

ZHAW School of Engineering  
Bachelor of Science in Computer Science  
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# Lernello – Project Sketch

Learn smarter, not harder

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## 1. Initial Situation

In the business world, instructors and their trainees face considerable challenges in the efficient organisation and delivery of training programmes. The digital tools currently available on the market often lack comprehensive features and personalisation, forcing businesses to invest excessive time and resources in creating multimedia learning content and quizzes. This situation highlights the need for a solution that simplifies content creation while ensuring tailored training experiences.

## 2. Idea

Lernello offers a training environment specifically designed for instructors of all kinds. The instructor can create Learning Kits (LKs) containing interactive learning units (LUs) and flashcards. The Artificial Intelligence (AI)-based assistant can then automate the generation of these components. As shown in Figure 1, a key feature of the LK is the inclusion of checkpoints to ensure that trainees cannot skip sections and are forced to fully engage with the content.

The screenshot shows a web browser window for 'Chrome' with a search bar. The main content area displays a 'Learning Units' section with three items: 'Introduction Theory', 'Checkpoint', and 'Flashcards'. Each item has 'Edit', 'Preview', and 'Delete' buttons. Below this is a 'Trainees' section listing 'Tim' with 'Invite' and 'Remove' buttons, and a '+ Add participant' button. The 'Context' section contains files 'Some File.pdf' and 'Another File.pdf' with 'Download' and 'Detach' buttons. There is also an upload field with an upward arrow icon. The 'Settings' section at the bottom has 'Publish' and 'Delete course' buttons.

Figure 1 - Creation of Learning Kit for Instructor

Source: own Presentation

Each LU is made up of components. These components may include Theory Blocks (TBs), Quiz Blocks (QBs) and Multimedia Blocks (MBs) (see Figure 2). An LU can be fully generated by AI or manually assembled by the instructor, component by component. The AI creation wizard can assist with the generation of components in manual mode. The instructor can then review and edit these components as required.

Once completed, the instructor provides the trainee access to the LK via a link. Regardless of the trainee's self-learning ability, they are guided through the structured LKs and can be trained in an intelligent and efficient manner.

Finally, the Statistics view allows the instructor to analyse the progress of the trainees and identify difficulties in the training topics. If necessary, the instructor can modify the content with the help of the AI Modification Assistant to improve the learning process for the trainees.

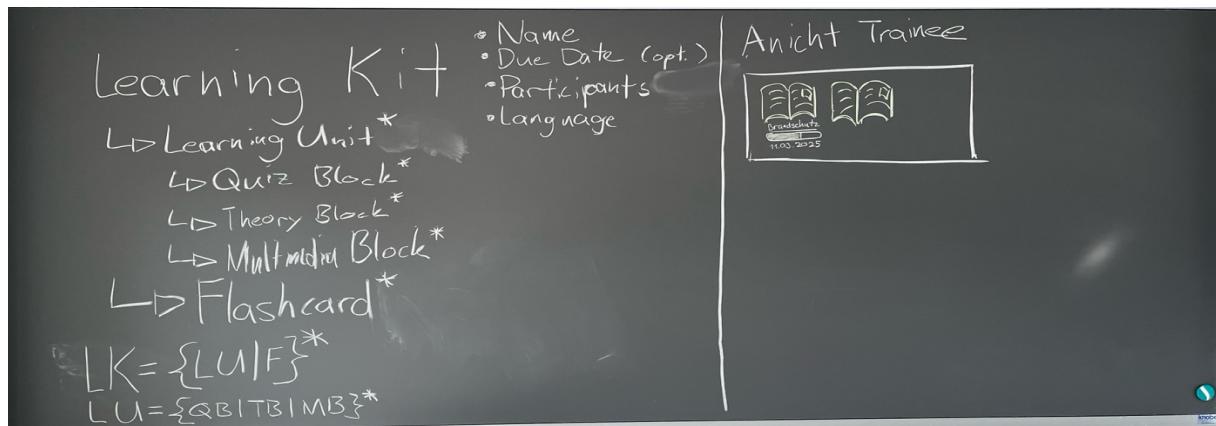


Figure 2 - Learning Kit content

Source: own presentation

### 3. State of the Art / Competition Analysis

In today's market, a variety of Learning Management System (LMS) aim to streamline corporate training and improve employee learning. Notable competitors include Kahoot [1], Connecteam [2], TalentLMS [3], and 360Learning [4]. However, Lernello stands out by offering a more comprehensive and integrated experience, specifically designed for B2B training and addressing the challenges outlined in the initial situation.

For example, Kahoot focuses on quiz-based learning in a gamified environment that enables real-time participation and collaboration [1]. While it effectively engages users through interactive quizzes, it does not mention advanced AI-driven content generation or the ability to automatically transform provided files into training modules [5].

In contrast, both Connecteam and TalentLMS take a broader approach to workforce and learning management. Connecteam integrates scheduling, communication and training capabilities into one platform, providing employee onboarding solutions that streamline day-to-day operations [2]. Connecteam highlights features such as easy content creation and assignment, but does not mention advanced AI-driven quiz creation or real-time performance analytics [6]. Similarly, TalentLMS emphasises ease of use, offering folder authoring, user management and reporting features in a streamlined interface [3]. On a sub-page, TalentLMS demonstrates how quickly content can be created and delivered, although there is no mention of dynamic analytics that can adjust training materials based on individual performance [7].

360Learning emphasises peer-to-peer collaborative learning, encouraging team-based content creation and knowledge sharing [4], [8]. While it emphasises the value of collective engagement, it lacks mechanisms for personalised feedback or AI-generated assessments, limiting its ability to provide fully customised learning experiences.

The key advantage of Lernello is its integrated approach, combining AI-powered content generation, interactive quizzes and robust analytics in a single platform. By providing features such as flashcard-based reinforcement, like popular learning platforms such as Quizlet, and real-time customisation, Lernello addresses the limitations of existing LMSs. This focus on collaboration and personalisation makes it an optimal choice for modern B2B training environments, enabling organisations to streamline their training processes and increase learner engagement.

## 4. Context Scenario

### Context Scenario Instructor



<b>Name:</b>	Sara
<b>Age:</b>	32 years old
<b>Work:</b>	HR manager at a mid-sized company in Zurich
<b>Expertise:</b>	Good with computer
<b>Goal:</b>	Developing a comprehensive training programme about the company's safety protocols. Her objective is to create an intuitive programme that not only meets regulatory requirements but also effectively engages employees.
<b>Precondition:</b>	She already has used the Lernello platform before and already has a personal login

Figure 3 - Persona: Sara

Source: generated by Dall-E

Upon logging in with her company credentials, she is greeted by an intuitive interface displaying existing folders. Sara uploads all the company-specific safety documents to a newly created folder to provide the necessary content foundation. (see Figure 4).

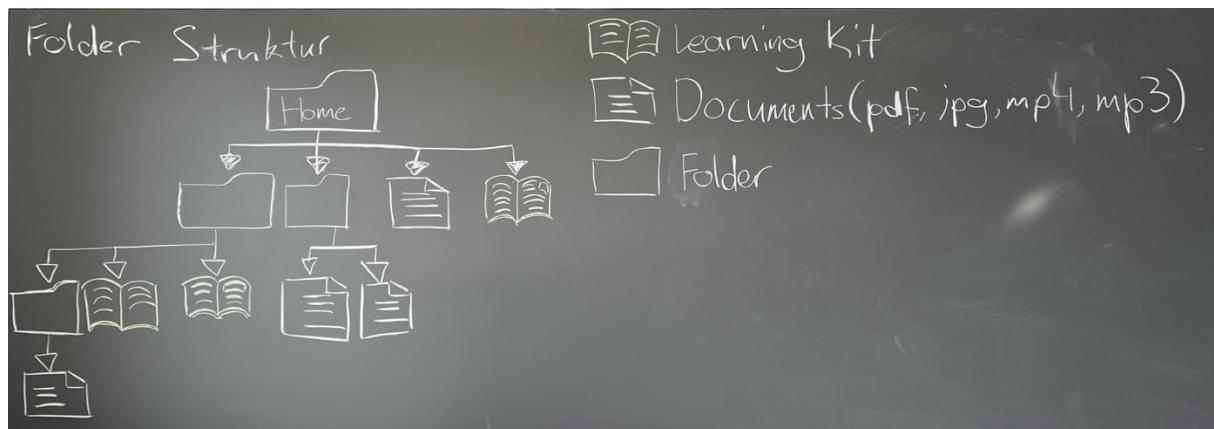


Figure 4 - Possible Folder Structure

Source: own Presentation

In the next step, Sara creates a new LK so that she can organise her LUs and deliver structured training programs to her trainees with ease and clarity. The platform prompts her to enter a name, a description and choose a default language. Following the creation of the LK, the platform offers to either create a new LU or a flashcard. Sara creates a new LU by assigning it a name.

After clicking the creation button, the platform displays an empty LU, which can be edited manually or with the help of the AI Creation Assistant. Sara chooses the AI option, which automatically generates a comprehensive and tailored LU from the uploaded training content, allowing her to significantly reduce the time and effort spent on manual LU creation while ensuring the content is engaging and relevant to her trainees. The system then analyses the uploaded content and automatically generates a draft LU that includes a structured layout with various components (TB, QB, MB).

She then selects all the content she wants her trainees to study and modifies some of the content she thinks is not so engaging. The platform also offers enhancements through embedded multimedia elements like videos, graphics, and audio, enriching the learning experience (See in Figure 5).

Figure 5 - UI of the Creation of a LU for an Instructor

Source: own Presentation

Prior to finalising the LK, Sara establishes a completion deadline, thereby allocating a period of one month for the trainee to complete the training. She then deploys the LK by selecting members from the company's database and publishes the folder. Participants are then sent an email with a link to access the new LK.

Three weeks later, Sara logs back into Lernello to assess her trainees' progress. By navigating to the statistic tab, she can review individual performance, including question attempts and success rates. Noticing that all team members struggled with a particular block, she utilises the AI Modification Assistant to adjust the problematic sections. This data-driven approach enables her to continuously improve the LK and address knowledge gaps effectively.

Over time, Sara observes a marked improvement in her team's performance and engagement with the training material. Sara's efforts are well-received by her superior, who is pleased with the outcome of the training program.

### Context Scenario Trainee



Figure 6 - Persona: Max

Source: generated by Dall-E

<b>Name:</b>	Martin
<b>Age:</b>	56 years old
<b>Work:</b>	Long-standing member of staff at a logistics company in Bern
<b>Expertise:</b>	Max does not consider himself to be particularly proficient with computers
<b>Goal:</b>	needs to attend some trainee program about the company's safety protocol
<b>Precondition:</b>	received an email invitation to participate in a company's safety programme. The email includes a link, his email address, which is needed for logging in, and a single-use password to access the program on the company's platform.

Despite his extensive experience, he approaches this training with some concern. He clicks the link in the email and, upon his first login, is prompted to set a personal password for security reasons. After updating his credentials, he is pleasantly surprised by the intuitive UI.

Max appreciates the platform's straightforward design, like the highlighted section for the most urgent LKs on a centralised dashboard, which allows him to easily navigate, access training content, prioritise tasks, and monitor his progress. When opening an LK, he can view a list of associated LUs or flashcards. By the end of the training, Max has gained a deeper understanding of the company's safety protocols. The process has not only reinforced his knowledge but also motivated him to continue studying with this accessible platform. This positive experience has left Max feeling reassured and motivated to engage in future learning opportunities.

## 5. Additional Requirements

Lernello has a strong foundation with its core features, enabling instructors to create structured folders, track trainee progress, and offer LKs, including LUs and flashcards. However, as the product evolves, additional features and refinements will be necessary to ensure it remains competitive, scalable, and adaptable to the changing needs of businesses and learners. Below are potential future developments categorised by their expected implementation timeline.

### 5.1. Near-Term Enhancements (post PM4)

These enhancements would improve usability and functionality, ensuring a more structured and customisable learning experience:

- **Exam mode for LKs:** A dedicated mode where quiz solutions are hidden, a grading system is implemented, time limits are enforced, and retry attempts are restricted.
- **Trainee grouping/labelling:** Instructors can quickly organise trainees into groups (e.g., departments or teams) for easier folder assignments.
- **Advanced folder organisation:** Folders can be categorised into nested folders or labelled for better content management.
- **Real-time learning kit translations:** A feature allowing trainees to instantly translate LKs, removing language barriers in multinational teams.
- **Curated learning kit translations:** Instructors can create multiple language versions of a LK to ensure clarity for non-native speakers.
- **Statistics on folder level:** Instead of viewing progress per LK, instructors can analyse performance at the folder level.
- **Trainee personal progress statistics:** Trainees gain insights into their own learning progress, fostering motivation and self-improvement.
- **Instructor visibility into individual trainee progress:** Allows better mentorship by tracking individual trainees' performance across multiple folders and LKs.
- **Personalised learning experience:** Features such as AI-powered chatbots or adaptive learning recommendations could tailor content based on trainee progress and needs.
- **Additional learning kit types:** Expansion beyond quizzes and flashcards to include summary-based Ls and specialised content delivery methods.

### 5.2. Mid-Term Enhancements

These features will enable greater organisational flexibility, user autonomy, and broader enterprise applications:

- **Product website:** A website allowing organisations to sign up, view pricing information, and manage accounts without direct sales intervention.
- **Organisation level sign-ups:** A new user role, the "Organisation Admin," allowing companies to sign up for Lernello and manage their instructors without requiring manual intervention.
- **Sub-organisations for large enterprises:** Enterprises with multiple departments or subsidiaries can create and manage sub-organisations under a single umbrella.

### 5.3. Long-Term Vision

To establish Lernello as a fully-fledged, scalable, and flexible SaaS offering, the following developments would be crucial:

- **B2C market expansion:** Individual users can sign up, create personal folders and flashcards, and use Lernello as a self-paced study platform.
- **Third-party integrations:** Sync due dates and learning schedules with tools like Google Calendar or Outlook.
- **Lernello as an API:** Offering Lernello as a third-party integration for other software and developers.

## 6. Resources and Planning

The successful development of the features outlined in Chapter 2 will require the input of a team of eight individuals, each bringing specific skills and expertise to the project.

### 6.1. Team

The team consists of eight ZHAW trainees. All members are in the fourth semester of their bachelor's degree in computer sciences and have diverse backgrounds and experiences prior to starting their studies. Each member is a full-stack developer and will contribute to both front-end and back-end aspects of the project, ensuring a well-rounded and collaborative approach to development.

Additionally, the members will have the following additional responsibilities:

- **Léon Brodbeck:** As the **product owner**, Léon is responsible for defining the product vision, managing the product backlog, and prioritising tasks.
- **Arnel Deomic:** As the **scrum master**, Arnel's primary responsibility is to facilitate the Scrum process, remove impediments, and ensure the team adheres to Agile principles.
- **Hajir Ismaili:** Hajir's responsible for automating build tasks and streamlining the development environment.
- **Michal Johnson:** Michal's responsibility covers back-end development, with responsibility for determining the most appropriate architectural patterns and refactoring where necessary.
- **Julian Maag:** Julian's responsibility includes overseeing testing and quality assurance. He is reviewing and supervising tests written by team members.
- **Thunusan Rajadurai:** Thunusan is responsible for the documentation of all technical details, user guides and project wikis.
- **Josias Ribi:** Josias has the most experience in software development. He will be responsible for product design and our expert-to-go for any technical uncertainties or challenges faced by the other team members.
- **Antonio Verdile:** As a member of the trainee organisation Alias, Antonio will leverage his connections to establish official collaborations with ZHAW and other partners.

All team members have experience in object-oriented programming, especially in the Java programming language. For this reason, we will be using Java 23 for the backend and Java Script for the frontend. To facilitate collaboration and ensure a smooth workflow, we will adopt a Scrum[9] methodology, using Git for version control and Kanban Board for task management. This structured approach will help us stay organised and ensure timely delivery of project milestones.

## 6.2. Roadmap

Based on the prototype, the identified user stories and the team composition, we estimate that the total effort will be approximately 960 person-hours (ph). This estimate has been calculated with consideration for the complexity of the functionalities, the technologies to be used, and the experience level of the team members. As outlined in Table 1, the roadmap for the prototype's basic functionality is 14 development days. The development process will adhere to the Scrum framework, with six sprints dedicated to delivering features that are user story oriented. The following user stories have been identified in an initial analysis, and the story points are estimated in a team for each sprint iteratively:

### Instructor and Trainee US (ITnr.)

1. Login for Trainees and Instructors (5)
2. Password Reset (3)
3. Internationalisation (2)

### Trainee US(Tnr.)

1. Trainee Registering (3)
2. Display LKs as a Trainee (3)
3. Work through LK as a Trainee (5)

### Instructor US (Inr.)

1. Folder Structure (5)
2. Navigate through the UI as Instructor (5)
3. Create LK (5)
4. Upload Training Documents (8)
5. Create LU (3)
6. Creating a TB (2)
7. Creating a QB (3)
8. Creating a MB (3)
9. Choose LK Participants (2)
10. Manage Participants (Add/Remove) (3)
11. Preview LK (2)
12. AI-generated LU (8)
13. AI-generated QB (3)
14. AI-generated TB (2)
15. Manage Participants (Add/Remove) (3)
16. View Basic LK Statistics (8)

Sprint	Start	End	Planned [ph]	Actual [ph]	Goal
<b>Intro</b>	17.02.25	02.03.25	135		<ul style="list-style-type: none"> <li>- Development environment set</li> <li>- Further requirements defined</li> <li>- UI paper prototype available</li> </ul>
<b>1</b>	03.03.25	17.03.25	135		<ul style="list-style-type: none"> <li>- Architecture verified</li> <li>- start with daily standups (3x/week)</li> <li>- Retro #1</li> <li>- US: <b>I1, T1, I1, I2, I3, I5</b></li> </ul>
<b>2</b>	17.03.25	31.03.25	135		<ul style="list-style-type: none"> <li>- US: <b>T2, T3, I4, I6, I7, I8</b></li> <li>- Retro #2</li> <li>- Demo #1</li> </ul>
<b>3</b>	31.03.25	14.04.25	135		<ul style="list-style-type: none"> <li>- US: <b>IT2, I13, I15</b></li> <li>- Demo #2</li> <li>- Retro #3</li> </ul>
<b>4</b>	14.04.25	28.04.25	135		<ul style="list-style-type: none"> <li>- US: <b>IT3, I9, I10, I11</b></li> <li>- Demo #3</li> <li>- Retro #4</li> </ul>
<b>5</b>	28.04.25	12.05.25	135		<ul style="list-style-type: none"> <li>- US: <b>I16, I12, I13, I14</b></li> <li>- Demo #4</li> <li>- Retro #5</li> </ul>
<b>6</b>	12.05.25	19.05.25	135		<ul style="list-style-type: none"> <li>- Final prototype</li> <li>- Clean up code + update Javadoc</li> <li>- Retro #6</li> </ul>

Table 1 - Roadmap

Source: own presentation

## 7. Risks

Risk management is essential to ensure the successful development and deployment of *Lernello*. This chapter identifies potential challenges that could impact the project and outlines strategies to mitigate them effectively.

### 7.1. Identified Risks

This section outlines key risks in development, deployment, and adoption. Table 2 categorises them by **severity** and **likelihood** to facilitate effective prioritisation.

#### *AI Performance Risks*

The AI-generated content in *Lernello* may not consistently meet quality expectations. This can result in inaccurate, overly simplistic, or contextually inappropriate learning materials. If the AI fails to interpret complex training content correctly, instructors may need to spend significant time reviewing and adjusting outputs, thereby diminishing the intended efficiency gains.

#### *Technical Risks*

The team members possess limited experience with the new coding environment from application to web application, which may result in delays or difficulties in correctly integrating it into the new platform. Insufficient proficiency in the new coding language may result in inefficient and malfunctioning code, which will take more time to debug and refactor, potentially leading to delays in release.

#### *Scalability Risks*

Large data inputs from users, such as extensive training materials or complex documents, can slow down AI processing, resulting in content generation and analysis. This may negatively impact the user experience, especially in real-time interactions.

		Severity		
		Marginal	Moderate	Critical
Probable	Technical risks			
Occasional		Scalability risks	Ai performance risks	
Improbable				

Table 2 - Risk assessment matrix

Source: own presentation

## 7.2. Risk Mitigation Strategies

For each identified risk, appropriate mitigation strategies are defined. These strategies aim to reduce the probability of occurrence or minimise the impact, ensuring the project remains on schedule and maintains high-quality standards.

### AI Performance Risks

To improve AI-generated content quality and accuracy, the following mitigation strategies will be implemented:

- **Continuous instructor feedback:** Establish regular feedback loops with instructors to promptly identify and address weaknesses in AI-generated content.
- **Simplified instructor editing:** Ensure that manual adjustments to AI-generated content are intuitive and efficient, enabling instructors to make quick modifications with minimal effort.
- **Adaptive AI model selection:** If inaccuracies become significant, consider transitioning to a more advanced AI model, prioritising AI reliability as a core platform feature, even if it entails higher costs.

### Technical Risks

To mitigate challenges associated with the team's experience with new technologies, the following measures will be taken:

- **Structured training modules:** Developers will complete comprehensive tutorials for all new technologies to establish foundational knowledge before implementation.
- **Example code:** *Josias Ribi*, as the *expert-to-go*, will provide example code for interface communication between different technologies to accelerate development.
- **Support through AI and experts:** Leverage development tools such as GitHub Copilot and other Large Language Models (LLMs) to address coding challenges. If these tools do not provide adequate solutions, *Josias Ribi* will be available for direct consultation.

### Scalability Risks

As the full extent of scalability issues is not yet fully defined, specific mitigation measures will be determined following initial compliance tests. However, potential strategies include:

- **Data preprocessing optimisation:** Implement AI-driven preprocessing to segment large data inputs, enabling content creation to process smaller data portions for improved efficiency.
- **Input file size limitations:** Impose file size limits to prevent excessively large documents from overloading the system and slowing down AI analysis, ensuring consistent responsiveness under heavy workloads.
- **Selective data filtering:** Optimise processing by excluding non-essential data in PDFs, such as metadata, legal disclaimers, redundant headers/footers, and tables of contents. Additionally, ignore **non-informative images** (e.g., logos, decorative graphics) to enhance AI performance, accepting minor data loss. Instructors can manually reintroduce relevant images if necessary.

## 8. Economics

### 8.1. Cost-Benefit Analysis

A thorough cost-benefit analysis has been conducted, outlining the various development and operational costs, as well as the anticipated benefits and revenue streams. This analysis will assess the platform's capacity to attain financial sustainability and growth.

#### *Cost Considerations*

Developing and maintaining Lernello involves several direct and indirect costs, categorised as follows:

#### 1. Development costs

The development of Lernello involve several direct and indirect costs. The primary expense stems from personnel costs, as the team of eight developers will collectively contribute approximately 960 person-hours over six sprints. Assuming an hourly rate of 31.50 CHF per developer, the total cost amounts to 30'240 CHF.

Beyond salaries, infrastructure expenses such as hosting, database management and AI processing are estimated at 500 CHF, while licensing fees for third-party APIs, AI-driven analytics and multimedia processing tools are projected to reach 1'000 CHF.

#### 2. Operational costs

Operational costs include data security measures to comply with GDPR and Swiss data protection laws, which may require legal consultations costing around 1'000 CHF. Additionally, marketing efforts such as website development, social media outreach and business networking will require an investment of approximately 3'000 CHF to attract early adopters.

Looking beyond the initial launch, maintenance and future scaling efforts, including bug fixes, feature updates and server expansion, are expected to add another 3'000 CHF per year to operational costs.

#### 3. Opportunity costs

Another important consideration is opportunity costs. Each team member is committing their time to this project instead of other potential freelance or trainee work, which represents a loss in alternative earnings. While difficult to quantify, this must be acknowledged as an implicit cost of development.

#### *Projected Benefits*

Lernello's monetisation strategy relies on a combination of subscription-based pricing, enterprise licensing and premium AI feature add-ons. Under a subscription model, businesses would pay a monthly fee of **50 CHF** per instructor account, with the price scaling based on company size.

Alternatively, a one-time enterprise licensing fee of **10'000 CHF** could be offered for companies that prefer a non-subscription approach. Additional revenue could be generated through premium AI-driven features, such as enhanced analytics, personalised learning paths, or integrations with existing corporate LMS platforms.

Assuming five mid-sized companies, each with 20 instructor licenses, adopt the platform within the first year, the annual revenue from subscriptions alone would amount to **60,000 CHF**. This number grows significantly as more organisations adopt the platform or opt for enterprise-wide licensing.

### *Break-Even Analysis*

Given an estimated initial investment of **35'740 CHF**, Lernello's financial outlook is promising. With a projected revenue of **60'000 CHF** in the first year, the platform is expected to break even within 12 months. Long-term sustainability is even more favourable, as additional clients would lead to increased profitability, enabling further development, enhanced features and expanded market reach.

## 8.2. Customer Values

The team at *Lernello* is developing an innovative software solution in collaboration with an external partner, a company that creates and distributes LKs. The goal is to optimise current processes, reducing costs and enhancing competitiveness in the long term.

Currently, f.e exams are created manually or using outdated tools, which is time-consuming and costly. For example, an exam with 100 questions currently takes around 100 hours of manual work[10], resulting in high labour costs of about 4'500 CHF [11].

Lernello addresses these issues with a core feature: AI-powered LU and flashcard creation. An exam with 100 questions, which previously took 100 hours, can now be generated in just a few minutes, saving approximately 95% in labor costs per exam. The software also allows for the customisation of exams to meet specific requirements. For instance, an exam tailored to a school's needs can be adjusted in 10 minutes.

Additionally, Lernello ensures standardised content creation across teams, even when multiple contributors are involved. This consistency improves scalability and collaboration, allowing seamless content expansion while maintaining internal quality standards.

By automating exam creation, the partner company saves an estimated 445'000 CHF annually, assuming it creates 100 exams per year. At the same time, production time is reduced by 99%, enabling faster market entry for new exams and higher revenue. In the long term, the solution strengthens the company's competitiveness and profitability by cutting costs and improving efficiency.

## 9. Outlook

After the completion of PM4, the primary goal is to transition Lernello from a prototype into a functional pilot project for a company we are already in contact with. This collaboration will serve as an opportunity to gather real-world feedback, refine existing features, and ensure that the platform meets practical business needs.

Our next steps will focus on enhancing the product based on user input and expanding its capabilities, particularly by implementing the **self-signup features** outlined in the Chapter 0. This will allow organisations to onboard themselves without manual intervention, making the platform more scalable and appealing to a broader customer base.

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## 13. Glossary

### A

**Assessment:** An assignment comprises a series of upcoming learning units that have been assigned to a trainee. It details the educational tasks and objectives that the trainee is expected to achieve soon.

**AI Creation assistant:** AI tool integrated into Lernello that helps instructors design and personalise learning units by suggesting content components like theory blocks, quiz blocks or multimedia blocks tailored to the uploaded training materials.

**AI Modification assistant:** A feature in Lernello that enables instructors to adjust and improve learning units based on participant performance data, addressing knowledge gaps and enhancing the overall training experience.

### C

**Checkpoints:** A checkpoint within a learning kit is an element ensuring that trainees cannot skip any blocks and must engage fully with the content in the learning kit.

### F

**Folder:** A folder can recursively contain another folder, and each folder can contain multiple documents or learning kits. This feature empowers the instructor to organise the learning materials according to their preferences. The trainee has no overview of the folders, it is only for the instructor.

**Flashcard:** Flashcards are study aids that consist of a card bearing information on both sides, used for memorisation and learning through active recall.

### I

**Instructor:** A user who has been granted the necessary permissions to create folders and learning kits, as well as to invite trainees to participate in these educational programmes. The instructor is responsible for personalising content that aligns with learning objectives, designing assessments, and facilitating the learning process.

**Super User:** A user with permissions to configure and administer the whole platform for the company. This involves overseeing system settings, managing user access, and ensuring the platform operates efficiently and securely. Super Users have the authority to implement changes, troubleshoot issues, and optimise platform performance, making them essential for maintaining the technological infrastructure.

### L

**Learning Management System (LMS):** A software platform used to create, organise and deliver educational or training content. It typically includes features such as folder authoring, user management, progress tracking and assessment tools that enable organisations to streamline and monitor the learning process for their users.

**Learning Kit (LK):** A learning kit is defined by a name (required), description (optional), default language (dropdown, required), deadline or start/end dates (optional) and participants (optional). The kit contains multiple elements, such as learning units and flashcards. The instructor has the option to publish a learning kit. The trainee will then have access to the learning kit and will study it.

**Learning Unit (LU):** A learning unit is given a name and may contain theory blocks, quiz blocks and multimedia blocks. These units are designed to engage trainees on specific topics.

## M

**Multimedia Block (MB):** A multimedia block is made up of different types of elements, such as embedded multimedia elements (videos, graphics and audio), which have the capacity to enrich the learning experience.

## O

**Organisation Admin:** A user role that allows companies to sign up for Lernello and manage their instructors without requiring manual intervention.

## Q

**Quiz Block (QB):** A quiz block comprises a series of concise assessments utilising multiple-choice, single-choice or true/false questions, thereby enabling the trainee to evaluate their knowledge.

## T

**Trainee:** A user engaged to develop the skills and knowledge required for a specific role or career path. The trainee must work through the learning units or flashcards within the learning kits provided to them.

**Theory Block:** A theory block is a segment of text that provides an explanation of the theory. Its purpose is to facilitate a more profound comprehension of the theoretical underpinnings of a particular subject for the trainee.

## 14. Annex

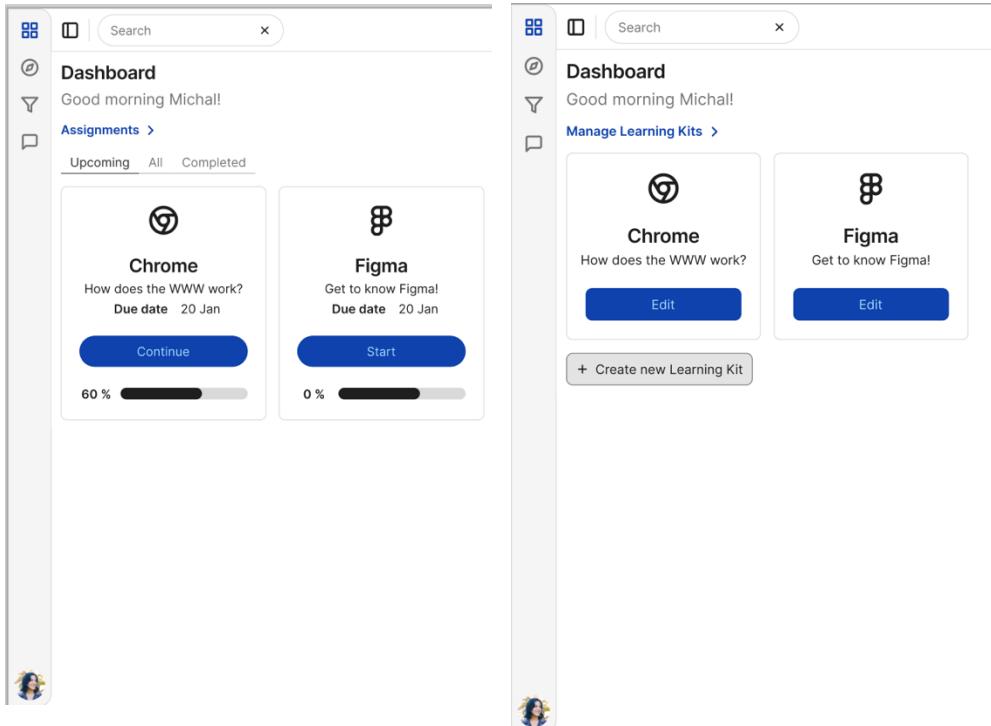


Figure 7 - Dashboard for a Trainee (left) / Instructor (right)

Source: own Presentation

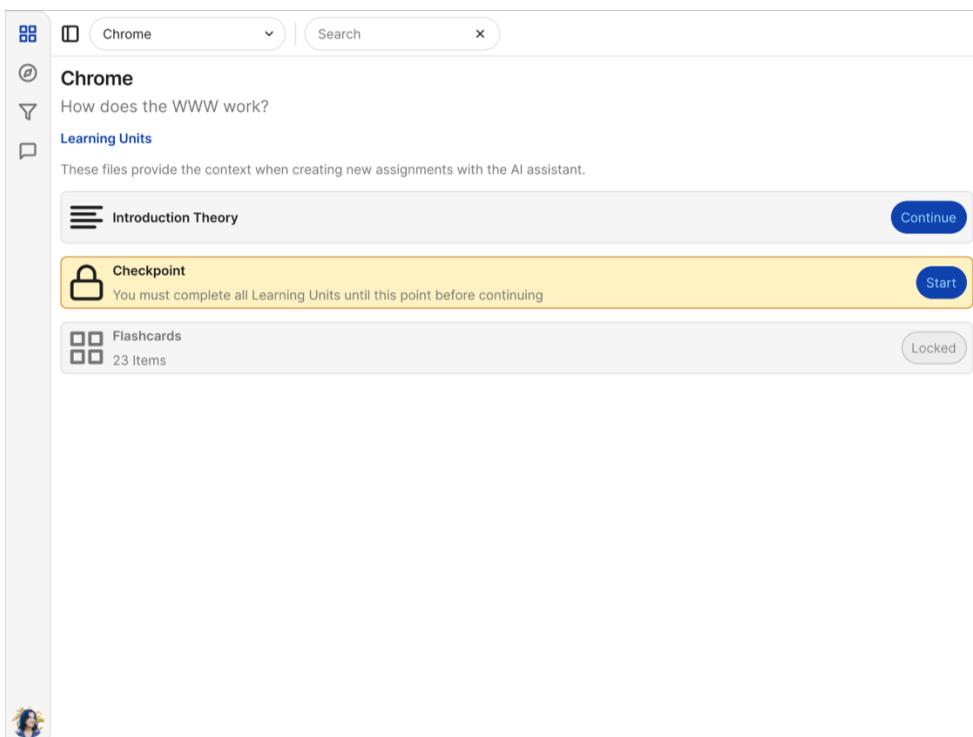


Figure 8 - Checkpoint in a Learning Kit (Trainee View)

Source: own Presentation

The screenshot shows a web-based learning application. At the top, there's a header bar with icons for refresh, back, forward, and search, followed by the title "Introduction Theory". To the left of the main content area is a vertical sidebar with icons for navigation and a user profile picture.

**Intro**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum

**Quiz Time!**

**Quiz Time!**  
Choose the right one!

**More theory**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum

**How old is the Chrome?**

Age

**Which browsers are awesome?**

Chrome  
Okay Google...!  
 Firefox  
It's Open Source!  
 Safari  
Apple made this!

Figure 9 - Learning Unit for the Trainee (Trainee View)

Source: own Presentation

**Chrome**

How does the WWW work?  
Feb 20, 4 pm

**Learning Units**

These files provide the context when creating new assignments with the AI assistant.

- Introduction Theory** (Edit, Preview, Delete)
- Checkpoint** (Edit, Delete)  
Trainees must complete all the above Learning Units, before gaining access to the rest.
- Flashcards** (Edit, Preview, Delete)  
23 Items

+ Create new Learning Unit

**Trainees**

These trainees have access to the course

- Tim** (Invite, Remove)

+ Add participant

**Context**

The context provided to AI assisting tools

- Instructions** (Edit)
- Some File.pdf** (Download, Detach)
- Another File.pdf** (Download, Detach)

Upload

**Settings**

Make changes to the course

Publish Delete course