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INCLUSION BY INTEGRATION: DESIGNING ONLINE TRAINING FOR NEW IMMIGRANTS AS FUTURE WORKFORCE CONTRIBUTORS TO FINNISH SOCIETY

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This design case describes three iterative development phases of online integration training design from 2015 to 2021. Online integration training is a public educational service for adult immigrants who are registered as unemployed in Finland. The learners are from diverse backgrounds, typically residing in sparsely populated areas or unable to attend classroom education for other reasons. Fully online and starting from language proficiency level zero, this full-time integration training design is among the first of its kind globally. Many participants had no prior experience studying online, and their digital skills varied widely. Initial impact expectations were low. This case illustrates how an accessible and collaborative online training design promotes inclusivity and agency in a new homeland. Development challenges between design iterations, particularly involving interaction among stakeholders, teacher workload, and learner engagement. The best design for learners wasn't necessarily the best for teachers, prompting compromises in design to ensure optimal functionality for all users. Results exceeded expectations in language and cultural learning outcomes and subsequent placements. Quality stemmed from the design's interactivity, attractiveness, practicality, shareability, and repeatability. The unique features of immigrants' online learning and the significant increase in immigration require further effective educational solutions in the future. Harnessing new technologies to respond to international workforce mobility and precisely coded co-design will enhance the effectiveness of online education services.

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Anita Hartikainen is a doctoral researcher whose work focuses on the organization of national integration training in Finland. Her research particularly examines online learning design and teacher competence in virtual learning environments.

Erkki Sutinen has been a Professor of Computer Science (Interaction design) at the University of Turku since 2015. He moved to Namibia in 2019 to set up the first overseas campus of the University of Turku, which was located until 2024 at the premises of the University of Namibia, in its main campus in Windhoek. Sutinen got his Ph.D. from the University of Helsinki in 1998, based on his research in string algorithms. In 1999-2015, he was a professor at the University of Eastern Finland (1999-2009 University of Joensuu), where he founded a research group in educational technology, hosting an online Ph.D. program, IMPDET. In 2010-12, he was the chief technical advisor of the 22 M€ STIFIMO science, technology, and innovation program in Mozambique. Erkki has been researching educational technology, Computing education, ICT4D, and co-design. He has supervised 35 Ph.D. students and co-authored approximately 400 papers. As an ordained Lutheran priest, his current interests include digital theology.

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INTRODUCTION

At the beginning of 2015, the Finnish Lapland Centre for Economic Development, Transport and the Environment (ELY) made a groundbreaking decision to purchase online integration training for immigrants. The training started in the Lapland region with three groups and similar training programs were later carried out in other Finnish provinces. The training was based on the Integration Act (Finlex, 2010), whereby all unemployed immigrants living in Finland for less than three years are provided with an integration plan and training. Finnish legislation mandates that the training must be accessible and equal (Finnish National Agency for Education = FNAE, 2012 and 2017), and teaching must be congruent throughout Finland. Integration training for adult immigrants is work-oriented training, which includes language and communication studies as well as skills related to work and societal functioning (FNAE, 2012; 2022).

This design case is part of a study that uses a design science research (DSR) approach to facilitate, describe and evaluate the design and development process (Hevner et al., 2004; Peffers et al., 2007). The artifact is developed in iterative cycles, where suitable user groups test and evaluate it in practice. The process is divided into three cycles: the Relevance Cycle inputs requirements from the contextual environment into the research and introduces the research artifacts into environmental field testing, the Design Cycle supports a research activity for the develop and evaluation of design artifacts and processes, and the Rigor Cycle provides grounding theories and methods, and adds the new knowledge generated by the research to the growing knowledge base (Hevner et al., 2004).

The work is based on the still ongoing educational design developed and implemented in 2015-2021 under study. A total of 630 people with 69 mother tongues from 191 (Figure 1) of Finland's 309 municipalities participated in the training (Haikala, 2019; Haikala & Kuja-Lipasti, 2021). This paper presents a description of the full educational artifact and the challenges arising during the iterative process of the training design, as well as the impacts of outcomes achieved by the participants.

In this design case we focus on the co- and re-design process of the online implementation from the training, and examine the technological, pedagogical and competence-based premises underlying the design. We are interested in the inclusive factors that support integration into society and the means adopted to create resource-wise online education.

The question that we asked continuously during the design cycle iterations was: "How do we create entirely online immigrant integration training that supports inclusion and integration?" The work presents a description of the short- and long-term changes between the design and the requirements of the Finnish environment, and examines how to choose options for content, methods, tools and pedagogies during the design and development process, in addition to what challenges were faced and how the challenges were resolved. The design case also considers the experiences and outcomes of participants.

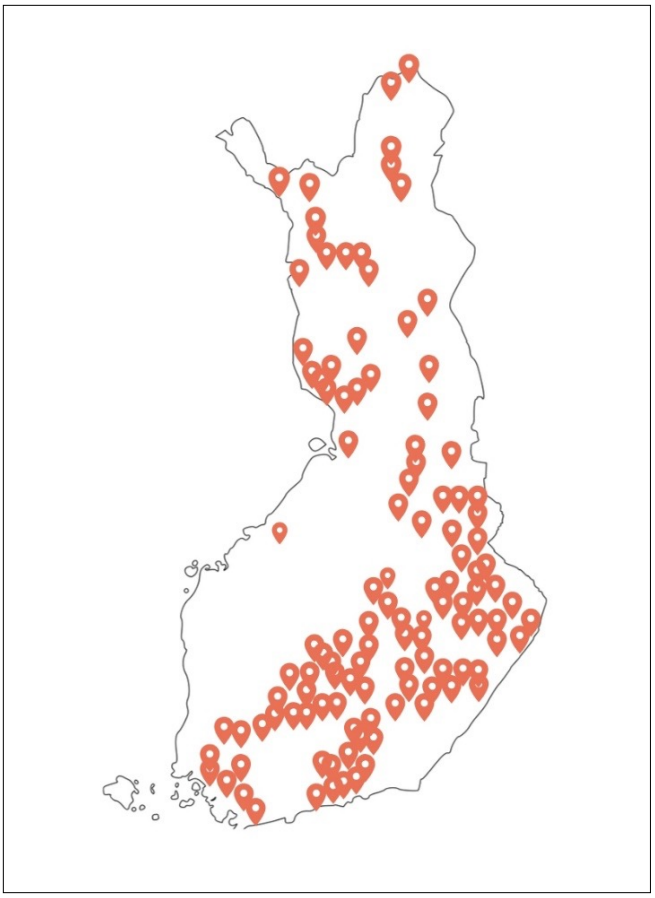

FIGURE 1. Online integration training has been organized in 191 locations in Finland.

DESIGN CONTEXT

The number of migrants in Finland is low compared to most European and Nordic countries. Consequently, Finland is rather inexperienced as a recipient country, and residence permit procedures are rigid compared to countries that have received immigrants for centuries (Zafar & Kantola, 2019). Unemployment rates among immigrants and people of immigrant background are considerably higher than those of the native population (Ahmad, 2020; Ministry of Economic Affairs and Employment of Finland = MEAE, 2020). Furthermore, the Finnish context is demanding in terms of integration compared to many other countries, not only because of the Finnish language, but also because social networking happens slowly in Finnish culture and Finnish society's receptiveness has been considered weak (Alho, 2020).

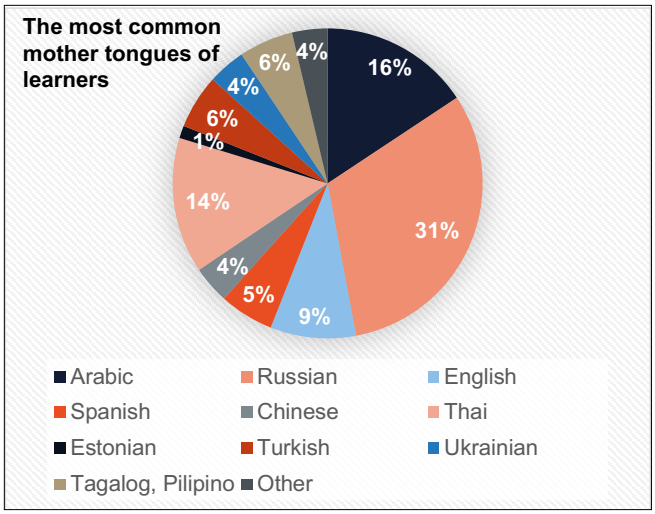

FIGURE 2. The most common mother tongues spoken by participants in the immigrant online integration training 2015-2021.

The learners who participated in the training under study spoke more than 20 native languages, the most common of which were Russian, Thai, Arabic, Chinese, Turkish, Tagalog or Pilipino, English, Estonian and Spanish (Figure 2; Haikala et al., 2019; Haikala & Kuja-Lipasti, 2021)1. The most common nationalities were Russian, Thai, Turkish, Syrian, Ukrainian, Filipino, American, Iraqi, Vietnamese and Chinese (Figure 3; Haikala & Kuja-Lipasti, 2021).

Finland represents a geographically extensive region characterized by low population density. It also stands out as a pioneering digital society, boasting the most extensive telecommunication infrastructure globally. Finland leads the way in the digitalization of governmental services (Ali-Yrkkö et al., 2023). Almost all public services in Finland are offered in a digital form. The reasons for this are the common civic skills of using digital services and functioning in the online environment.

ARTIFACT DESIGN

The Contents of Immigrant Integration Training

Integration training is based on a standardized curriculum and agreements between the financier and the service provider. Funding for integration training is allocated from the state budget, and until the end of 2024, the Centres for Economic Development, Transport and the Environment (ELY) have been responsible for procurement. The organization of integration training is governed by legislation (Finlex, 2010). Society is obligated to provide integration services. Public services, such as integration training in this case, are competitively tendered by educational service providers.

[1] The figures are indicative and descriptive because the education administration system changed, making it impossible to obtain precise numbers regarding participants' background variables.

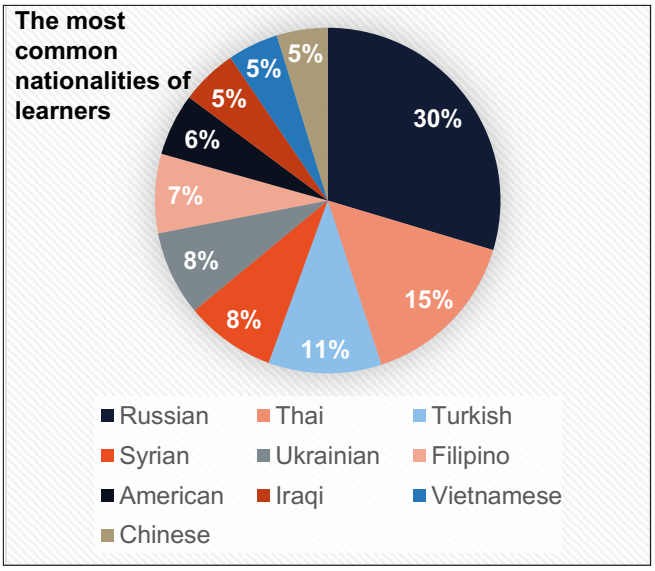

FIGURE 3. The most common nationalities of participants in the immigrant online integration training in 2019-2021.

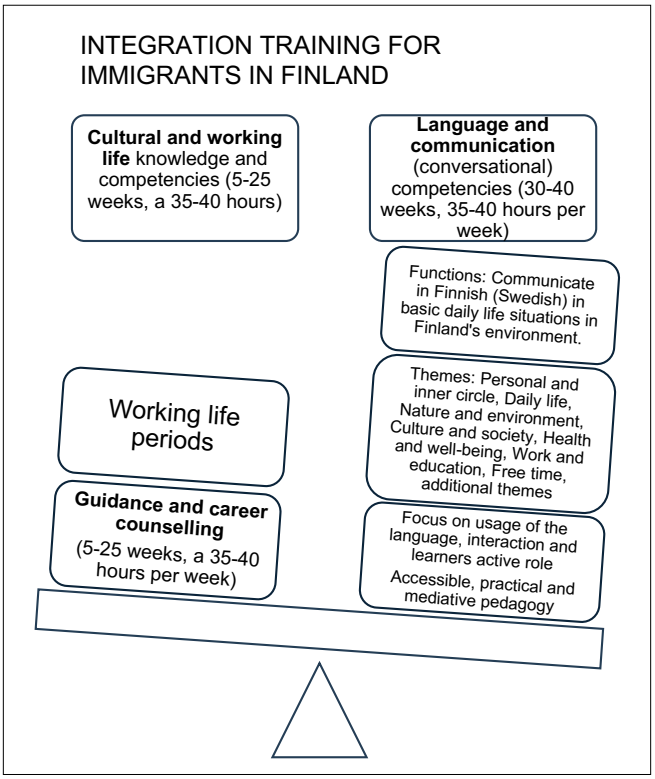

FIGURE 4. The contents of integration training based on the National Core Curriculum for Integration Training (FNAE, 2017/2012).

Proposals are evaluated based on the best price-quality ratio (Ruuskanen & Väänänen, 2022). If the education is successful, it is possible that additional training will be procured from the same service provider.

In Figure 4, the components of integration training are presented. The education includes 5-25 weeks of studies in cultural and working life knowledge and skills, full-time at 35-40 hours weekly, as well as 30-40 weeks of language and communication studies, also at 35-40 hours per week.

In cultural and working life studies, in addition to group-based teaching and guidance, there are also work placements and personalized career counselling. Working life knowledge refers to cultural practices and norms that must be considered in Finnish workplaces, in addition to professional skills. Examples in Finland include adhering to strict schedules, hygiene requirements and industry-specific collective agreements. The goal of language and communication studies is to learn to communicate in Finnish or Swedish in everyday life and in the workplace in Finland, integrate into the new language and cultural environment, and lead a balanced and sustainable life in Finland. The themes of language and communication studies are aligned with the curriculum content, with varying emphases depending on the specific training. Learning is always designed to focus on practical language use, interaction and the active role of the learner. To create a design that encourages practical language use, both pedagogy and technology must be accessible, practical and consider mediation.

According to the National Core Curriculum for Integration Training (FNAE, 2017/2012), the emphasis in teaching lies on language usage skills, the interactive nature of language, and the active role of language learners. The starting point for training is meaningful and necessary text genres and language use situations, along with language awareness. Teaching focuses on conversation and interaction strategies, as well as sociolinguistic skills (Ruuskanen & Väänänen, 2022). These objectives are consistent across all regions in Finland. The curriculum guidelines provide a framework and recommendations for education funders and implementers, based on which detailed regional and institution-specific curriculum and implementation plans are developed. This flexibility allows practical implementation to consider regional characteristics. In this design case, functional learning objectives have been formulated for each topic area within the curriculum, enabling competency-based learning (micro-learning), such as dedicating one day to mastering a specific competency function.

Environment, Knowledge Base and Design

The Three-Cycle Model (Hevner, 2007) has been successfully applied in IT system research and design. Using this model (Figure 5), the elements of online integrated education that impact the design of teaching artifacts have been systematically identified and rendered visible. Environmental factors define the individuals involved in the artifact, the technology in use, its pedagogical applications, and the challenges where the environment significantly impacts the design. The knowledge base encompasses essential information related to research, learning culture, and national and European Union-defined frameworks. Teacher expertise and other participating specialists contribute to the knowledge base. Additionally, newly created artifacts and emerging expert knowledge are incorporated. The Relevance Cycle connects the environment and artifact design, while the Rigor Cycle links the knowledge base and design. The Design Cycle specifies the artifact's goals and the results affecting its evaluation and redesign.

Customer demands serve as the starting point for technological and pedagogical decisions in training design. The financier defines the framework for design, when allocating resources for teaching, guidance and available technology. The primary goal for all stakeholders is to promote employment. Despite limited funding, it is essential to develop resource-efficient design without compromising the learner's experience. Throughout the design process, considerations included perspectives from learners, teachers, organizational operations, and individual requirements.

The educators involved in the design process paid attention to the conditions set by organizational leadership and the financier. Otherwise, the teacher team had autonomy in designing the implementation of training and creating content based on the curriculum. Continuous dialogue was maintained among teachers, organizational leadership, and the financier.

Learning Contents for Artifact

The training focuses on competencies crucial for language, culture, communication, and employability. Table 1 (next page) outlines the curriculum-based competencies horizontally. The "Design Solution" row illustrates how the learning context for each competency was technologically shaped and implemented, along with the necessary technological elements and materials.

These solutions enable the development of speaking, writing, listening, and reading comprehension, as well as digital skills, in alignment with the requirements of the local business sector. They incorporate collaborative applications and technological choices favored by regional companies.

Technology facilitates visits to various organizations and networking with different stakeholders. Companies and visitors were supported in using technology, ensuring an accessible learning environment and interactive engagement with learners. Work internships focused on both skill acquisition and active language learning.

During working life (trainee) periods, technological solutions allowed diverse ways to document, save, and reflect on learning.

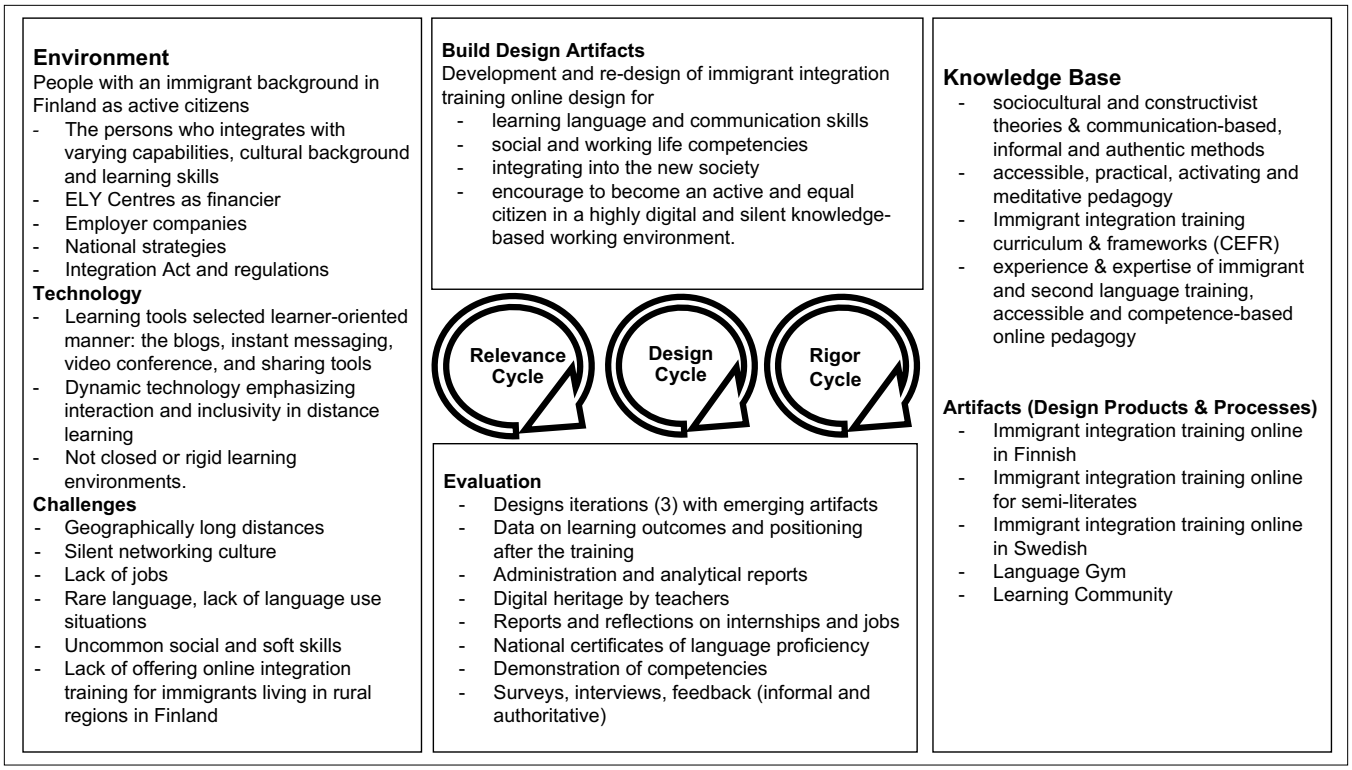

FIGURE 5. The online implementation of integration training presented in the form of an artifact according to Hevner's (2007) design cycle view.

.Initially, the designers based the process on their experiential understanding that training must be highly approachable without unnecessary login steps, especially in the absence of a common auxiliary language. They implemented anonymized course profiles to address privacy concerns. In 2015, fully online beginner-level full-time web-based learning was uncommon, and online learning experience was limited. The participant group included learners with low literacy skills and those unfamiliar with computers or online education.

To ensure equitable and engaging learning experiences, the designers chose not to use closed learning environments favored by universities, recognizing the need to support learners with weaker digital or study skills. This decision allowed participants to focus on mastering the learning content itself. The designers gradually introduced technology throughout the program, ensuring that by its conclusion, learners could independently complete tasks such as system logins.

The goal was regional and social activation, a sense of belonging, and successful integration. To optimize the use of participants' prior experience with the local business sector and technological applications, background information and technological practices were assessed before the training. Final decisions on technological choices were made only after identifying the professional field, potential recruiting company or industry, and the required skills.

Since pedagogical interaction in distance learning required video conferencing, group chat, and a website containing daily schedules and tasks, the standardized basic unit for training design from 2015 to 2021 became blog website and Skype (free version), and Adobe Connect. If a group had very low digital skills or literacy, only Skype and a web link to the schedule were used. In Skype chat, it was possible to create a chat flow with all the necessary information for learners using screenshot tools and video features.

Prerequisites for Learning in the Artifact

The design emphasized resource efficiency and accessible choices. Even if internet connectivity was poor or the required technologies for collaborative learning were not functioning, learners could still easily find out what tasks they needed to complete. For each group, a blog was created on a WordPress site under the group's name. Learners saved the blog link to their desktop and favorites, providing easy access from any device. The blog contained schedules, the current day's program prominently displayed on the homepage, small group compositions, tasks, teaching materials, archives of previous assignments and recordings, and teacher contact information. We referred to this website as the group's "home base".

The core principle of the design was to enable real-time interaction and collaboration through instant messaging, allowing seamless communication between individuals

and groups in a familiar, versatile, and secure manner for participants. Each student had a Skype profile with their chosen or invented name. The user interface was familiar and intuitive for students, but Skype was used exclusively for educational purposes, specifically to facilitate quick written or spoken interaction. Learners' perspectives were gathered through the group chat, individual chat with the teacher, and small group chats with other learners. From the teacher's viewpoint, Skype featured a shared teacher chat, smaller teacher team chats, the group chat, small group chats within the group, and individual chats with learners.

The essential learning space was the Adobe Connect (AC) virtual classroom, where the entire group engaged in discussions together. The group blog provided a direct link to the scheduled lesson. Teachers also sent the link via the group chat shortly before the session began. Teachers could use either a personal Adobe Connect classroom or, alternatively, "themed" classrooms based on topics. The latter was made possible by AC's layout function and preloading and storing audiovisual materials in the classroom. For example, there were separate AC classrooms for themes like weather, nature, food, household chores, education, professions, and going to the doctor topics. A notable design feature was the learning spaces in AC that enabled independent small groups and supplementary learning. These classrooms contained preloaded materials such as vocabulary and grammar exercises, authentic materials (e.g., news excerpts), dialogue and simulation exercises, images, and pair and small group tasks, all designed for learning the Finnish language. Thanks to the divisibility of the materials, differentiation was agile. Students could independently use these themed AC classrooms for practice, peer learning, and group work. The data for this design case was collected until 2021, when Zoom usage became more widespread among the artifact's users. Zoom's lightweight and agile nature contributed to its adoption. However, from the perspective of competency-based pedagogy, Zoom's weakness lies in its limited ability to create interactive learning environments within the platform.

As the study day was long, the design required diverse pedagogical solutions supported by technology. The fundamental principle was to provide each learner with an engaging and immersive way to study Finnish online. A carefully curated selection of applications created a cohesive structure for interaction within the training. To enhance engagement and variety, the instruction incorporated gamified learning and collaboration tools, such as Kahoot, Quizlet, Vocaroo, Audacity, Thinglink, Prezi, MindMeister, EtherPad, and Padlet. Teachers selected learning apps based on their preferences and the demands of the groups. For administrative purposes, teachers had access to a business-oriented office tool system. For assessment, the Administration of Employment Services administration offered two information systems (OPAL & ARVI).

DESIGN ITERATION PROCESS AND CO-DESIGN

Before launching the first training in 2015, the educational service provider conducted background research to ensure high-quality design and learning outcomes. Recognizing the challenges of developing interactive online training for immigrants, the provider hired experienced learning designers. At the start of the training, the Ministry of Economic Affairs and Employment (MEAE) and the Centres for Economic Development, Transport, and the Environment (ELY centres) consulted experts on whether online training could effectively support spoken language learning. The financier, ministry officials, and teachers expressed scepticism about the success of an online model, leading to cautious procurement decisions. Many believed that learning to speak Finnish online was impossible. A designer-teacher (Ahola) met with authorities to advocate for online training as a viable option, despite widespread doubts.

Alongside curriculum planning, the provider actively participated in customer acquisition, marketing, and national development efforts. The provider presented implementation proposals to ELY and MEAE officials, engaging in negotiations with education funders behind closed doors. These discussions covered legal conditions, regulatory requirements and detailed training implementation plans. The provider's management and teaching staff collaboratively analyzed negotiation notes, visually mapping out potential training models using sticky notes. During these discussions, they evaluated available financial resources, which influenced staff workload distribution, technological tool selection, and resource-efficient planning of interactive activities.

The employment administration and the service provider's monitoring systems assessed the design through official reporting methods, language proficiency exams, follow-up plans, and progress tracking. The teaching team tailored pedagogical and technological choices based on learners' previous experiences and skills. Teachers contacted participants to assess digital literacy, communication habits, and learning conditions before training began.

The design team structured the artifact by accounting for persistent and variable factors in the educational service (Table 2; Figure 6). They identified persistent factors at the start of the co-design process and monitored variable factors throughout the training. After each iteration, the team integrated new ideas and tested improvements in real-life learning situations. The iteration process generated new artifacts, methods, indicators and results, while also increasing learner competence, employment opportunities and inclusion.

The designers facilitated co-design sessions by inviting various stakeholders to participate, including teachers,

COMPETENCIES	SPEAKING	LISTENING COMPREHENSION	WRITING	READING COMPREHENSION	STUDY AND WORKING LIFE SKILLS AND NETWORKS	CREATIVE ACTIVITIES, REGIONAL AND NATIONAL CONNECTIONS	JOB SEARCH, WORKING LIFE	EFFECTIVE AND VARIED UTILIZATION OF ICT IN REAL-LIFE DIGITAL SKILLS CONTEXTS
Design solutions HOME (LANDING PAGE) web page (web link) containing the daily schedule, simplified routines, and links	Collaborative project tools with video call activity, breakout rooms and access for varying learning groups without registrations, easy access and recording *shared documents, performing shows, visitors, simulations, co-operative outputs, interface to real life: messaging and networks.*	Auditive input for conversations. *Web pages, podcasts, vlogs, ebooks, authentic environment, speaking of teacher or classmate.*	Chat for daily life written conversations, reverse learning, sharing input of real-life *photos, ads, texts, links.*	Textual input for collaborative processing. *Web pages, blogs, ebooks, authentic environment: documents, rules, signs, ads, info, messages.*	Real-time interactive video call tool for guidance, easy for small groups and teachers to join in, shift and move off. Sharing function for everyone.	Interactive ICT etiquette for contact between real-life learners. ICT-mediated visits, tours, trips, and meetings with bridgebuilders, matchmakers, and activators in work life and society. Documents, invitations, simulations, calls, contacts, free time activities, volunteers, local contacts.	Technologically supported (one or multiple) periods at the workplace, 6 weeks (40 hours a week). *Language trainee, internship (professional), work trial or apprenticeship, employment, entrepreneurship.* Design facilitates communication and collaboration with firms. It enables the observation, recording, reflection, evaluation, and utilization of experiences during and after training through digital diaries, portfolios, forms, videos, and visualization/verbalization (e.g., learning blogs, vlogs, presentations, and shows).	Flexible learning environments enable creative solutions, such as designing and decorating 'classrooms' for simulations and dedicated spaces for implementing learner-produced mini-courses and learners' own ideas and preferences. **Tools:** email, phone, blogs, chat activities (applications are listed in Table 3).

TABLE 1. Contents of the designed artifact.

learners, support staff, management and financiers. Teachers provided continuous feedback through daily observations and collected learner input throughout the training. Some participants directly contacted the designer or management during feedback and research interviews. The team incorporated all feedback into the design process, as detailed in the three iteration descriptions.

The financier (ELY) also gathered learner feedback using the OPAL survey system. The designer joined meetings with management and funders to analyze the feedback and refine the learning experience. These discussions focused on user-centred usability, training accessibility, and geographical challenges unique to government-funded online programs. The designer and management collaborated to

SEARCHING AND DEFINING OPTIMAL DESIGN	DESIGN 1 (D1)	DESIGN 2 (D2)	DESIGN 3 (D3)	METHOD
Persistent factors	Integration Act, contracts, curriculum, funding, CEFRl, DigiComp, ESCO, CEDEFOP, long-term study and career planning			Compliance with the law and frameworks, contract and discussion with the service funder, provider and user
Variable factors	Conditions: home as a learning environment, ergonomics, background, family situation, location, provider's and user's competencies and experience, tools, wifi, desire, requirements, motivation, affordability, regional culture, profession, education, language competencies			• Data collection • Data analysis • Mapping • Culturally aware problem-solving and re-design
Strengths	• Secure, systematic, solo-teaching, permanent invitation link, ease	• Flexible, motivated learners, co-teaching, varying invitation links, differentiation, ease for teacher (homogenous groups) • Allocated time for personal guidance, • tailored to accommodate user diversity, • opportunities for variation of interaction and social networks	• Secure, scalable • solo-teaching, stability, • varying joining link, • quick to prepare and manage, • ease for learner and teacher to deploy and apply, • common activities, • optimized for the average learner, • external IT and language support, • precisely structured interaction situations	
Critical points after the design version	• Desire for differentiation (competence-based learning, variable goals and professions), • long periods with one teacher (need to vary) pedagogical desires)	• User interface (UI): not intuitive before using, • difficult to instruct and induct, • complicated to coordinate	• Lack of differentiation, • inflexibility	

TABLE 2. Variable and persistent factors, strengths of design and critical points of design versions of online training artifact.

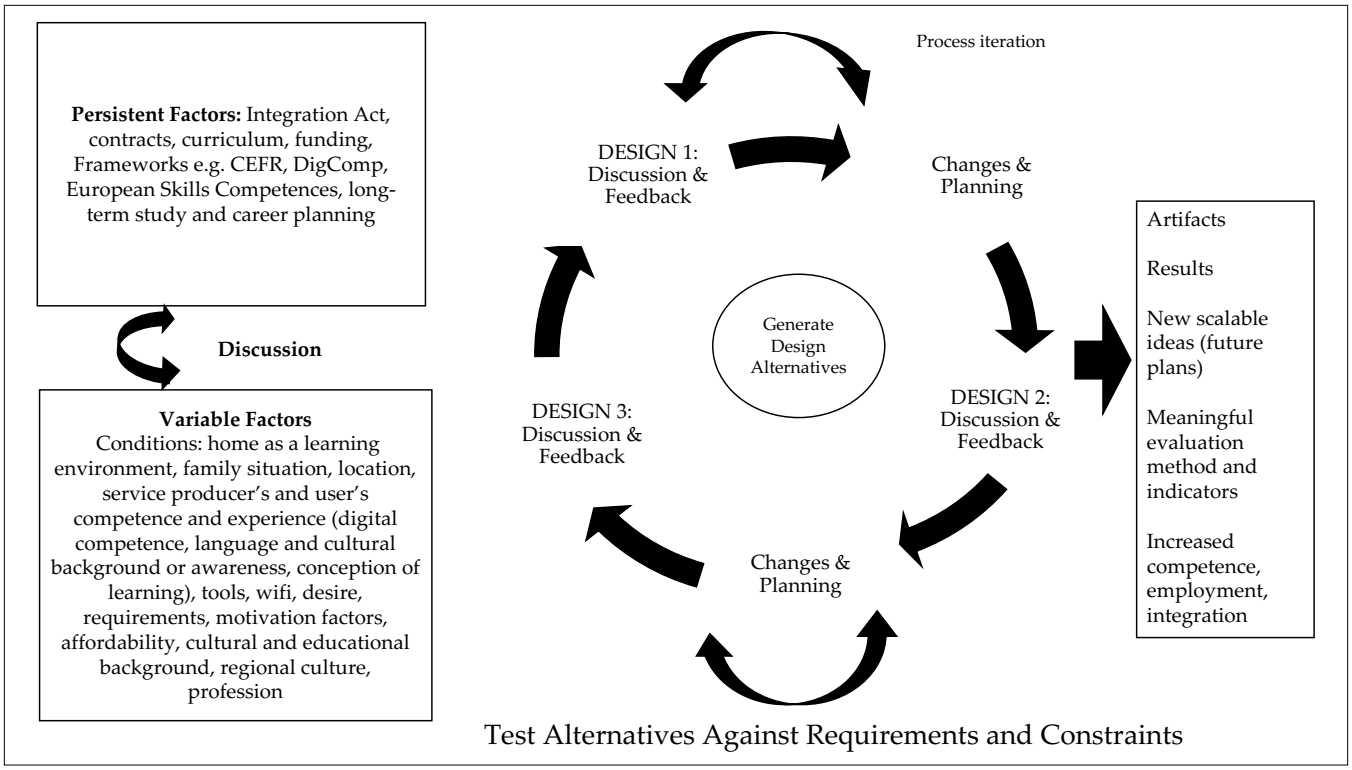

FIGURE 6. Design iteration process with variable and persistent factors and outcomes.

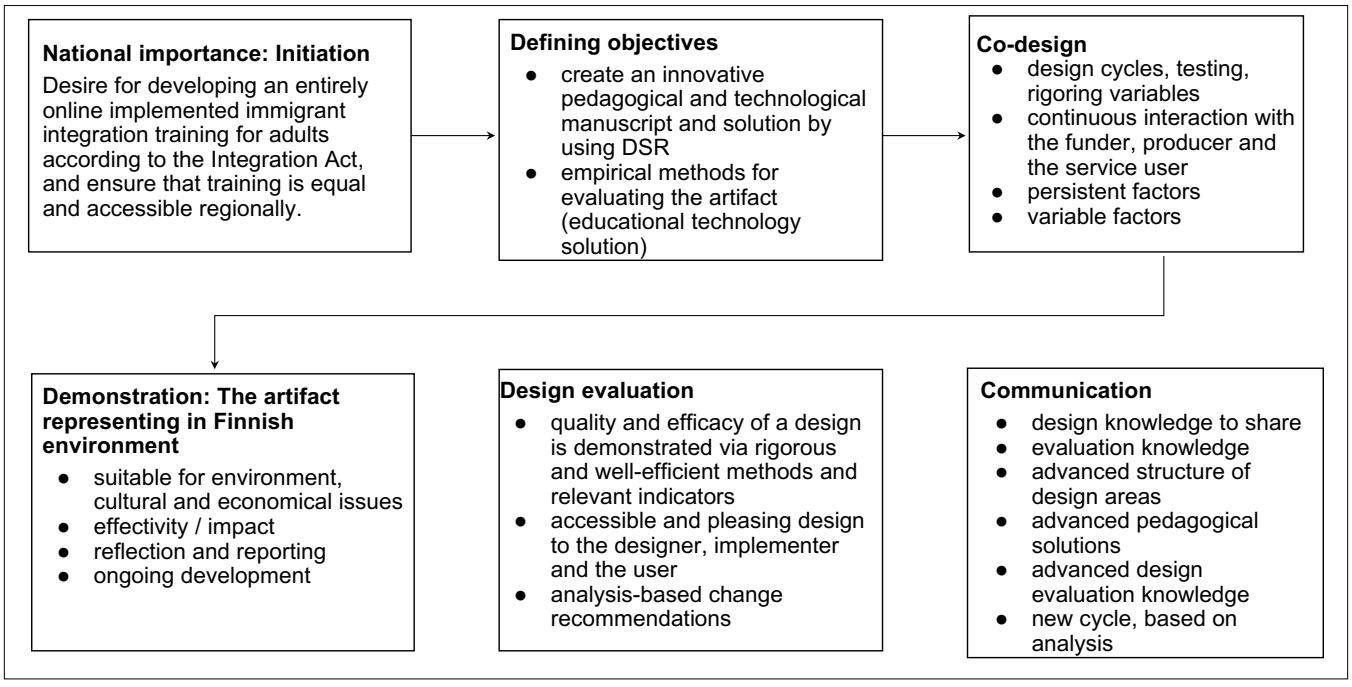

FIGURE 7. The analysis and evaluation of the design process follows the six-phase process (Peffers et al., 2007).

develop potential learning models that aligned with learner needs and teacher resources.

The provider pre-assessed the design during a teacher development day, after which teachers integrated it into their daily teaching practices. Throughout the training, participants provided ongoing feedback and participated in continuous development efforts. During the initial learner assessment phase, teachers clarified individual limitations, skills, education history, professions, motivation and participation conditions through structured interviews. The team tracked variable factors throughout the training, ensuring

that feedback informed redesign decisions, tool selection and pedagogical improvements.

The design underwent continuous evaluation through employment administration monitoring, service provider reports, language proficiency tests and follow-up plans. Table 2 (previous page) illustrates persistent and variable factors, highlighting the strengths and critical points identified through learner experiences.

For persistent factors, the team relied on official reference frameworks, legal compliance and user consultations. For variable factors, they analyzed data from feedback surveys, observations, interviews, chat logs, complaints, ongoing interactions, informal discussions, negotiations with funders, and anecdotal insights. The data analysis required a culturally and linguistically aware approach to ensure meaningful insights.

The design process followed Peffers' (2007) six-phase model, which defined demands, goals, development requirements, and real-life testing locations for online integration training artifacts. The team rigorously evaluated design changes and disseminated findings to inform broader societal discussions (Figure 7).

DESIGN 1

National Importance: Initiation

Launched in 2015, the training program initially faced scepticism regarding its suitability for the target group. Given the limited resources available for design and implementation, the focus was placed on the most critical features and ensuring high-quality design. The process followed an iterative approach (Hevner et al., 2004; Peffers et al., 2007), with particular emphasis on practical solutions informed by users' prior digital experiences.

The selection of technological tools was guided by principles of ease of use and accessibility, ensuring that participants could focus on learning rather than encountering technical challenges. The significant variation in participants' digital skills and the absence of a supporting language posed high accessibility demands. To facilitate barrier-free access, all learning materials were openly available without registration. Teacher-led interaction across multiple channels was an integral component of the training, playing a crucial role in language acquisition.

Defining the Objectives

In Finland, there was a need to organize high-quality online integration training for immigrants living in sparsely populated areas.

Design and Development

Learners and teachers actively participated in the co-design process and provided continuous feedback. The initial implementation (Figure 9) involved three full-time teachers, who were also the original designers of the training program. Development ideas were gathered through daily interactions with learners, by talking with management and financiers at a low hierarchy whenever a discussion was needed, and collaboration with labor market stakeholders, influencing the next phase of the design, including the selection of the communication application.

The design process was informed by practical observations as well as an informal international survey of comparable training models. The findings indicated that no similar long-term online integration training programs existed elsewhere. The Finnish model stood out as a nationally structured, comprehensive approach designed to serve all immigrants.

Each group had its own dedicated website (Figures 10 and 12), where the daily schedule, assignments and links to online meetings (Figure 11) were provided. The design emphasized accessibility and ease of use. The teaching methods were interactive and socially engaging, incorporating peer learning, skill-based projects, drama exercises, and authentic tasks such as library and city visits. Assignments were documented through photos, videos, or written reports and were subsequently discussed within the group.

The design team chose free Skype as the instant messaging tool because it allowed them to quickly create group chats that connected participants from different groups. Teachers needed to communicate and make decisions in real time, just as they would in a shared physical space. The group had

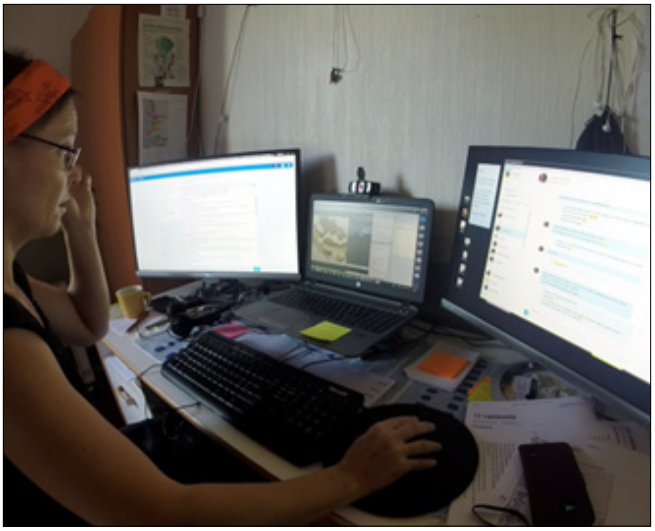

FIGURE 8. The teacher utilized three screens while teaching: teaching materials, a web conference, and chat software, through which learners and teachers could also communicate outside the webinars.

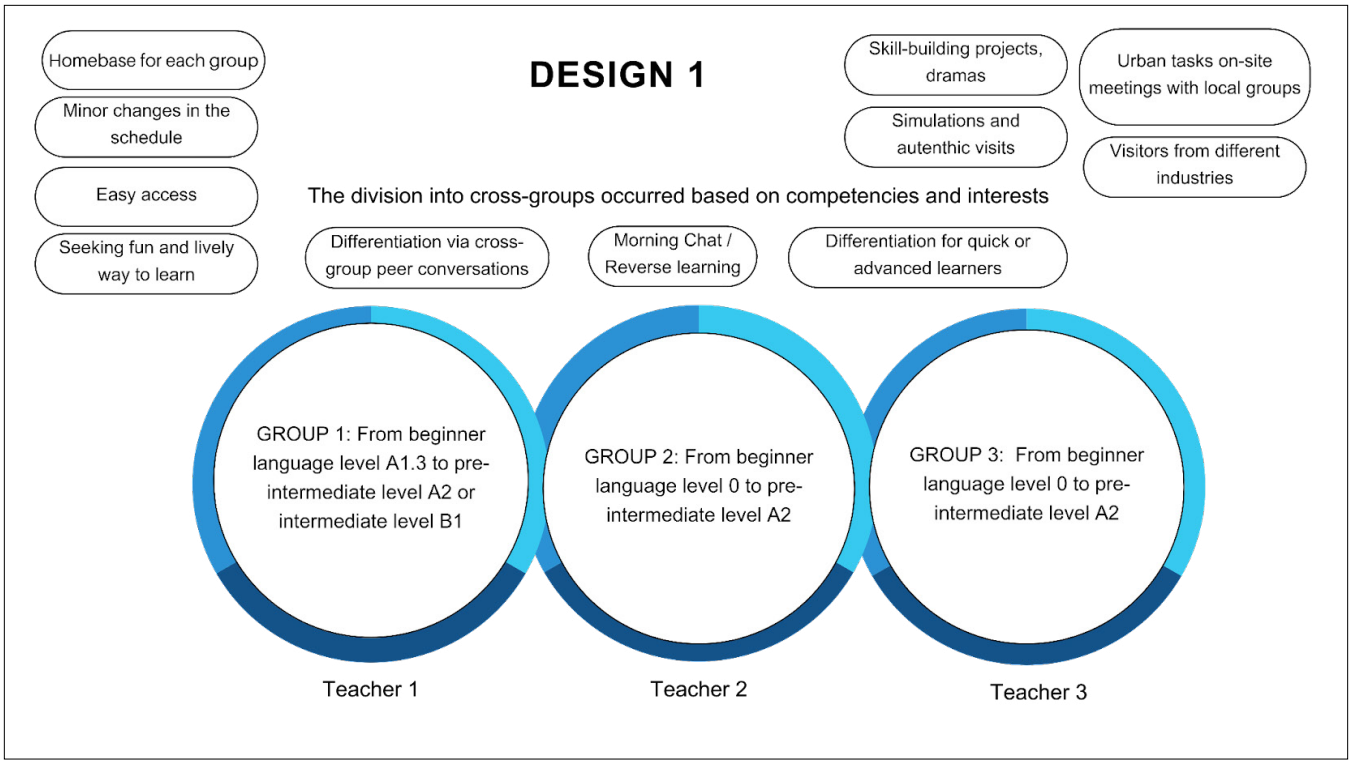

FIGURE 9. The iteration, learning groups and activities of Design 1.

one lead instructor with whom they studied. Students were divided into peer-learning groups based on their professional background, interests and learning needs. Morning discussions followed a flipped learning approach, encouraging learners to practise the language functionally through chat interactions.

Participants in the chat were rotated based on factors such as language proficiency, profession, interests, and activity level. The teacher initiated the chat conversations and encouraged learners to use the Finnish language functionally within the chat. At its best, the conversations arose organically from the learners themselves.

The core design principles—technological security, stability and simplicity—were integrated throughout the entire implementation. Familiarity with technology enabled participants to apply their ideas across various applications, supporting independent learning and group work.

Interactive and socially engaging teaching methods included skill-building projects, drama exercises, simulations, and authentic visits to various locations, such as cultural and leisure services within one's municipality. Course tasks were related to the services within their own locations and reported online to teachers and the group. To document their task completion, students could send the teacher pre-agreed or freely chosen documentation: a photo, video, or written text. The applications used were part of the design choices. Additionally, the training hosted visitors from various sectors of society and organizations through appropriate channels.

Demonstration: The Artifact in the Finnish Environment

Design 1 (Figure 9) was initially introduced for three groups with a total of 75 learners. The prerequisite for participation was that the participants and teachers had adequate common language skills, and the participant was able to switch the computer on and off, and operate the browser, microphone and camera. At first, participants opposed the online implementation but quickly began to see it as a workable option. At the beginning of the training, the focus was on mentoring and building trust and empathy.

Learner's Journey in the Design

The learning objective for the day is: "I can ask how much a product costs. I can request a product at a service counter or checkout. I can ask for help if I cannot find something (e.g., 'Excuse me, do you have honey?' or 'Excuse me, where is the sugar?'). I know how to navigate a Finnish grocery store (e.g., weighing fruit and vegetables, using the checkout, waiting in line, asking for help from a store assistant). I understand basic questions from the cashier and can respond to them (greetings, loyalty cards)." The theme is everyday life, level 0-A1.3 (CEFR), module 1, for a slow-progressing subgroup that has been studying for less than a month.

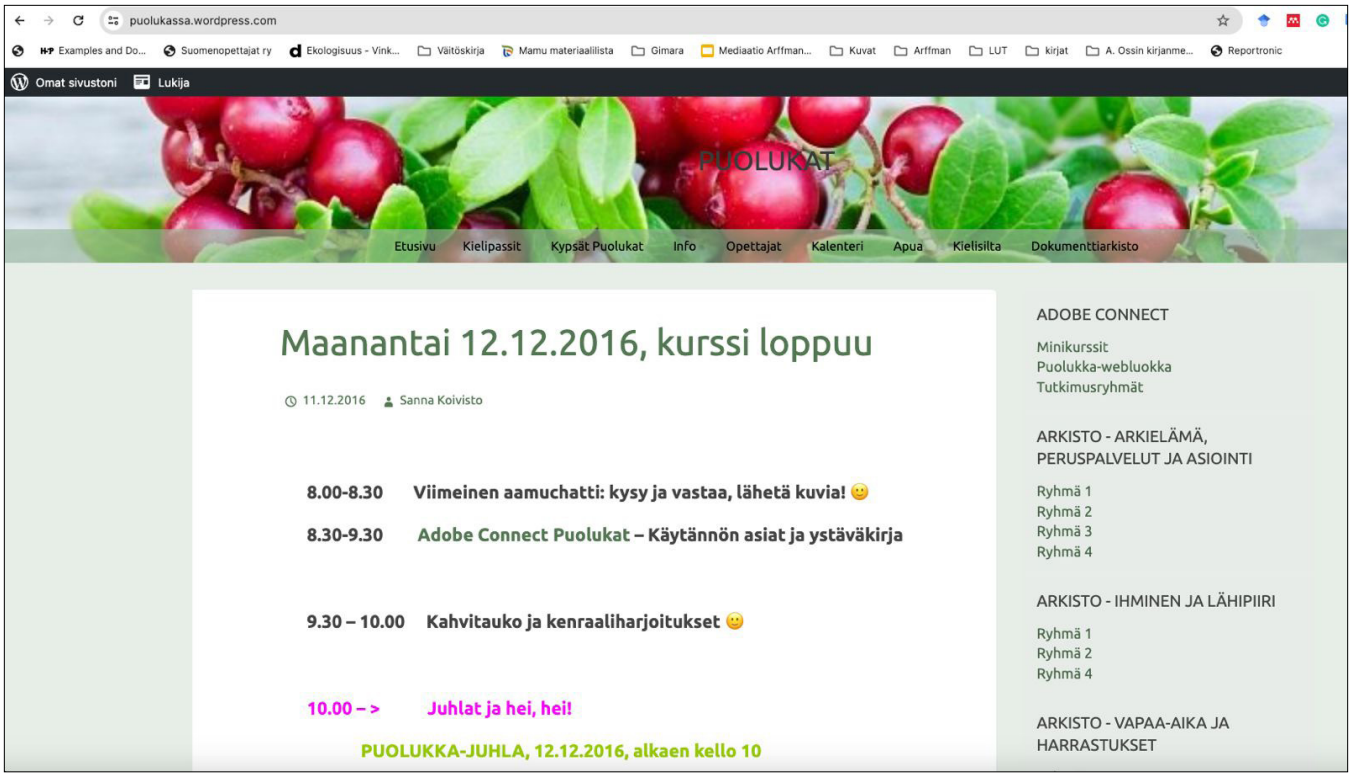

FIGURE 10. Puolukat (The Lingonberries) group's home base includes all necessary information, a daily updated schedule, learning objectives, themes or assignments, and quick links to the online classroom, small groups and archives.

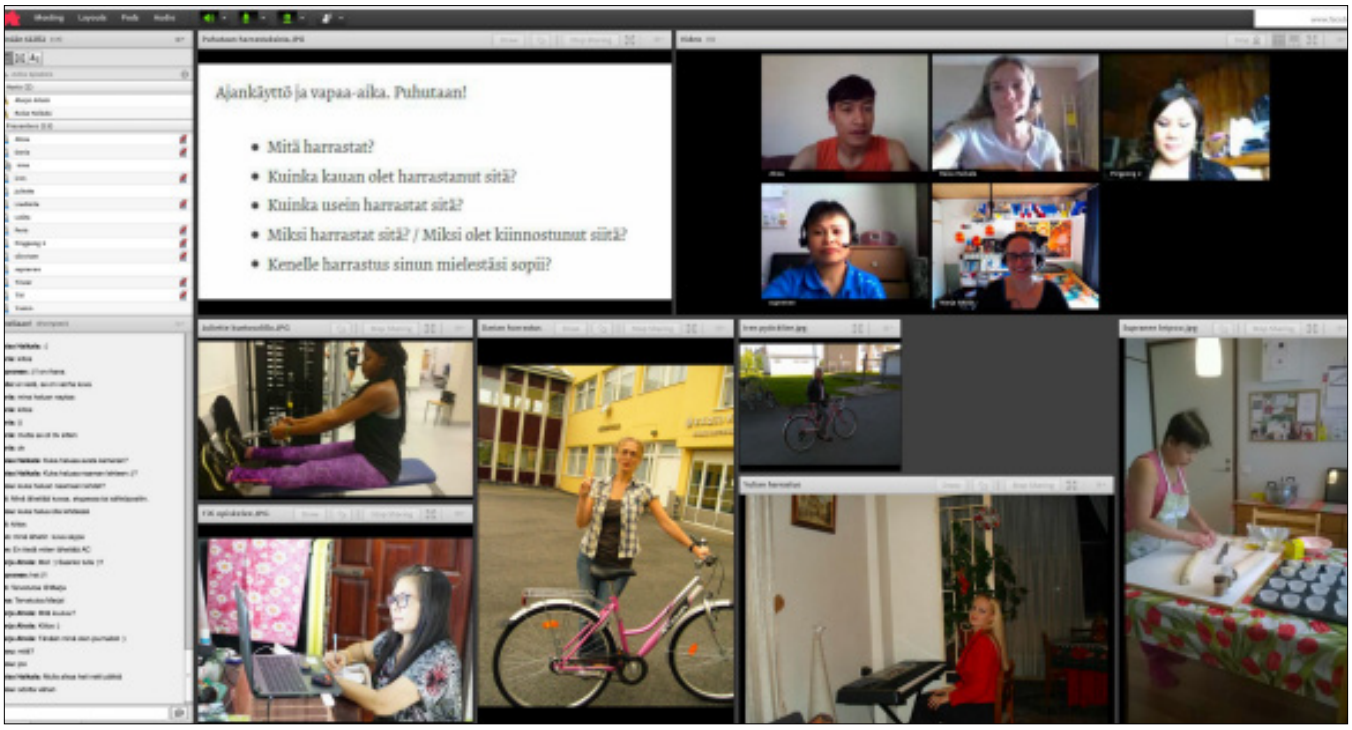

FIGURE 11. The learners practised Finnish actively by creating material from their own lives and sharing their activities with others. Material from one's own life can include personal content related to background, family, work, profession, studies, hobbies, living environment, or one's home country and its culture. This material is strategically used as language learning material.

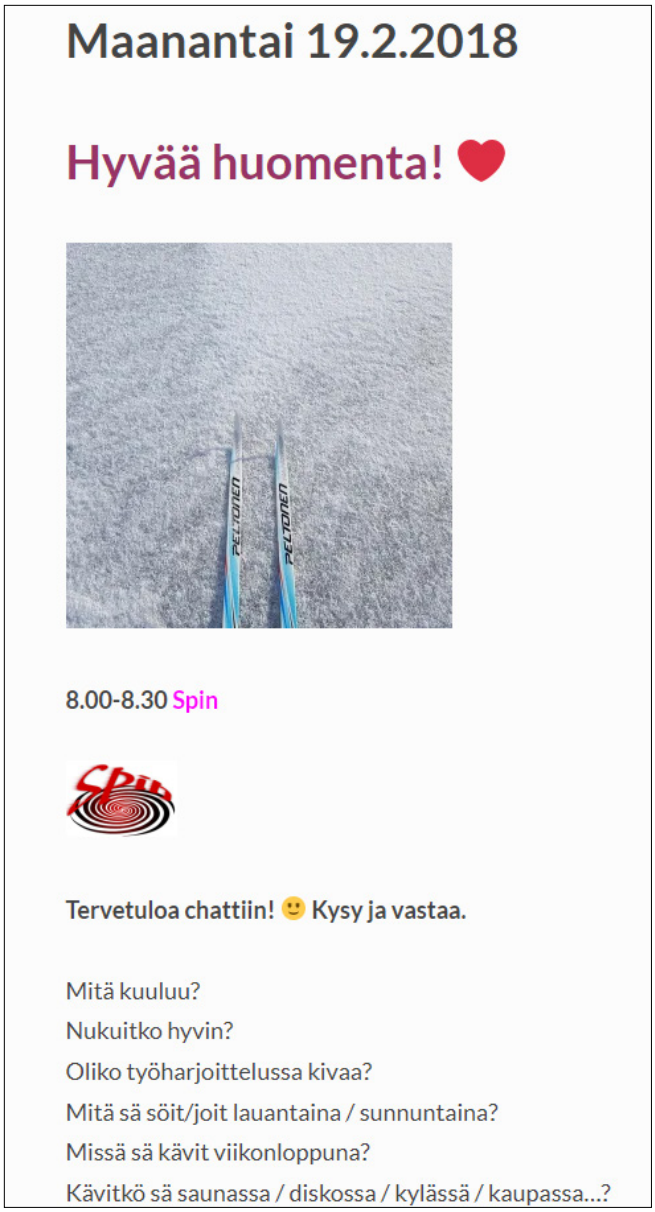

FIGURE 12. In the group's home base, a program was published each morning that included the date, a greeting from the teacher, and instructions for activities. In this example, the learner is invited to a chat to discuss updates on Monday morning.

Learner 1 starts the day in an online integration training session by checking the daily schedule on the blog and joining a Skype discussion with a small group. The group is structured so that Learner 1 engages in conversation with six other learners of the same proficiency level. When the lessons begin, Learner 1 has already activated the necessary vocabulary through these conversations.

Next, the group participates in a teacher-led webinar via Adobe Connect (AC). The group discusses creating a shopping list and prices. In a virtual store simulated within AC, Learner 1 practices a shopping simulation, where another

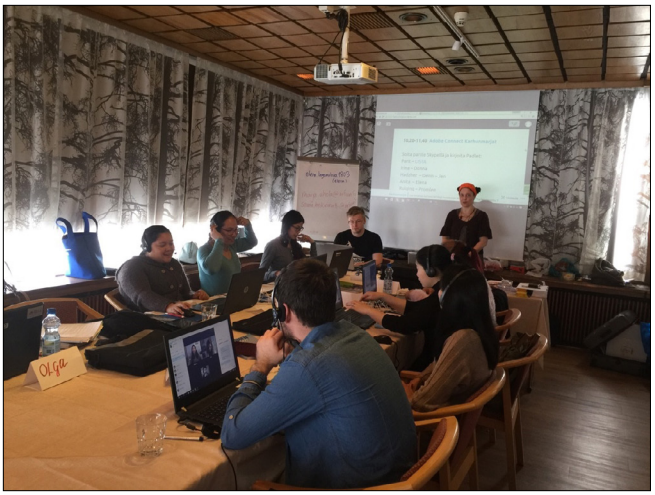

FIGURE 13. Students were introduced to learning tools, and distance language learning principles during a common orientation week. Key educational environments were saved on the desktop, and together with the teacher and the group, the course schedule and the use of applications were practiced. This ensured that everyone knew the daily study routines, where to find the schedule and assignments, and how to contact the teacher and other students at the right time.

learner plays the role of the salesperson, while also preparing for their own upcoming work placement in retail.

The second AC webinar takes place at the Lahti market, where the teacher is on-site with a mobile device, while the students participate remotely. The group prepares questions for the market vendors, and Learner 1 practices purchasing vegetables virtually through AC. During the day, Learner 1's group also has an activation session in an AC breakout room, where they collaboratively write a dialogue about a shopping trip using Tieke's EtherPad. The completed dialogue will be shared and presented to the group the following day, with the teacher circulating between groups to provide support.

In the afternoon, Learner 1 completes independent assignments using Google Forms. Upon completion, they receive instant feedback and an update to their progress in the goal-tracking sheet on Google Sheets. Additionally, Learner 1 prepares for a mini-course on floral arrangement. As a florist by profession, Learner 1 will teach their peers how to make a floral decoration in an open AC room during the independent study period the next day. The mini-course has been advertised in the course's Facebook and Skype groups, and seven interested participants have signed up.

Later today, Learner 1 will join a voluntary, learner-initiated "study group" to play word games with a classmate. Open AC rooms have been set up for these study groups. In the evening, Learner 1 takes photos of the floral decorations they made and uploads them to the AC room for an upcoming

joint project involving two course groups: a theater performance (Figure 9).

Learning outcomes, attitudes to learning and further placements exceeded expectations (Haikala, 2019). Interaction, attractiveness, practicality, ease and the ability to return to content enhanced learning. Language proficiency was demonstrated by validated online tests based on CEFR definitions and The Finnish National Certificates of Language Proficiency. Competence was continuously demonstrated through assessments. Participants were consistently exposed to real-life language use situations, and learning outcomes were recorded through various technological applications, creating outputs that were easy to validate. The target level of language proficiency in one year of training is to progress from beginner level 0-A1 to intermediate level B1-B2 (CEFR, 2019). In the online implementation, there was some flexibility for this. The training expanded and new procurements required new teachers. The pedagogical-technological implementation of Design 1 could not be entirely transferred to all new teachers, many of whom did not have experience as online trainers.

Design Evaluation

The designers collected continuous feedback from discussions, chats and questionnaires, as well as from participants, teachers and authorities (ELY, MEAE) through meetings and calls. The operating environment in Finland posed challenges due to the rare language and passive networking culture (Alho, 2020).

As new groups joined, design clarity became essential. Some training groups struggled with an interactive and pragmatic approach, leading to critical participant feedback: *"The teacher can't teach. / The teacher speaks alone and does not make sure the students have understood things. / The teacher does not discuss with the group. / We do not understand what the teacher is talking about. / Lessons are boring / too difficult. / We don't learn anything. / I want to interrupt my training. / I don't want to study in this teacher's lessons. / We want to switch to contact teaching."* The teacher community analyzed feedback collaboratively with management, using affinity mapping to identify key redesign needs: differentiation, peer learning groups, multi-teacher models, and improved teacher collaboration.

Immigrants generally provide consistently positive feedback on all integration training programs (Ruuskanen & Väänänen, 2022). The OPAL survey measures participant satisfaction, covering the learning environment, training content, implementation, benefits and follow-up plans. In 2016, 88% of 8,283 respondents rated the training as good or excellent, with an 85% response rate. However, research indicates that critical feedback is rare in integration training (NAO, 2018). Given this tendency, any criticism must be carefully considered, as it provides valuable insights for improving training. In this case, we focus solely on critical feedback, as it is essential for redesign. The main issue stemmed from teachers' limited experience with online instruction, leading to lecture-heavy sessions rather than interactive learning. Some teachers misinterpreted learners' ability to process information and did not provide enough space for participation. Online feedback collection requires specialized techniques, as student engagement is less visible than in traditional classrooms. Teachers needed training and practice to effectively gather and interpret feedback in a digital environment.

The initial design phase also revealed that technology alone did not ensure interactivity—teachers had to purposefully integrate interactive methods into daily lesson plans. The feedback emphasized the need for differentiation, particularly in forming peer-learning groups with aligned learning objectives. Effective differentiation required skilled teacher guidance and sufficient time resources, which would be prioritized in the next design iteration.

In the next iteration, the technologies were selected to require greater collaboration among teachers, as they shared groups and taught the same participants. Adobe Connect (AC) and Skype supported this collaboration.

DESIGN 2

Initiation

Design 2 (Figures 14 and 15) was developed based on feedback from Design 1, provider experiences and user input. After analyzing affinity mapping results, teacher workload and available resources were reassessed. Teachers received enhanced training in technology-mediated pedagogy, self-directed learning support, and small-group online guidance. A management model fostering a stronger teacher community was introduced.

Key elements of Design 2 included user orientation, competence-based learning, linguistic and pedagogical accessibility, and differentiation. While financial and organizational resources remained unchanged, instructional design prioritized teacher activities to ensure learner-centred and individualized learning paths. These adjustments were agreed upon with the financier to facilitate implementation.

Defining the Objectives

The primary goals were to enhance user experience, interaction, inclusivity and accessibility. Continuous feedback was collected from both learners and teachers.

Design and Development

Learners were grouped based on language proficiency, with each group assigned multiple teachers daily. As participant numbers grew, peer groups were introduced for professional

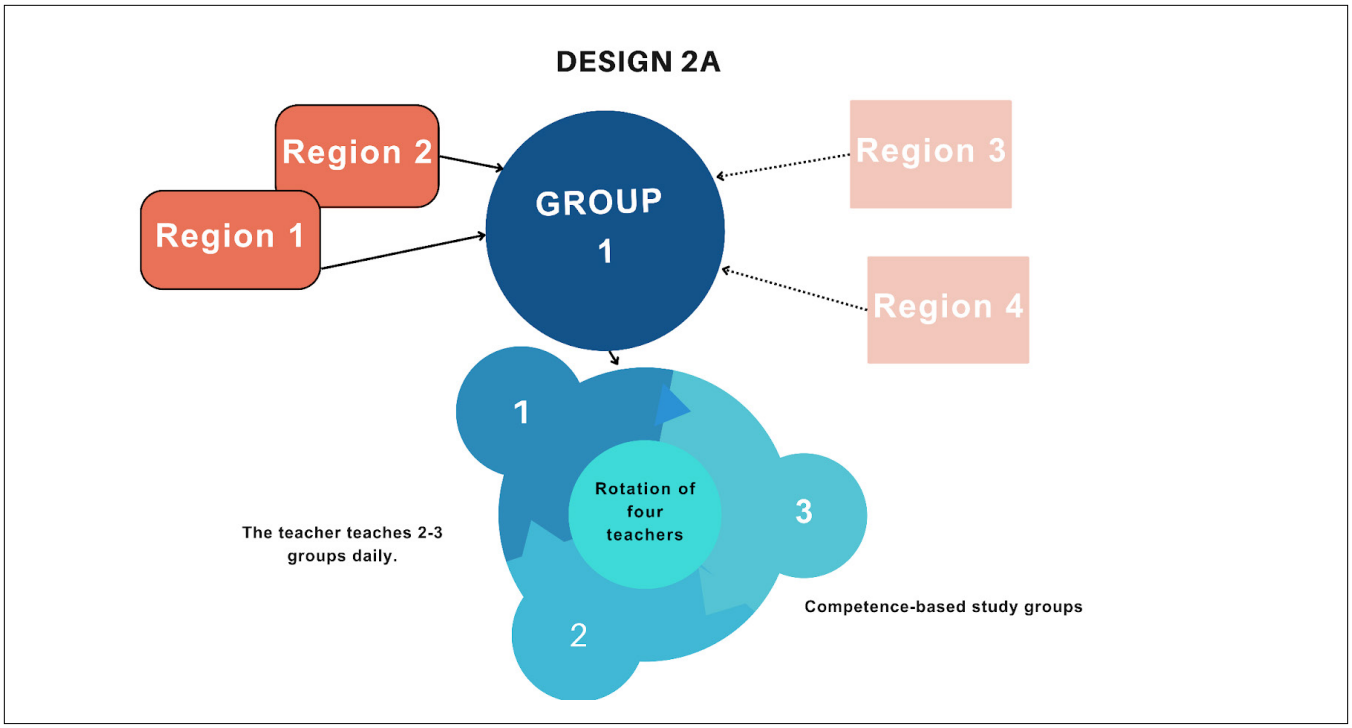

FIGURE 14. Design 2. Phase A. Competence-based differentiation and teacher rotation at the first round.

Finnish language studies. Advanced learners could join language immersion groups focusing on specialized language skills.

In Design 2 (Figure 14), learners were initially grouped together and later divided into three competency-based levels:

- Group 1: Focused on core Finnish language skills essential for societal adaptation.
- Group 2: Followed the fundamental curriculum.
- Group 3: Applied language skills analytically at an advanced level.

New groups were formed continuously. If a learner did not fit into an existing cohort, efforts were made to place them in the most suitable competency-based group.

In Design 2, teachers specialized in specific competencies, instructing two to three groups per day. Curriculum content was divided into distinct skill areas, with responsibilities shared among teachers. Daily study plans and micro-learning goals were published on home base websites, facilitating collaboration and maintaining instructional quality.

This more complex design was co-developed by management, financiers and designer-teachers. Teachers pre-assessed and planned implementation before execution to ensure feasibility.

Demonstration: The Artifact in the Finnish Environment

At Phase 2A (Figure 14), there was one responsible teacher and two rotating teachers, and 33 learners from the Lapland region. At Phase 2B, training was expanded (Figure 15) with 7-10 teachers and 252 learners from six regions participating simultaneously. Learning outcomes were assessed based on the evidence by measuring the language proficiency level with course tests, continuous assessment, peer assessment and feedback collected by the employment administration. Some of the learners completed the National Certificates of Language Proficiency (YKI) tests. Design 2 needed a large number of participants who could be grouped, emphasizing different learning aims. The design was complicated to manage.

Learner's Journey in Design 2

The learning objective for the day is: "I can express my feelings and concern for another person (e.g., 'I'm tired,' 'I feel bad,' 'You look sad, is everything okay?'). I can apologize and express regret. I can tell someone if they've hurt my feelings. I can describe what has happened." The theme is health and well-being, level A1.3-A2.2 (CEFR), module 2, for a medium-paced group that has been studying for five to six months.

Learner 2 starts the day by opening their computer and checking the group's blog for the day's schedule. They belong to a medium-paced small group but are considering moving to the fastest-paced group. Using the flexible

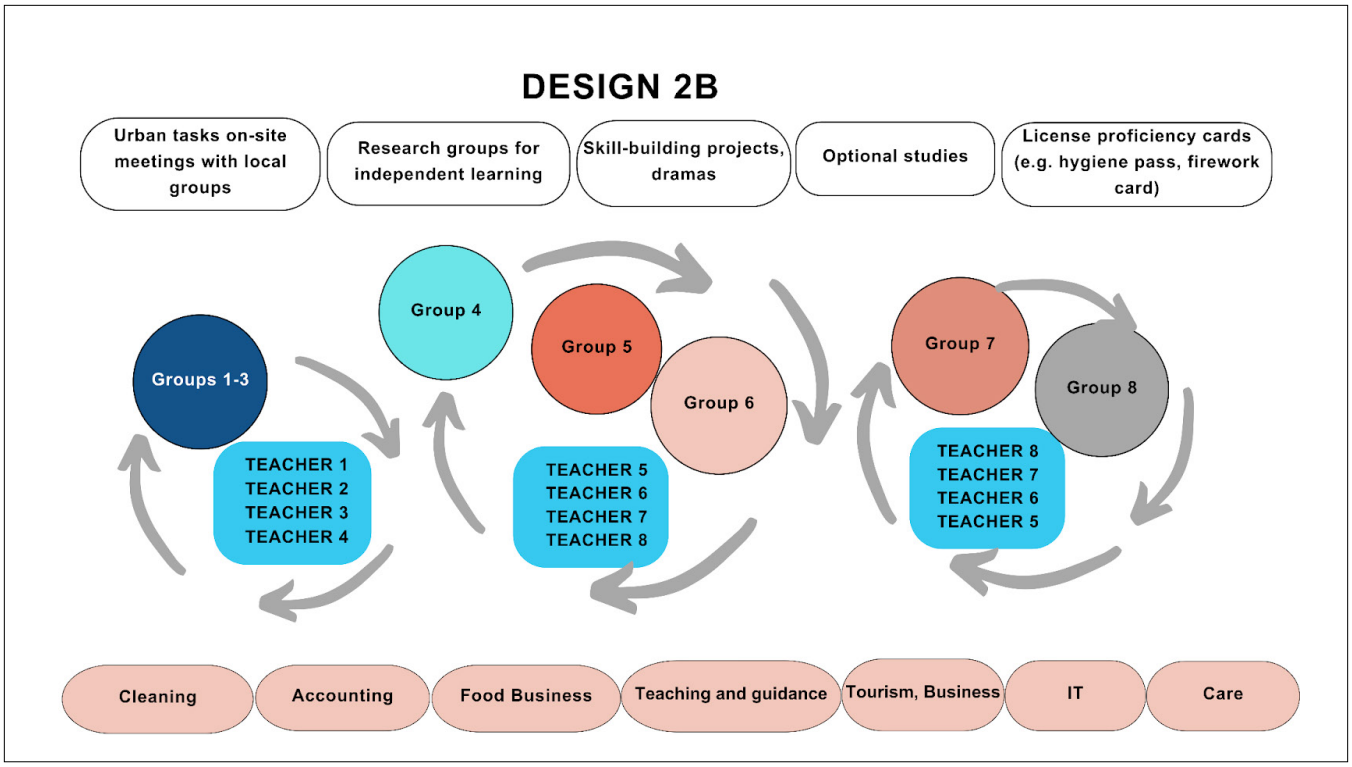

FIGURE 15. Design 2. Phase B. Competence-based groups and complex teacher rotation.

learning paths available on the course blog, they select tasks independently, also drawing from the more advanced group's materials.

The day begins with chat tasks to introduce the theme, followed by two Adobe Connect (AC) webinars led by two different teachers. One of the teachers is particularly skilled at creating an engaging and fun atmosphere that supports learning. Even though the second webinar is more challenging and theoretical, Learner 2 appreciates the diversity of teaching styles, as there are typically two or three different teachers each day. This daily exposure helps them become accustomed to various speaking styles.

In the first webinar, participants simulate different interaction scenarios using visualizations created in the AC room, and they share their experiences. The afternoon activation session is a nationwide, profession-specific meeting. Learner 2 is a language teacher, and while there are no other language teachers in their region or group, a larger professional group has been formed by gathering learners from across Finland.

Independent studies today are organized into optional groups. Some students are completing a hygiene passport, while others are working on an occupational safety card. The day ends with independent assignments. Learner 2 prepares for the next day's city group meeting. Although the participants live in rural areas, three students from two different groups reside in the same area, forming a city group. The group completes regional, practical tasks and produces a learning video or other output, which is submitted to the group chat for review the following day (Figures 14 and 15).

Design Evaluation

Learners provided end-of-training feedback through surveys, while teachers collected ongoing input via discussions and questionnaires. Design 2 ensured accessibility regardless of language skills, digital competence, age, or technological access. Participants felt they received personalized guidance, and the design improved teacher collaboration, competence-based learning, and peer learning. It emphasized differentiation, continuous interaction, co-teaching, and advanced online pedagogy.

For teachers, Design 2 was a major shift from authoritarian solo-teaching. IT support became essential, yet insufficient guidance and competence-based assessment resources led to overwhelming workloads. Feedback was collected through confidential teacher chats, meetings and staff development days. Over time, negative messages increased, signaling exhaustion and frequent sick leave. The designer-teachers mapped major issues, revealing that a learner-optimized design placed excessive demands on teachers.

Teachers raised key concerns: *"It takes a lot of time to make daily schedules on websites. / Working all the time intensively online is laborious. / There is too much cooperation between teachers. / Weaker students need a lot of guidance."*

Design 2 was overly complex and too flexible, making it unsustainable for large groups and teachers with limited online teaching experience. It required simplification for scalability.

For learners, however, Design 2 was engaging and effective. Confidential feedback indicated high satisfaction, with frequent comments like "all is good" and "everything is fine." Participants valued personalized guidance and networking opportunities. Attendance remained high, and no participants requested to leave the program.

The design addressed common challenges in immigrant training, such as accommodating diverse educational backgrounds, learning styles and study speeds. Motivated learners could progress rapidly, benefiting from personalized, engaging instruction tailored to their individual preferences.

DESIGN 3

Initiation

Up to this point, the design had been developed learner-centrically, aiming to make learners' studying as high-quality as possible. Contrary to the initial expectation, the focus in the design had to be shifted towards teachers. Without this shift, teachers would not have been able to work within the program. Design 3 (Figure 16) is a simplified version of Design 2. The number of training sessions and groups increased and more administration and teachers were needed. In the groups, there were at least two teachers who taught different competencies, with each teacher teaching at least two groups. Due to the lack of coordination and pedagogical guidance, competence-based learning with constantly changing teachers was not feasible.

Defining the Objectives

The goal was to integrate key elements from previous designs, such as interregional collaboration and differentiation, while simplifying technological implementation through automation and centralization. As the training expanded, the technology needed to be more independent, consistent and accessible, even for teachers with no prior online teaching experience. At the same time, the design aimed to preserve user orientation, quality and teacher collaboration.

Design and Development

As in Design 2, new actors such as new teachers and learners, and regional employment services, participated in co-design, so new perspectives were also gained in the design. The weakness of the re-design was that it was not possible to include the unique, particularly high-quality solutions of the previous designs in the new implementations because the situations in different regions and the training demands differed. The design had to find a balance between harmonization and diversity of participants.

In Design 3 (Figure 16), teachers are allocated specific responsibility groups and swapped these groups with their co-teacher for a portion of the day. Occasionally, individual learners transitioned to another group, because the objective was to identify the most suitable group for each learner. It was easy for teachers to switch to teaching other groups as needed in addition to their primary assigned groups. As the administration had expanded significantly and there were numerous teachers and learners, support services such as IT and multilingual support were centralized.

Demonstration: The Artifact in the Finnish Environment

At Design 3 stage, 10-12 teachers and 303 learners from seven regions participated. Training lasted 6-12 months. During D3 implementation, multilingual support was set up in addition to IT support and a differentiated artifact, a tablet course for semi-literates, was designed and implemented (Ahola & Hartikainen, 2022). Additionally, Design 3 included a new Swedish-language online integration training programme (Figure 16). A new fast track training and employment programme for immigrants in Finland was also established.

Learner's Journey in Design 3

The learning objective for the day is: "I can fluently describe my work and educational history, as well as the key points of my professional experience. I can explain the different tasks and responsibilities I've had in various jobs. I can describe my skills, current situation regarding work and education, and my future plans. I can ask for more information about a job opening, both over the phone and in person. I can handle a job or education interview and respond to the most common questions asked during interviews. I can confidently introduce myself to new colleagues or fellow students. I am familiar with Finnish work culture and can compare it with work cultures in other countries (e.g., power distance with supervisors, valuing initiative)." The theme is work and education, level B1.1 (CEFR), module 3-4, for a fast-paced group that has been studying for over six months.

Learner 3 begins their day by opening their computer and checking the blog for the day's assignments. The daily schedule is clear and consistent. After chat tasks that help orient the group to the day's theme, Learner 3's group has two Zoom meetings, each led by a different teacher.

In the first webinar, participants take turns giving short "pitch" presentations where they introduce themselves professionally and briefly highlight their key skills. The second webinar involves collectively building a vocabulary list that describes professional skills on a shared Padlet. Students also learn about the specific characteristics of Finnish work culture through videos, images and simulated situational tasks. After these exercises, students share their own experiences of job

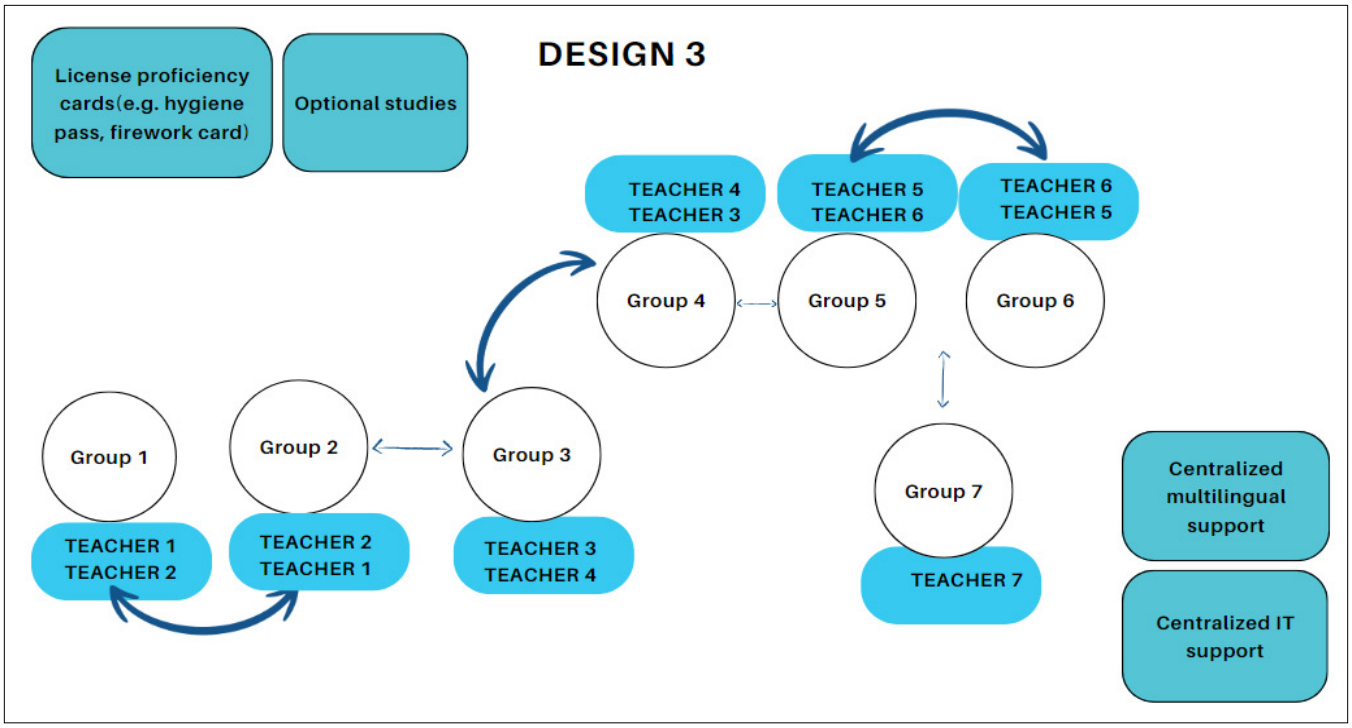

FIGURE 16. Design 3 is a simplified version of Design 2.

interviews in their home countries and in Finland. Vocabulary continues to be collected on the shared Padlet throughout the session. Meanwhile, the teacher constantly takes notes, offering language corrections and improvement suggestions in a subtle way that doesn't interrupt the speaker. These notes are visible to the students throughout the lesson and are shared with them at the end of each class.

Following this, there is an activation session where the students conduct simulated job interviews in breakout rooms. The teacher moves between rooms, listening in and providing feedback. Today, Learner 3's partner experiences technical issues with video and audio. Learner 3 must wait while IT support helps resolve the issue. The problem is challenging to fix remotely, but fortunately, the training program offers multilingual support, and the issue is quickly resolved. While waiting, Learner 3 works on independent tasks from the blog.

Learner 3 is a professional chef, and the independent tasks include some optional projects. One of these projects is to create a recipe blog in Finnish, for which they are given two hours per week to work on. A shared task for all students is to find a job advertisement in their own field and write a job application letter in Finnish. This writing assignment is completed on a shared Google Drive document so the teacher can provide direct feedback.

Each course day includes independent assignments, optional tasks, or additional certification courses (e.g., hygiene or safety cards). These courses may involve multiple groups and take place in a separate online space (Figure 16).

Design Evaluation

The developers structured Design 3 to be more teacher-oriented and easier to manage than Design 2. They reduced the intensity of co-teaching, making Design 3 clearer for both participants and teachers. The design team also ensured that Design 3 was easier to present to the financier and aligned with the training structure and contract requirements.

This research did not analyze feedback for the next design phase. However, preliminary discussions with learners and teachers revealed key insights. Learners expressed lower satisfaction compared to Design 2, stating they needed more individualized, competence-based teaching and guidance. In contrast, teachers reported higher satisfaction than in Design 2, but uneven workload distribution remained a concern. As a result, issues related to work contracts, salaries, resources, and teacher well-being continued to be significant. The financier expected a higher-quality service at lower costs, which could only be achieved by automating a significant portion of the work.

The design team identified key improvements for the next iteration, particularly more efficient technological solutions. They proposed integrating artificial intelligence (AI) to handle part of the teachers' workload and administrative tasks. To support this, teachers needed better AI application skills to ensure automation streamlined online teaching while

	DESIGN 1 BEGINNING > RAPIDLY GROWING	DESIGN 2	DESIGN 3
Period (nonlinear)	4/2015-7/2017	8/2017-6/2019	7/2019-1/2021 (still ongoing)
Participants	33 > 75	252	303
Teachers	3 > 6	7-10	10-12
Structure	The group had one lead instructor and small groups based on learner competencies or interests.	Teachers handled two or three groups throughout the day, and had the opportunity to specialize in teaching specific competencies.	Teachers are allocated specific responsibility groups and swap these groups with their co-teacher for a portion of the day.
Methods of Data Collection and Evaluation	Continuous feedback and reflections from learners and teachers, final survey from participants, brainstorming, sticky notes.	Continuous feedback and reflections from learners and teachers, final survey from participants, brainstorming, sticky notes, affinity mapping.	Continuous feedback.
Technologies Used	Adobe Connect, Audacity, Blogger, EtherPad, Facebook Groups, Google Drive, Google+, Hot Potatoes, IMO, Kahoot, Line, LyricsTraining (or similar), MindMeister, Padlet, Popplet, Prezi, QuizCreator, Quizlet, Scoopit, Simplesites, Skype (free version), Smartfeet (Seppo), SoundCloud, Telegram, Thinglink, Tieke Muistio, Viber, Viddler, Vimeo, Vocaroo, WeChat, WhatsApp, Wix, WordPress, YouTube, Zoom		Skype (free version), Adobe Connect, Zoom, Google Meet, WordPress, WhatsApp, Kahoot, Quizlet, Wordwall, Vocaroo, Google Workspace tools, Audacity, SoundCloud, Popplet, Seppo, YouTube
Reflections	Teachers' orientation to full-time online teaching insufficient, practices varied significantly, in some groups remarkably dissatisfied learners. Proficient and innovative educators, particularly those who specialize in teaching immigrants, can develop successful and efficient online learning. However, transferring the spontaneous and creative teaching approach to an inexperienced online teacher poses significant challenges. To address this, a more precise learning design is necessary—one that provides supportive structures tailored to the needs of less experienced educators.	Learners were unprecedentedly satisfied, however, teachers became overloaded and were no longer able to teach.	All parties were sufficiently satisfied so that everyone could work and operate online full-time. Excellent approaches have been pruned due to insufficient resources. Enables the production of various meta- and sub-artifacts.

TABLE 3. Summarizing the full design case study.

allowing them to focus on high-quality online interactions. The technological design should guide—or require—users to engage in interaction. Additionally, AI could enhance authenticity in language and cultural content, helping learners and teachers access the most suitable options based on language proficiency, accessibility, variety, information sources, and data reliability.

The developers emphasized that employment-oriented integration training must be designed by aligning with local labor market needs.

Design Effectiveness

The challenges encountered during real-life implementation and the corresponding solution options are always unique. Each design received additional input from the environment,

influencing its development as the designs evolved iteratively (Table 3).

Data from 630 participants between 2015 and 2021 provides evidence contrary to previous claims, showing that online training proves effective and productive when its design prioritizes training quality.

Learners achieved similar outcomes to in-person implementation, exceeding expectations in their attitudes toward learning and further placements (Haikala, 2019), thereby validating the online training. The design team created a unique artifact, and no similar online learning model for immigrants exists in Finland or elsewhere. This design responds to societal demands for sustainable and equitable immigrant employment and engagement across Finland.

The design team enhanced interaction, engagement, practicality, shareability and accessibility, allowing learners to revisit content and improve learning outcomes. However, researchers must critically assess language proficiency results to evaluate the quality of online training. National indicators fail to measure training effectiveness accurately, as employment rates and language skills among immigrants (NAO, 2018) do not correlate with learner satisfaction.

The goal of integration training is to help participants reach B1.1 language proficiency, which corresponds to the level needed for employment and further studies. Between 2013 and 2016, 35% of integration training graduates achieved B1 proficiency (NAO, 2018). Since 2017, integration training has also included employment targets, measured by the percentage of unemployed graduates three months after completion. The target was less than 34% unemployment in 2017 and less than 31% in 2018 (NAO, 2018).

In this online integration training model, the learning outcomes and further placements compared favorably to all implementations. Among participants, 36% reached B1-level proficiency, and 34% secured employment, further education, or a work trial (Haikala, 2019).

The designers developed the learning model by combining user-friendly technological tools familiar to the target groups. This approach ensured participation and allowed learners to focus on studying rather than struggling with technology. Given significant differences in digital skills and the lack of an auxiliary language, accessibility demands were high. The design team recognized that optimal language and cultural acquisition requires interactive experiences. To achieve competence-based and function-related learning outcomes, teachers had to facilitate ongoing interaction, collaboration and real-time engagement. This required expertise in structuring both formal and informal interaction scenarios effectively.

FUTURE CHALLENGES

A significant challenge for those who have relocated to Finland lies in the difficulties of social networking (Alho, 2020). Profound changes at the grassroots level are necessary to enhance society's receptiveness. Communities formed during training remained sustainable even after completion. In technological interaction design, emphasis must be placed on facilitating interaction, ease of use, and the technology's attractiveness for interaction. Synchronous, functional and engaging e-learning fosters informal interaction situations, strengthening engagement, inclusion, equality and employment opportunities.

Critical factors guiding the training program's design encompass dimensions of accessibility in technological, lingual and pedagogical aspects. The technologies, language choices and pedagogy were selected based on familiarity, gradually progressing within the zone of proximal development (ZPD) of the learners (Vygotsky, 1934/1962). Learners benefit from participating in online learning by already being familiar with learning tools, having the ability to revisit content, and engaging in a learning design that reaches them in geographically remote areas.

Merely possessing functional language and cultural competence isn't adequate for successful integration if society does not actively welcome newcomers. Given the swift global changes and shifts in the labor market, web design demands agility, while teachers need resilience. Integration training encounters persistent factors that delineate its boundaries in design. Moreover, variable factors must be considered: the program's continual dialogue with broader society defines requisite competencies and facilitates effective readiness for societal and professional engagement. Web designs achieve impact when embedded within an authentic society, fostering flexibility for grassroots users and businesses to contribute and co-design further.

Adjusting the design's complexity involves assessing variable factors. Enhanced and finely targeted designs correlate with heightened user satisfaction and superior learning outcomes. Online instructors adept at reshaping their roles as interaction facilitators, leveraging authentic environments, simulating real-life scenarios, and engaging learners, can implement advanced design structures (e.g., Design 2) necessitating collaborative refinement. Conversely, if educators lack online facilitation experience or if the learner count is high, a simplified design (e.g., Design 3) becomes necessary. Larger participant numbers require increased resources for both learner preparation and educator instruction.

The next step in technology-mediated integration training is the development of artificial intelligence-based adaptive systems, as they would enhance individual competence-based learning and assessment.

REFERENCES

Ahmad, A. (2020). When the Name Matters: An Experimental Investigation of Ethnic Discrimination in the Finnish Labor Market. *Sociological Inquiry*, 90(3), 468–496. https://doi.org/10.1111/soin.12276

Ahola, M. & Hartikainen, A. (2022). Lesson Learned of Tablet Course for Semi-literate Immigrants. In book Ahram, T., & Taiar, R. (Eds.). *Human Interaction & Emerging Technologies (IHIET-AI 2022): Artificial Intelligence & Future Applications (Vol. 23)*. AHFE International

Alho, R. (2020). "You need to know someone who knows someone": International students' job search experiences. *Nordic Journal of Working Life Studies, 10(2), 3–22*. https://doi.org/10.18291/njwls.v10i2.120817

Ali-Yrkkö, J., Kässi, O., Pajarinen, M., & Rouvinen, P. (2023). *The Digibarometer 2023: Data, AI, and economic growth*. Taloustieto Oy.

European Commission: Joint Research Centre, Redecker, C., & Punie, Y. (2017). *European framework for the digital competence of educators: DigCompEdu*, (Y.Punie, editor) Publications Office. https://data.europa.eu/doi/10.2760/159770

MEAE = Ministry of Economic Affairs and Employment of Finland. (2020). *The regional development decision 2020–2023: Sustainable and vital regions* (Publications of the Ministry of Economic Affairs and Employment, Regions 2020:37). Retrieved: https://julkaisut.valtioneuvosto.fi/handle/10024/162336

FNAE = Finnish National Agency for Education. (2022). *National Core Curriculum for Integration Training 2022*. Retrieved: https://www.oph.fi/en/statistics-and-publications/publications/national-core-curriculum-integration-training-2022

FNAE = Finnish National Agency for Education. (2012). *Curriculum Guidelines for Adult Immigrant Integration Training. Regulations and Instructions* 2012:1.

FNAE = Finnish National Agency for Education. (2017). *Curriculum Guidelines for Adult Basic Education 2017*. Regulations and Instructions 2017:9a.

Haikala, R. (2019). *Immigrant integration trainings online at Arffman 4/2015–6/2019* [Report]. Arffman

Haikala, R., & Kuja-Lipasti, J. (2021). *Immigrant integration trainings online at Arffman 4/2015–1/2021* [Report]. Arffman.

Hevner, A. R. (2007). A three cycle view of design science research. Scandinavian *Journal of Information Systems, 19(2), 87-92*. http://aisel.aisnet.org/sjis/vol19/iss2/4

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly, 75-105*.

NAO = The National Audit Office of Finland. (2018). *Integration training* (Performance Audit Report 15/2018). Audit Reports of the National Audit Office of Finland. Grano. In Finnish. https://www.vtv.fi/app/uploads/2018/10/15152336/VTV-Tarkastuskertomus-15-2018-Kotoutumiskoulutus.pdf

OECD (2021), *Language Training for Adult Migrants*, Making Integration Work, OECD Publishing, Paris, https://doi.org/10.1787/02199d7f-en.

Peffers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A design science research methodology for information systems research. *Journal of Management Information Systems, 24(3), 45-77*.

Ruuskanen, L., & Väänänen, A.-M. (2022). *The elements of high-quality integration training* (Reports 78). Centres for Economic Development, Transport and the Environment of Nyland, Kainuu and Northern Ostrobothnia.

The Act on the Promotion of Immigrant Integration, 1386/2010 (Finland). https://www.finlex.fi/en/laki/kaannokset/2010/en20101386

Council of Europe. (2001). *Common European Framework of Reference for Languages: Learning, teaching, assessment (CEFR)*. https://www.coe.int/en/web/common-european-framework-reference-languages

Vainio, A., Viinamäki, O.-P., Pitkänen, S., & Paavola, J.-M. (2017). *Business administration – international comparison* (Publication Series 63/2017 of the Government's Investigation and Research Activities). https://www.researchgate.net/publication/319702486_Julkisen_hallinnon_asiointi_-_kansainvalinen_vertailu

Vygotsky, L. S. (1962). *Thought and language* (E. Hanfmann & G. Vakar, Trans.). The M.I.T. Press. (Original work published 1934)

Zafar, A., & Kantola, J. (2019). Brain drain in Finland: A real threat or a myth and its impact on Finland's R&D capabilities. *Scientific Journals of Poznan University of Technology, 2019*(79), 243–256. https://doi.org/10.21008/j.0239-9415.2019.079.16