2. *Brukertesting.* Brukertesting vil vare i omtrent 45 minutter, og innebære lyd- og/eller skjermopptak slik som ved intervju, og foregår ved at man blir vist paperskisser eller trykker seg gjennom en prototype på nett, og får spørsmål om hva man mener.
3. *Spørreundersøkelse.* Spørreundersøkelsen vil kunne fylles ut på ca. 10-15 minutter. Dine svar fra spørreskjemaet blir registrert elektronisk. Spørreskjemaet lages med SurveyXact, som Universitetet i Bergen har avtale med.
4. *Observasjon.* Observasjonene vil bli utført gjennom brukertesting, med fokus på å utforske vaner, holdninger og bruk av digitale tjenester. Observasjoner vil noteres.

Det er frivillig å delta. Hvis du velger å delta har du mulighet til å trekke samtykket, uten å oppgi grunn, når som helst i løpet av prosjektperioden. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern - hvordan vi oppbevarer og bruker dine opplysninger. Vi vil bare bruke opplysningene om deg til formålet vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. I bacheloroppgaven vil

alle personer som har deltatt bli anonymisert. Vi vil ikke bruke opplysninger som kan identifisere deg i noen skriftlige sammenhenger. Vi kommer til å transkribere intervjuet, slik at vi kan gjennomgå dine svar i etterkant. Navnet ditt vil imidlertid ikke stå noe sted i dokumentet, og all data forbundet med deg vil være knyttet til en tallkode istedenfor ditt navn. Tallkoden vil være det eneste koblingspunktet mellom ditt navn og transkripsjonen og ellers andre opplysninger vi har om deg. Bachelorstudentene som utfører prosjektet ved Universitetet i Bergen, er de eneste som vil kjenne din identitet. Faglærere og forskere vil ellers ikke vite hvem du er.

Hva skjer med dine opplysninger når designprosjektet avsluttes? Prosjektet vil etter planen avsluttes 1. juli 2025. Etter prosjektslutt vil datamaterialet med dine personopplysninger anonymiseres. Koblingen mellom ditt navn og dine transkriberte uttalelser vil bli slettet, og det vil dermed være umulig å knytte ditt navn til uttalelsene.

Hva gir oss rett til å behandle personopplysninger om deg? Vi behandler opplysninger om deg basert på ditt samtykke. På oppdrag fra Universitetet i Bergen har SIKT – kunnskapssektorens tjenesteleverandør vurdert at behandlingen av personopplysninger med de prosedyrene vi bruker er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Kontaktpersoner

Hvis du har spørsmål til prosjektet, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:

- Studentgruppen som er ansvarlig for gjennomføringen av undersøkelsen:
- Professor som har det overordnede faglige ansvaret for undersøkelsen kan kontaktes på
Personvernombudet ved Universitetet i Bergen kan kontaktes på personvernombud@uib.no.

Hvis du har spørsmål til vurderingen som er gjort av personverntjenestene fra Sikt, kan du ta kontakt via e-post: personverntjenester@sikt.no eller telefon: 7398 4040.

Med vennlig hilsen

Ansvarlig student og faglig ansvarlig professor

Samtykkeerklæring

Jeg har mottatt og forstått informasjonen om designprosjektet "UI-Luna», og har fått anledning til å stille spørsmål. Jeg samtykker til at å delta i:

- o Intervju
- o Gruppeintervju
- o Spørreundersøkelse
- o Brukertesting
- o Observasjon

Jeg samtykker til at opplysninger om meg behandles frem til prosjektet er avsluttet.

(Navn med blokkbokstaver)

(Signatur, sted, dato)