



Arto Kotti

Digital Upskilling in a Finance Corporate Environment

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Abstract

Author(s): Arto Kotti
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In the rapidly changing business environment, skillsets are changing for all roles, necessitating fast and efficient upskilling efforts. Digital skills are becoming a requirement for many roles that never needed them before. It is therefore a must to find the best methods to digitally upskill learners.

This thesis explored modern learning methods and their implementation to find how to increase value to learners in the case organization, while remaining conscious of the time constraints in the case organization.

Data was collected from the case organization through interviews and surveys which showed that there was general enthusiasm for learning new digital skills, but there were often blockers for adopting regular learning routines. Learners' time constraints were a particular focus during the following literature study phase, which found recent research on learning methods and best practices for implementing them.

This thesis applied the latest information on modern learning methods to construct proposed actions and solutions to improve value for learners in the case organization.

Learners in the case organization were split into categories based on identified traits, then offered solutions tailored to the needs of their category. The thesis found that learners in the case organization needed a multitude of solutions in addition to improved learning methods to achieve the best outcomes, and so the thesis recommended actions to increase the number of employees learning actively in the case organization. Proposed solutions were presented by order of criticality, with the solutions that had the highest learning value and lowest implementation requirements being prioritized.

Keywords: E-learning, Blended learning, Hands-on learning, Microlearning, Gamification, Competence Development, Learning Methods, Digital Upskilling

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1 Introduction

This chapter contains the introduction to the thesis. The section introduces the thesis topic, as well as the motivation, goals, deliverables, and scope of the project.

1.1 Business Context

Digitalization is the process of converting tools, systems, or processes into a digital format. The global business environment is rapidly changing, driven by digitalization and the need to increase efficiency in companies. In the case organisation, the case organization's upskilling methods need improvement, as part of the digitalization initiative. The digitalization initiative includes the digitalization of tools and systems, as well as the upskilling of employees to use and create digital tools.

According to the LinkedIn learning report 2023, Around 25% of jobs have had their required skillsets change since 2015, with the amount being expected to double by 2027 (Hadjati *et al.*, 2023). The Heavy workloads that employees currently have will remain, while concurrently requiring employees to learn new skills to remain efficient and up to date on tools and competencies. With employees already expressing that a lack of time for learning is stopping them from adopting new learning initiatives, better and more time efficient learning methods must be offered by competence development to combat this.

The current digital upskilling efforts at the case organisation consist of initiatives that offer different learning methods to learners. The main digital upskilling avenue is the Digital Personas framework, which contains five curated learning paths of varying levels that learners can choose to learn the expert-selected critical digital competencies. Also on offer are hands-on instructor led webinars where learners can follow along with an instructor to learn various digital tools. All company learners have access to the companies learning store and some

online learning platforms such as LinkedIn Learning, that offer massive amounts of training content of various quality and difficulty. Lastly, various miscellaneous trainings are offered throughout the year that learners can sign up for.

This subject was chosen due to the relevance and importance of the topic to the author's role in the company. Digitalization is an important process that drives change in the global business environment. It is crucial to increase the efficiency of organizations to enable people to transfer from execution roles to more creative roles. While digitalization is the overall process that is key to future development of the business world, the digital upskilling process is just as crucial. Without digital upskilling, the digitalized systems would be underutilized by employees that lack the knowledge to use and continue to develop modern digital tools and processes.

1.2 The Goals and Deliverables

The goal of the thesis is to identify and suggest improvements for the digital upskilling methods of the case organisation. This will be achieved through conducting interviews, surveys, and research on the topics of digitalization and training methods, such as gamification and microlearning. This main goal steers the thesis into a more forward-looking perspective. The main purpose of the thesis is to identify the global trends and methods of digital upskilling and find ways to implement the successful methods into the organization's digital upskilling efforts. A secondary goal is to gather and consolidate data on the current state of digital upskilling in the case organisation.

Deliverables

The deliverables of this thesis are as follows:

- The proposals for digital upskilling methods.

The enablers for the main deliverable are:

- Analysis of the employee learning survey outcome.
- The analysis of employee interviews.
- Possible future applications of gained knowledge.

The proposals of improvements for digital upskilling methods are the most important deliverables of the thesis, as they have the most direct effect on the digital upskilling efforts. The proposals are based on an analysis of the learning survey outcome and employee interviews, along with literature study of recent studies of learning methods.

1.3 Scope

This thesis covers the Financial Office and finance business groups of the case organization, all surveys and interviews will be conducted within this organization. While the goal of this thesis is to suggest improvements to the digital upskilling initiative, specific competencies or trainings will not be suggested. The scope will be limited to proposals for the overall methods used to upskill employees, such as training methods. The theories studied during the literature review section are digitalization, training methods, gamification, and agile frameworks. These theories will provide an understanding of what the global trends of digitalization implementation and training methods are, as well as an outside perspective of other organizations successes and failures in digital upskilling.

2 Project Plan

This section contains the project plan, including information on each phase of the project as well as the plan for gathering data.

2.1 Project phases

The successful execution of this project requires six phases. The first four phases, current state analysis, framework building, data gathering, and data analysis, form the overall framework of both theoretical and practical understanding that enables the last two phases to be successful.

The first phase is the current state analysis (CSA), which will consist of interviews and surveys, along with an analysis of the 2022 digital upskilling initiative's results. The outcome of these will be an understanding of the scope and priorities, strengths and weaknesses of the currently used methods for digital upskilling.

Following the CSA, the next phase is to build the framework for the problem's solution. The completion of the CSA will allow for a greater understanding of what theory and concepts that should be studied and analysed to provide the best information for the proposal building phase. The digital upskilling documents from 2022 and early 2023 will also provide context and clues toward identifying the theories and trends that could assist in building the proposal framework. Some of the digital upskilling projects launched at the end of 2022 and early 2023 were forward-looking pilot projects that seek to evolve the initiative. For example, the implementation of hands-on learning is an attempt to provide a new method of learning for employees. The author's existing knowledge of work experience in the competence development field, knowledge of agile and the digitalization process will assist in building the framework and identifying key topics found in the data gathered.

The data gathering and data analysis will be the literature review portion of the thesis. The previous phase identified research topics and themes, and these

phases will involve the gathering and analyses of sources that then provide the knowledge for the proposal building process. While the CSA will contain interviews and surveys, there are questions that are more forward looking and relevant for the proposal building framework.

The building of the proposal is the culmination of all previous phases and will use the developed framework to create proposals for improvements to the digital upskilling methods, as well as the other deliverables described in section one. The proposal will consist of an explanation of a method and the suggestions for its implementation the current digital upskilling method.

The validation of the proposal will be a workshop session with the case organization community's competence development contacts, in which the proposal will be presented and discussed to gather feedback for the final iteration of the proposal. After the final proposal is validated, the thesis will be considered completed.

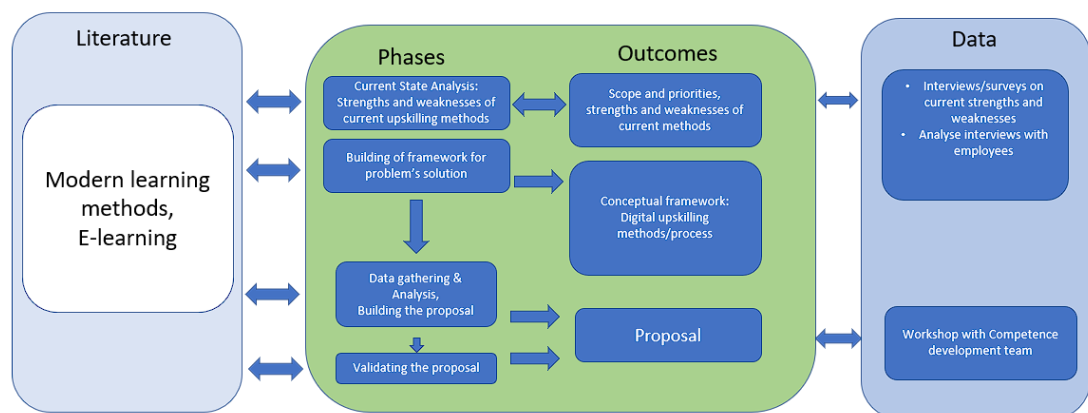


Figure 1. Phases of the Thesis Diagram

Figure 1 depicts the four main phases of the thesis, along with the literature, outcomes and data surrounding them. Literature and data enable the different phases to reach their respective outcomes.

2.2 Data Gathering Plan

Table 1. Data gathering plan.

| | Contents | Source | Timing | Result | Phase |
|--|--|--|--------------------|--|-------------------|
| Organization's dig. Upskilling feedback & analysis Current state analysis | Str. + weak. of current state | <ul style="list-style-type: none"> - Interviews with CoDe responsible, employees - Survey for organization | May | Summary of Str. + Weak. of current methods / state of initiative | CSA |
| Interviews with unit leadership and CoDe contact | Four digitalization / digital upskilling related questions | <ul style="list-style-type: none"> - finance leaders and CoDe contacts | April | Summary of interview findings | CSA |
| CoDe and Business Group units General survey | High level questions about digitalization and mindset | <ul style="list-style-type: none"> - General case organization community | April | Summary of survey findings | CSA |
| CoDe contacts Survey | deeper questions about digital upskilling, mainly focused on methods | <ul style="list-style-type: none"> - CoDe contacts | April | Summary of survey findings | CSA |
| Creation of proposals for improvements to digital upskilling methods | Proposal to implement method | <ul style="list-style-type: none"> - Interviews with employees - Literature study | August - September | Proposals for improvements to digital upskilling methods | Building proposal |
| Validation and feedback for proposals | Adapting proposals with feedback | <ul style="list-style-type: none"> - Workshop with CoDe team | October | Finalized proposals | Validation |

Table 1 – Data gathering plan, shows the gathered data with the following columns: title, a short description of contents, the source of the data, the timing of the data gathering, the result of the process, and finally the phase that the specific process takes place in.

2.3 Current state analysis

The content of the current state analysis data gathering will be the strengths and weaknesses of the current digital upskilling initiative. The sources are interviews with competence development contacts, and the survey for the entire case organization. The outcome will be a summary of strengths and weaknesses of the current methods, as well as the state of the digital upskilling initiative.

To support the current state analysis phase, there will be interviews with case organization leaders and competence development contacts as well as the survey for the entire case organization. There will also be an analysis of data from 2022, that will provide insights into the general sentiment of past initiatives and methods. There are metrics and feedback for nearly every digital upskilling effort that was facilitated by the competence development team, which enables a good overview of the past year's achievements.

Creation of proposals for improvement to digital upskilling methods

The outcome of this data gathering task will result in the proposal to implement a method or methods, as well as any proposals to improve the existing methods. The source of data for this task is more interviews with employees. Relevant theories that will bring an understanding of the latest methods and trends of upskilling, and especially upskilling in a digital field.

Interviews can be a good format to obtain direct opinions and information about topics from knowledgeable individuals, while documents can provide concrete details about how something is supposed to be. People can share their perceptions and knowledge in a way that cannot be easily replicated through a survey or other non-face to face method.

3 Current State Analysis

This section contains the current state analysis. The section collects and analyses data relevant to understanding the current state of digital upskilling in the organization. This section will contain a breakdown and analysis of each interview and overall survey results, as well as a strengths and weaknesses analysis of the current state of the digital upskilling initiative.

3.1 Interviews with case organization leadership along with competence development contacts

The interviews were conducted with every leader in the case organization to gather feedback for the digital upskilling initiative. Nine full interviews were conducted in total, which included the leader and competence development contact of each respective unit. While it was originally planned to have the interviews with the leaders and competence development (CoDe) contacts separately, the interviews were combined due to time constraints. CoDe contacts are the individuals responsible for their respective unit's competence development needs and are in regular contact with the case organization wide competence development team. Each unit was interviewed once.

The leaders and competence development contacts were chosen as the interviewees due to their understanding of the broad scope of their respective unit's plans and needs. CoDe contacts will also be able to answer the digital upskilling related questions better than leaders, who often do not have time to delve into the topic. This combination worked well during the interviews, and on many separate occasions the CoDe contact was able to answer questions that a leader was not able to. They could also add more depth to a leader's answer.

The interviews were comprised of eight questions that can be seen in Appendix A. The interview questions covered the broader topic of case organization Competence Development (and contained only a few thesis-relevant questions). The thesis relevant questions were as follows:

- Does your team have a digital mindset?
- Most critical digital skills for your teams for the next few years, why?
- How much time should your team be allocated for upskilling weekly?
- What are the biggest challenges that your team faces when digitally upskilling?
- How do you see the current state of digital upskilling and initiatives in the case organization?

The interviews were semi-structured, meaning that the interviewees could speak about topics not discussed in the question set, although an effort was made to answer every question. Most interviews were scheduled for 30 minutes, with two being 40 minutes in length.

Knowing the available time for regular training is an important consideration for competence development, as it can determine the feasibility of various learning methods for the average learner. By far the most common challenge among every unit was the lack of time for upskilling. Most unit leaders felt that one to three hours of training per week would be optimal, with some exceptions. Many units reported that their colleagues were unable to learn with regularity beyond their immediate job role. At least one unit reported that significant time could be saved through automation with new digital tools, but that they lacked the time to learn how to use these tools, since they would have to add the training on top of their overloaded schedules.

When the interviewees were asked about their respective units' average digital mindset status, most interviewees reported they have a digital mindset. Two reported that they have a strong digital mindset, five reported a digital mindset that needs improvement, one reported that they have some digital mindset with

aspirations for developing it further. Finally, one reported that there was next to no digital mindset and that it was being slowly developed. The status of an organisation's digital mindset is important for determining what form of digitalization and digital upskilling to focus on.

Each unit was asked about their perspective of the current state of digital upskilling and initiatives in the case organization. The responses received were generally positive, with some interviewees feeling that they could not respond adequately due to lack of experience with the initiatives. The most common criticism was the perceived lack of promotion and buy-in from the community. The lack of onboarding from the community could be due to reasons mentioned by the interviewees, such as low interest, lack of time, outside of comfort zone, perceived lack of relevancy, unawareness. Most commonly mentioned reasons are mindset or communication related, although lack of time is by far the most prevalent issue.

Each unit's perception of the current state of digital upskilling and initiatives in the case organization was the final question of each interview. To add context for the interviewees, a short description of current and recent initiatives was given. All units gave similar answers with some outliers that are more unit specific.

Two interviewees felt that they did not have enough knowledge or experience to comment on the current state. The reason they mentioned for this was a lack of time to pursue upskilling beyond current role requirements. It is also possible that they were unaware of the digital upskilling initiatives for various other reasons. Five out of nine interviewees felt that there is a low adoption rate of digital upskilling initiatives. Among these interviewees, a common perception was that the low participation rate of digital upskilling initiatives could be due to a lack of marketing and awareness.

Out of nine units, six responded that they want targeted and concrete training opportunities.

At least one unit responded that they want higher levels of investment in developing experts, instead of maintaining a standard for the whole community. For example, experts could specialize in digital skills such as Python, and handle all complex Python related tasks for their teams, rather than everyone having to learn a basic level of Python. This effort could be repeated for various experts and competencies until there are experts in all critical areas that can handle complex tasks while the rest of the team focuses on day-to-day activities.

3.2 Competence development contacts survey

This survey follows the interviews in 3.1. The survey questions go into more detail and ask more specific questions about digital upskilling methods. The survey questions can be found in the Appendices. Five out of 11 possible competence development (CoDe) contacts responded to the survey, with eight total responses.

A survey was conducted in addition to the interviews to ensure that respondents had the best possible chance to give robust feedback, and to answer more in-depth questions that could not be asked during the interviews due to time-constraints. The CoDe contacts were chosen as the audience for this survey as they have the most knowledge about their unit's specific learning needs and state. Due to the short timeframe of the thesis, there was no need for multiple surveys to test for changes in any unit's feedback.

The responses were overall positive, with actionable feedback for most questions. The CoDe contacts rated the current digital upskilling initiative a mean of 3,4/5. The respondents felt that the currently offered training initiatives' biggest strength is that they are flexible and varied. The biggest weakness was the lack of focus in trainings. One respondent claimed that it was easy to become paralysed with the choice when approaching the curated learning paths, as they rely on the individual learner to choose which path to take followed by the order of courses. Another respondent felt that the level of

trainings should be more practical, rather than the awareness level they are currently at. This would suggest implementing more complex hands-on practical learning.

When asked about each unit's preferred methods of learning, most respondents felt that group and hands-on learning is the best. In addition, of the six that responded with hands-on or group learning, three suggested that certifications complement learning. One suggested that while certifications are not learning, they provide proof that an individual has learned a topic. Certifications are a great motivator for some learners, since it is a concrete goal to work towards.

All organizations face challenges when digitally upskilling and utilize different strategies to overcome these challenges. Each unit was asked what they found to be the most effective in overcoming any difficulties. There was no majority consensus as to a strategy that works best for digitally upskilling. Three out of eight respondents said that a top-down, champion approach works the best, while others said that good training and messaging is the key. While competence development can provide training and assist the unit's in creating unit specific training and marketing, a top-down approach can only come from a unit's leadership.

3.3 General case organization survey

This survey had the widest reach, with a target audience of the general case organization community. The survey consists of eleven high level questions that aim to gauge the community's perceptions of digital upskilling, followed by the perceived value add of utilizing various learning methods. The survey questions can be found in the Appendices entitled general survey questions.

The response size for the general survey was forty-five respondents, out of a possible total of about 2800 people. This means that a response was received from just over 1,5% of the case organization community.

Most respondents, 36/45, considered themselves eager to learn new digital skills, suggesting a high willingness to learn. Out of the other nine responses, all were neutral, with none against learning new digital skills. A slightly higher number of respondents consider themselves eager to apply digitalization to their daily work. Thirty-seven respondents were eager, eight were neutral, and none against. A free answer field was provided that allows respondents to explain how digitalization could benefit their team. Thirty-five free answers were provided, with the majority claiming that digitalization could increase efficiency and free up time for other work. Increased work efficiency was directly mentioned in fifteen answers.

The next question asks how relevant digitalization is in the individual's daily work. Twenty-seven claimed that it is quite relevant or very relevant. sixteen claimed that it was somewhat relevant or not irrelevant. Two claimed it was slightly irrelevant.

Thirty respondents answered what they felt was preventing them from learning on a regular basis. Fifteen respondents felt that workload or other lack of time prevented them from learning regularly. Eight respondents, almost one-third of the total, felt that they had nothing preventing them.

The final question of this survey described each learning method in use by the case organization's CoDe team in the digital upskilling initiatives. Each method listed had a brief description asked for a rating of perceived value add to the individuals learning experience. The methods listed were blended learning, hands-on learning, face-to-face learning, and gamification. All methods were seen as valuable to the learning experience, with some methods being seen as more valuable than others. Hands-on learning was rated by thirty-four respondents as valuable or highly valuable, with ten neutral and one perceiving little value. The lowest rated method is gamification, which was seen as valuable or highly valuable by twenty-four respondents, with twelve neutral, and nine perceiving little to no value.

3.4 Strengths and weaknesses of the current state

Table 2. Strengths and Weakness of the current state. Bolded weaknesses represent the focus of the thesis.

| Description | Strength / Weakness | Source |
|---|---------------------|--|
| Case organization-wide digital mindset is strong | Strength | Interviews |
| Variety of curated learning paths at multiple competency levels available | Strength | Interviews, CoDe contacts survey |
| Hands-on method is highly valued, currently being utilized | Strength | CoDe contacts survey, General case organization finance survey |
| Low adoption rate of digital upskilling initiatives | Weakness | Interviews |
| Limited time availability of community | Weakness | Interviews |
| Choice paralysis from broad range of learning content | Weakness | CoDe contacts survey |
| Lack of focused and concrete trainings | Weakness | Interviews, Code contacts survey |

This thesis will focus on the weakness of limited time availability of community, and how to utilize the limited time available for learning as well as possible. This was decided due to the large number of individuals that perceive themselves to have heavy time constraints, and that many of these individuals do not participate in learning initiatives. By finding the most time-efficient or learning effective training methods, the community may over time reduce their daily workload. The goal is to make upskilling into new critical digital areas as efficient as possible for learners who lack the time and direction, and managers who feel they cannot allocate longer hours for training.

The weakness of choice paralysis resulting from a broad range of learning content will also be tackled through research on finding the most valuable training methods to implement. The CoDe contacts survey revealed that some learners perceive that too many options for learning prevents them from starting, and that they need more guidance.

The chosen weakness can be tackled through a literature study of modern learning methods and the experiences of relevant individuals. Robust and efficient learning methods have the potential to alleviate the learners' time constraints.

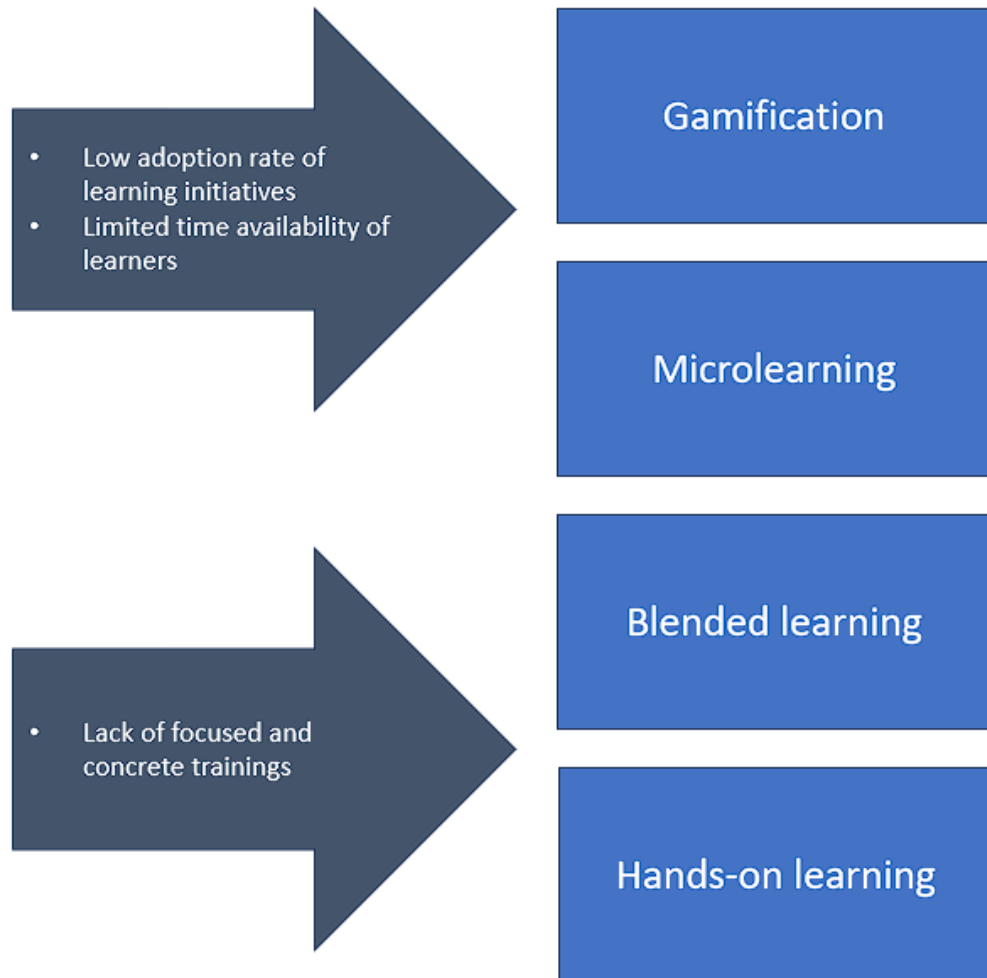


Figure 2. Weaknesses from current state analysis led to topics of study.

Figure 2 depicts the main weaknesses identified during the current state analysis, and the topics that they led to. The four main learning methods on the right have the potential to alleviate the identified weaknesses and were therefore chosen as topics of study in the following chapter.

4 Literature study

There are various training methods to consider when looking to upskill a workforce. Training can be split into various categories, such as traditional face-to-face training or online learning. A recent trend is the shift of learning resources to the online space, where they are more flexible and readily available compared to face-to-face methods (Abrahamsson and Dicksson, 2023). This is due to their always online nature, meaning that a learner can access the learning content on their own schedule, rather than relying on fixed timeslots for learning with an instructor present.

The rapidly changing business environment is forcing organizations and employees to upskill a more broad set of skills than ever before (Hadjati *et al.*, 2023). Around 25% of jobs have had their required skillsets change since 2015, with expectations to double by 2027. Heavy workloads on employees remain, while new skills are expected to be learned quickly and efficiently. The LinkedIn Learning report 2023 (Hadjati *et al.*, 2023) states that 89% of learning and development professionals agree that the solution to such fast skillset change is proactive upskilling. This means that upskilling is more important than ever, and finding the most efficient and effective learning methods is key to having a future-fit organization.

4.1 E-Learning

E-learning encompasses all learning that is done through a digital medium, for example, web-based training, webinars, online learning platforms, and blended learning (Schröder, 2021). The terms e-learning and online learning are interchangeable. During the COVID pandemic, learning was rapidly transformed from an in-person experience to a remote e-learning experience, on top of rapidly increasing the need to digitalize and enable remote work for many jobs (Mikołajczyk, 2021). Most organizations have shifted their learning and development budgets away from traditional instructor-led training and towards online learning, including learning platforms with accessible training and bigger

reach (Van Nuys, 2021). E-learning is swiftly replacing classroom-based training. Traditional face-to-face instructor led classroom training is being replaced by virtual instructor led training, especially in the form of online blended learning. In the 2020 survey by LinkedIn Learning (Van Nuys, 2021), they found that 73% of learning and development professionals expected to spend less on in-person instructor led training, whereas 79% expected to spend more on online learning.

According to Gascó, Llopis and Reyes González, 2004, the shift to e-learning and subsequent redesigning of learning content to fit on online platforms has proved advantageous to learners. This is due to the accessibility of learning content being greatly increased, since e-learning fits an available at any time and place model. While the implementation of e-learning was costly in both time and resources, it enables learners to connect to learning content in a way that was impossible when in-person learning was more prevalent.

Although e-learning has become widespread in corporate environments, it has not been adopted by all learners. According to Annansingh and Bright, (2010), there are three main barriers to e-learning, which are time, technology, and resistance to change. Managers may not see the value of learning beyond mandatory skills in the workplace, and therefore not allocate time for their staff to learn. An already high workload can also discourage potential learners from consuming learning content more regularly.

Another potential barrier is the technology of the e-learning platforms. An e-learning platform must be reliable and always available for learners, meaning that these platforms must have sufficient infrastructure to load learning content for every learner in a reasonable amount of time.

Some individuals may simply prefer traditional learning settings, such as physical classrooms and workshops. Other learners may perceive that they are not technologically savvy enough to access and benefit from e-learning, likely due to unfamiliarity with online tools and platforms. These perceived barriers

are classified as resistance to change, as they are based on preference for older methods.

Any of the above stated barriers to learning lead to a much higher drop-out rate for e-learning content compared to classroom training (Horton, (2000) as cited by Annansingh and Bright, 2010). To avoid this, learner's needs must be considered when offering e-learning. Learners must perceive the value and relevancy of the trainings, and that they have enough time to commit to learning.

4.2 Blended learning

The term blended learning is often brought up when discussing modern learning methods, especially in conjunction with learning methods available through e-learning. According to Hrastinski (2019), there have been various definitions for blended learning going back to at least 2004. Most of these definitions state that blended learning includes both face-to-face classroom learning and online segments, with various weightings between which of the two learning methods should hold most of the learners' time. A common example of blended learning is a longer-form course that includes e-learning in between instructor lead sessions. Today, the instructor-led training can be held either in-person or online. During and post-Covid, the opportunities for face-to-face learning have diminished, with organizations favouring online replacements that are more accessible (Van Nuys, 2021).

Blended learning in a workplace environment enables colleagues to collaborate and support each other's learning by, for example, leveraging subject matter experts or leaders' knowledge and experience in knowledge areas through group learning opportunities (Lewis and Harapnuik, Dwayne, 2021).

When implementing blended learning, classroom size and scheduling conflicts must be considered. Even when the instructor led sections are moved online, it is difficult to organize large amounts of learners if sessions are interactive or involving group work. Modern classrooms are often more of a concept or

experience rather than a location. Due to the prevalence of e-learning, learners can use a large variety of devices to access learning content. Blended learning, and training in general, must be created to suit the array of learning devices and locations used in modern learning. Blended learning in the workplace must also be designed to consider the roles and needs of the audience, to make the most effective learning content for those individuals. One must keep in mind that online blended learning requires some use of technology, which can be unfamiliar or even overwhelm learners. There must be clear instructions and a helpful environment available to learners to prevent anyone from being demotivated due to perceived lack of technological capability. (Hofmann, 2018)

Blended learning, especially when online, is a long and complex learning method to implement successfully when compared to simple, one-off courses that can be completed in one sitting. Due to the various phases of learning in blended learning, there is a higher risk of failure. The learners must be motivated and see value in attending the instructor lead training, completing the self-directed work, and potentially complete an assessment. To prevent this, a needs assessment must be conducted to link the learning outcomes to the business requirements. When the learning outcomes and objectives are clearly detailed, focusing the learning content becomes easier, and learners will see the value of the training. During and after the blended learning training, the learning content should be archived and accessible to all learners as a support to either their self-directed learning and further learning. (Hofmann, 2018)

4.3 Micro-learning

Micro-learning is a type of learning that is short to complete and focused on one specific topic or area (Buchem and Hamelmann, 2010, as in Nanjappa *et al.*, 2022) As reported in the current state analysis, lack of time is a widely reported limitation to learning potential of employees. This potentially limits available training methods that cannot be scaled to be shorter and more accessible. According to (Nanjappa *et al.*, 2022), rapidly changing technology needs in the business environment lead to a need for “focused, just-in-time, cost effective,

short-tenured, but engaging, learning modules". To adapt to these new technologies while maintaining a heavy workload, employees could benefit from shorter, targeted, and flexible learning material. More traditional, long-form learning methods may not be as accessible or useful to those with tight schedules or who struggle to maintain engagement throughout longer learning sessions.

According to Nanjappa *et al.*, (2022), the main benefits of micro-learning to a learner are the flexibility and access afforded by the short completion time. This short completion time tackles one of the main weaknesses of learning in a corporate environment, which is the perceived lack of available time for learning. Managers also found that learners could use micro-learning together with other learning methods to boost learning and help with longer form training (Abrahamsson and Dicksson, 2023). Micro-learnings have also been found to be beneficial for increasing engagement and learning outcomes, including when paired with adding game elements (gamification) to the learning content (Arnab *et al.*, 2021).

Micro-learnings alone cannot teach more complex, multidisciplinary topics due to limitations in time and scope of trainings (Nanjappa *et al.*, 2022) (Abrahamsson and Dicksson, 2023). Micro-learnings must also be specially created to tailor to each topic and fit the specific format of a micro-learning, meaning that it is not sufficient to break down longer form content into shorter sections. The main drawback is the effort and resources required to make multiple short learnings compared to longer form content (Díaz Redondo *et al.*, 2021). This requirement can be reduced by encouraging learners to participate in content creation, such as having experts write or record short trainings on topics they know well.

Micro-learning can be placed into the same e-learning platforms that host other longer form content to satisfy the learning needs of learners that perceive that they lack to time to complete more long form content. Keeping both micro-learnings and other learning content on the same platforms improves the user

experience and reduces the likelihood of potential learners not wanting to their learning content to be spread across different platforms with their own log in requirements. Another advantage of keeping both micro-learning and other learning content on the same platform is that it allows trainers and curators to combine both learning methods to train more complex skills. Micro-learning can be the learning reinforcement to other longer and more complex forms of learning, such as hands-on or blended learning. (Díaz Redondo *et al.*, 2021)

4.4 Hands-on learning

Hands-on learning is a learning method that emphasizes learning by actively doing real-life or mock tasks in order to learn by experience rather than theoretical training (Admane and Mondhe, 2021). While hands-on learning is often conducted in-person, digital skills can be practiced hands-on online. Tools such as Microsoft Excel or Power BI are found exclusively in a digital format and can therefore be practiced hands-on using both online and offline learning materials.

Admane and Mondhe (2021) suggest that hands-on learning can be particularly useful to learners that struggle with theoretical studies. In their study, they found that 11 out of 15 students identified as “weak” in their theoretical studies were assessed to be good at hands-on assignments, compared to five out of 15 being assessed to be good at conceptual and theoretical assignments. On the other hand, seven out of 15 bright students rated highly in hands-on assignments compared to 12 out of 15 bright students being good at conceptual or theoretical assignments.

Hands-on learning was found to be beneficial to learning when combined with blended learning (Chandler *et al.*, 2013). The study found that hands-on work following online learning enhanced the learning experience and significantly increased the likelihood that learners understood how to perform in their functional roles. Hands-on learning can be conducted both online and face-to-face and is especially effective when done in a social environment where

learners can help each other. Hands-on learning was seen to be more effective in a face-to-face environment, however.

4.5 Gamification

(Zichermann and Cunningham, 2011; Deterding et al., 2011, as cited in Zainuddin *et al.*, 2023) gamification is the concept of adding game-like elements and experiences to non-gaming situations. Examples of game elements include achievements, points, leaderboards, goals, challenges, and so on.

A recent study on Adult learners with the average age of 32, suggests that there is a correlation between added gamification in learning, and final test scores (Zainuddin *et al.*, 2023). Students also claimed that gamification elements increased their motivation and attentiveness while learning.

Adding gamification elements can be as simple as including gamified quizzes to learning sessions, or adding achievements for completing learning content that can be shown off by learners. The goal is not to convert learning content into a game, but to enhance the overall learning experience with gamified elements.

According to a study by Arnab *et al.*, (2021), gamification works particularly well when added to micro-learning content. Users in the study felt that adding mini games such as 'drag-and-drop' games and other challenge-focused games were voted as the most popular and value adding gamification elements to add to the learning content. Short, interactive mini games that tested knowledge with various challenges proved to be the most engaging. Out of narrative and scenario driven games, the one that used ethnicity and cultural agnostic characters was rated the highest, compared to live-action games with actors.

4.6 Summary

Four main learning methods have been identified and studied as potential solutions to improving the currently used learning methods for digital upskilling in the case organization. These learning methods are blended learning, micro-

learning, hands-on learning, and gamification. Each learning method exists to some extent in the form of e-learning or online learning.

Table 3. Summary of all topics explored during literature study.

| Topic of study | Summary | Implementation |
|-------------------|---|--|
| E-learning | All online learning is e-learning, usually kept on learning platforms | Create learning content online |
| Blended learning | Instructor led training with online learning | Offer to learners who can take long form in-depth training |
| Micro-learning | Short and focused training on one topic or area | Create learning material with minimal completion time |
| Hands-on learning | Learning by completing / practicing tasks | Learners receive tasks to complete using skills or tools they are learning |
| Gamification | Adding game elements to improve learning experience | Enhance learning material with game elements such as achievements |

Little research has been done combining multiple learning methods. Each source used focused on one learning method, with very few exceptions. In a real-world learning environment, learners have different learning needs and

preferences, especially in a diverse corporate community. Multiple learning methods must be combined to provide the best possible learning outcomes that suit the learners' individual needs.

No research was found that dealt with a scope or setting similar in size to the case organization. Some articles researched students, who are used to formal learning environments and generally do not have a separate workload beyond learning. Adults may also have a large gap from the time that they were last in a formal learning environment, considering the average age in the organization being above 40.

Seemingly little research has been done on hands-on learning, especially in a corporate environment. Some research used the term experiential learning, which is another name for the same concept.

Gamification is in an early phase for research. One article discussing gamification stated that more research must be done to explore the topic further.

While the generalizability is limited, the research explored provides a good basis for the proposals highlighted in the next chapter of the thesis.

5 Proposal

This section contains the proposals for improving and implementing learning methods based on the findings from the interviews, surveys, and research on relevant literature.

5.1 Identifying the types of learners

A workshop was held to identify learners in the organization, and brainstorm solutions for each category. First, a distinction is made between identified and categorized learner groups based on perceived common learner traits, then, proposals are offered based on these learner's needs based on perceived to add value to each learner group. The workshop was attended by the case organization's Competence development lead, case organization competence development senior consultant, and competence development trainee.

The learners as individuals were identified in the workshop as fitting into seven identified learner categories. The learners were classified as individuals that primarily fit into one category. Some proposed solutions in the table below are not learning methods but enable learners to move to other categories where learning methods are applicable. Once learners move to applicable categories, they will be offered the proposed learning methods found in the table and detailed in 5.2.

Table 4. Categorization of Learners

| | Hands-on learners | No time | Enthusiastic but lost | Unaware | Unconvinced | Happy Learners | Neutral learners |
|-----------------------------|---|---|---|---|--|---|--|
| Characteristics of learners | <p>Want to learn by doing</p> <p>Want concrete examples in their learning</p> <p>Want relevant tasks for learning</p> | <p>Can't invest much time into learning</p> <p>Feels unable to participate in learning initiatives</p> <p>Unmotivated due to perceived needed time investment</p> <p>Workload prevents learning beyond mandatory training</p> | <p>Motivated to learn</p> <p>Potentially unaware of available learning content</p> <p>Can't decide where or what to start learning (choice paralysis)</p> | <p>Don't follow Competence development news / invites</p> <p>Manager doesn't inform of opportunities</p> <p>Manager doesn't enable learning</p> | <p>Establish relevance of training e.g., through manager</p> <p>"Not my job"</p> <p>Retiring soon or otherwise unmotivated</p> <p>Workload prevents learning beyond mandatory training</p> <p>No motivation for learning</p> | <p>Finds and completes learning content</p> <p>Enthusiastic for more learning</p> <p>Aware of relevant learning opportunities</p> <p>Willing to test new learning offerings</p> | <p>Finds and completes learning content</p> <p>Mandated by managers</p> <p>Learns new skills when required</p> |

In the table, the learners in the Unaware category do not currently partake in the case organization's Competence Development digital upskilling initiatives for various possible reasons, all of which result in the learners being unaware of the learning opportunities offered to them. For this reason, these individuals must be moved to other categories that are at least somewhat aware of available trainings and initiatives so that the proposed learning methods would have an impact.

Hands-on learners are identified by their preference for hands-on learning. This category contains individuals that may belong to other learner categories as well, such as No time. The hands-on learner category is the only category listed

as a learning method specific category. *Hands-on learners* were found to be strongly preferential to that specific learning method, and so they must be catered to (Admane and Mondhe, 2021).

The *No time* learners are a large block of the community who all perceive that they lack time to invest into learning or partaking in learning initiatives. These learners can be offered learning methods that can enable them to begin investing time into learning.

The *Enthusiastic but lost* learners are learners that are motivated to learn, but potentially unaware of the learning opportunities available to them. Another possibility is that they are overwhelmed by the broad range of currently available learning content and have choice paralysis.

Unaware learners are unaware of available learning opportunities. The main reason for this was determined in the workshop to be a lack of information or learning enablement by a learner's manager. Unaware learners may also not follow the feeds that competence development news and invites are offered through. These learners will migrate to the other categories upon becoming aware of available learning opportunities.

Learners that are at least somewhat aware of available learning opportunities but are not convinced to partake in them are found in the *Unconvinced* category. These learners may not see trainings as relevant to their roles or may lack motivation to learn new skills for various reasons. Some learners approaching retirement age may feel that they will not benefit from new future-oriented skills. Other learners may feel that they have too heavy a workload to add extra learning on top of, similarly to the *No time* category.

Happy learners are generally aware of available learning opportunities and seek out learning content whenever they can. These learners are highly motivated and often sign up to pilot new learning offerings.

Neutral learners complete learning content that is mandated to them when required. They do not seek out optional learning opportunities and are not motivated to learn beyond what is required of them for their role. These learners may not see the relevance of future-oriented skills such as digital skills.

5.2 Proposed solutions for learners

Proposals for each learner category were further developed and validated with the case organization's competence development team during a second workshop. There are a total of 27 proposed solutions spread across seven categories of learners. Learners are not locked into one category and are intended to migrate to different categories when the proposals are implemented as shown in Table 5 below.

Identifying key competencies was done through dialogue with the competence development contact and team leaders. The needs of each team are collected and analysed to form a list of needed competencies and actions that are then acted upon. This ensures that the case organization wide competence development is aiming in the right direction and that case organization units get targeted training in the competencies that they specifically need.

Table 5. Possible solutions for learner categories

| | Hands-on learners | No time | Enthusiastic but lost | Unaware | Unconvinced | Happy Learners | Neutral learners |
|---------------------------------|---|---|---|--|---|--|--|
| Possible solutions for learners | <p>Identify key subjects to offer</p> <p>Inform of Hands-on sessions</p> <p>Create more hands-on learning in key subjects</p> <p>Create innovation projects or workshops</p> <p>Use them as teachers for more hands-on training</p> | <p>Identify key subjects to offer</p> <p>Offer workshops or special learning that can be agreed with manager</p> <p>Offer microlearning in key subjects</p> | <p>Establish awareness of training e.g., through manager</p> <p>Offer more / better guidance for starting learning</p> <p>Raise awareness of available content</p> <p>Invite to learning pilots</p> | <p>Manager informs of training opportunities</p> <p>Improve learning opportunity advertising</p> <p>Persuade manager of training relevance, so that they inform others.</p> <p>Be transparent about the future, skillset changes happening</p> | <p>Be transparent about the future, skillset changes happening</p> <p>Show vision of competence development goals</p> <p>Establish relevance of training e.g., through manager</p> <p>Show how these individuals value gain from learning</p> | <p>Advertise all learning opportunities</p> <p>Offer specialized training for expert development through manager</p> <p>Test / pilot new learning offerings through them</p> | <p>Establish relevance of training e.g., through manager</p> <p>Persuade manager of training relevance, so that they inform others.</p> <p>Show vision of competence development goals</p> <p>Provide achievements, gamification-based recognition</p> |

The solutions listed in Table 5 are not listed in the order of implementation, as there is no mandatory order for the implementation.

E-learning or online learning has already been widely implemented in the case organization and will continue to do so. It is expected that all learning opportunities are online unless specifically stated otherwise.

Learners in the *Unaware* category must be made aware of learning opportunities and moved to other learner categories before their learner needs can be addressed. *Unaware* learners must be reached through various means,

such as through their managers. Managers were identified as the most likely weak link in communicating about learning opportunities. This suggests that managers need convincing to enable the learning of their staff by forwarding case organization competence development news and invites. These managers could be convinced to raise awareness of available learning opportunities if they were convinced of the relevance of training and the outlook of future skillset changes that are rapidly occurring in the business environment. By showing managers that digital skillsets are becoming vastly more relevant to the corporate finance environment, they will realize the need to upskill their team's digital competencies. Increasing the frequency of the case organization competence development advertising could also have an impact on the awareness of the learning opportunities. Once these learners become aware of the learning opportunities, they will migrate to the other learner categories, such as *Unconvinced* and *No time*.

Unconvinced learners are similarly not adopting learning initiatives with the difference being awareness. These learners are aware of some or all the learning opportunities available to them, but do not see the relevance or value of upskilling. The goal with *Unconvinced* learners is to persuade them to invest time in learning and then migrate them to another learner category. These learners should be handled similarly to managers, in that they should be presented with the outlook of skillset changes approaching and shown how it affects their roles. These learners' managers should also be utilized to show the relevance of upskilling to their roles, since managers will have a more specific understanding of their team's competence development needs than the competence development team that is responsible for the entire case organization. These learners must also be shown how they will benefit from upskilling and becoming future-fit, especially by demonstrating how it will benefit their career in the future.

Enthusiastic but lost learners have two distinct groups, that are both motivated to learn. The learners that are unaware of new learning content for them to consume should be made aware, through both their managers and a higher

frequency of learning opportunity advertisement. Managers need to be convinced of the value of upskilling, through previously mentioned means. Learners that are aware of available learning opportunities but find themselves unable to choose where to begin should be offered clear guidance on how to start learning. This is especially relevant to the digital personas, which are learning paths with large amounts of curated learning content. These learning paths are presented as five different levels of competency, ranging from a beginner to digital competencies, to an IT level digital expert. The learning paths were created to cater to the needs of learners but have also caused some confusion and choice paralysis. These learners are motivated to learn and should be invited to learning pilots for new learning methods and initiatives. These pilots are often of a hands-on or blended learning format. These learners are more likely to be motivated to participate and provide valuable feedback for implementing new learning content to the general case organization audience.

Happy learners are already completing and seeking out new learning content, and therefore see the value and relevance in upskilling. To satisfy the learning needs of these learners, learning opportunities should be advertised in an increased frequency to increase the likelihood of them finding more content. These learners are also ideal for piloting new learning offerings as they are always looking for more learning opportunities and will be the most motivated to test the latest learning methods and content. These learners should also be offered specialized training for expert development through their managers. This specialized training is very often in the blended learning format. Expert development is a priority for many case organization units and would satisfy both managers and happy learners to implement.

Neutral learners complete only the learning content mandated by managers, such as skills that are required for a role. There are two directions to go with this learner category. If learning is prioritized over motivation to learn, managers could be convinced to mandate more training to these learners. This would require establishing the relevance of training persuading the managers of the value of training. On the other hand, some neutral learners could be motivated

to learn if they are rewarded for learning, such as through gamification mechanics. Many individuals in this category have execution roles, and prefer rewards for completion of tasks, in a competitive nature. These learners could earn achievements or badges that they could show off to others. Other learners might be motivated to know how upskilling will bring value to their careers.

Learners in the *No time* category perceive that they lack the time to invest into learning beyond mandatory trainings. These learners must be offered trainings that take up minimal time yet target key competencies that will benefit them in their roles. The most effective learning method for these individuals would be micro-learnings, which aim to teach specific topics in a short amount of time. Implementing micro-learnings would require either the creation or curation of learning content that is specifically made to be micro-learning. It is not enough to cut up longer form trainings into smaller pieces and label them as micro-learnings. Workshops or special learning sessions should be offered to managers to get individuals or a team learning without disrupting the workload by implementing a regular training time. These could be single workshops that a team sets aside one day to learn a new competency, or a few days to attend a blended learning class. If scheduled through a team's manager, this would enable a whole team to get learning done at once, and then allow the team to get back to their work afterwards. The main benefit is that this avoids having a manager allocate time for learning over a long period of time, versus agreeing on one-off learning sessions.

The *Hands-on learner* category consists of learners that strongly perceive value in hands-on learning, meaning that they want to learn by using the tools or processes they are learning. These learners should be offered trainings in key competencies, such as data visualization, and the opportunity to practice skills in these competencies, ideally in a group setting with a trainer that can assist them as they learn. More hands-on workshops and training sessions should be created to suit the needs of these learners. These hands-on trainings should be offered in a variety of needed competencies to ensure that learners who strongly prefer hands-on learning can learn a variety of skills. Innovation

projects or workshops could also be created for these learners to apply their knowledge and skills to innovate on relevant topics in a hands-on manner. These learners would have concrete, work-related topics to work on and learn in a group setting. Due to the often-social nature of hands-on learning, experienced learners can be utilized to instruct on hands-on learning topics. In this case, the size of the case organization is advantageous, since there are experts in a wide range of competencies, who are often willing to teach others. These experts can also be utilized as mentors for various initiatives. Hands-on training can be combined with blended learning training as seen in 4.4 hands-on learning.

5.3 Proposed solutions by criticality

This section presents the proposed solutions in order of time requirement for implementation by case organization Competence Development and others by value to the learner. The proposals and their charted positions were validated through a workshop with the case organization's competence development team.

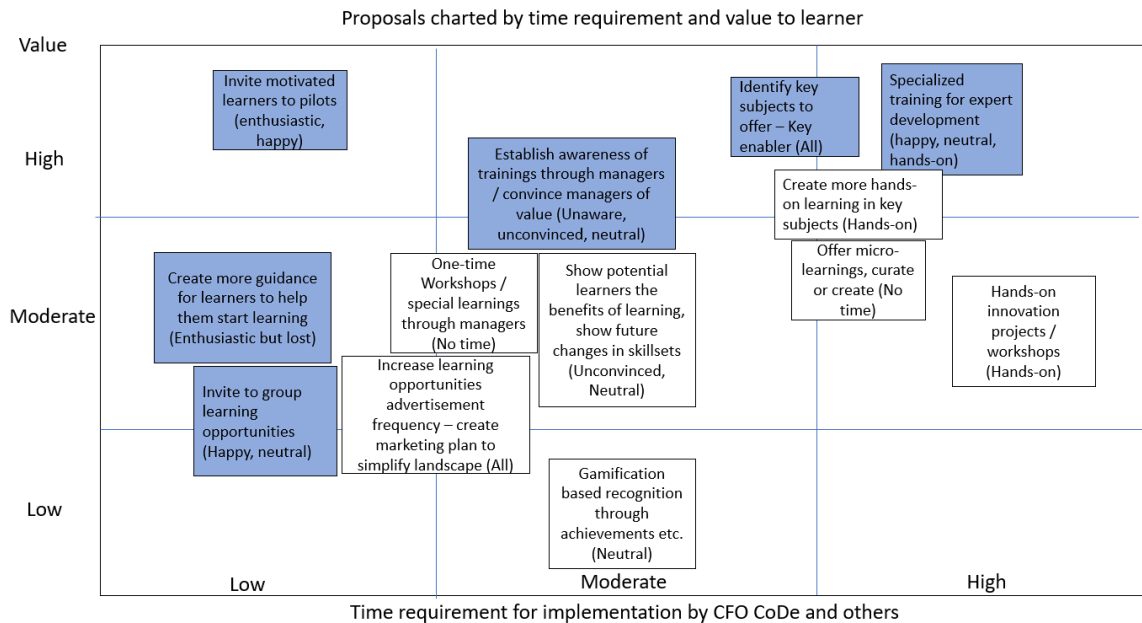


Figure 3. Proposals charted by time requirement for implementation by Competence Development and others by value to learner.

Figure 3 depicts the 27 proposals shown in Table 5, which have been consolidated into 12 proposals. Priority proposed actions are marked in blue. These proposals are then charted in order of time requirement as cost of implementation, and value to learners. These 12 proposals were consolidated from duplicate and similar proposals in each of the seven learner categories. The learner categories that each proposal appears in is written in parentheses. The proposals marked in blue are suggested as the highest priority.

The highest value solutions are to invite identified motivated learners to participate in pilot initiatives, establish awareness and convince managers of the value of trainings. Compared to increasing case organization-wide advertising, convincing managers of the value of trainings will take more effort and yield much higher value, as messaging from managers has more impact than case organization-wide communications from the competence development team.

The key enabler in Figure 3 is identifying key subjects to offer to the learners. This is because learner and unit needs must be identified before new learning methods and competencies can have learning content developed for them. This

is not a fast process, as it requires interviews with leaders and competence development contacts, as well as surveys and data analysis. Without this step the competence development team would be forced to guess what skills and competencies the teams will need to learn in the future.

Once key subjects are identified, if the new skills require a new type of training, motivated learners should be prioritised when piloting new training methods. These learners will participate fully in trainings and provide detailed feedback that will enable the CoDe team to adjust the training if necessary.

Establishing awareness of trainings and convincing managers and their teams of the value of trainings can be done with similar materials. The competence development team should develop presentation material that shows the benefits of learning to both individual roles and long-term careers. This material should also show the outlook of how the business environment is changing rapidly to require new digital skillsets. This should be presented at events with a large audience, ideally with both managers and non-managers present. Finally, a simplified marketing plan should be created as well, as an easy-to-reach and easy-to-read site that communicates all of case organization CoDe's available training content and how to get started.

Creating better guidance for learners to help them start learning is a low-cost task to implement that will take at least some learners from doing no learning to doing some learning. There has been some indication that there are individuals who have tried to start learning but have not succeeded, as they have been confused as to how to begin using the learning content. With a clear guide on how to begin learning, this could be avoided.

Specialized training for expert development has a high cost to implement but will be of high value to learners who participate in it. There are many steps required to implement specialized training, such as identifying subjects requiring experts at a unit level, finding expert trainers that are likely external to the

company, getting managers to allocate significant time to training, and then scheduling the training.

Other proposals charted in Figure 2 will provide value to learners for moderate to high cost, yielding a less beneficial cost to value ratio than the above-mentioned proposals. These other proposals are still valid and should be pursued after implementing the previously listed, higher-priority solutions.

6 Summary and Conclusions

The purpose of this thesis was to research and propose improvements to the case organization's competence development upskilling methods, particularly in the digital upskilling area. The case CoDe digital upskilling methods needed improvement, and upskilling methods needed to be continually improved and iterated upon due to the fast-paced nature of change in the business environment.

There were multiple discoveries relevant to the CoDe team in this thesis, mainly related to best practices of how to implement different learning methods. For example, this thesis identified best practices for creating and implementing micro-learning content and highlighted the possibility of combining gamification with micro-learning. Another significant discovery that led to a proposal was that students that prefer and excel at hands-on learning may struggle with theoretical learning. This suggested that these hands-on learners should have a wider range of trainings to support their varied learning needs. The outcome of the thesis was a set of 27 proposals tailored to 7 identified learner categories. This was then consolidated into 12 proposals charted by time required to implement and value to learners. All of the identified proposals are actionable, though not all proposals are learning methods in themselves, as some enable the implementation of learning methods in the future.

The goal of the thesis was to identify and suggest improvements for the digital upskilling methods in the current digital upskilling framework. This goal has been reached, as the work identified and proposed actions to improve the upskilling methods and to increase the number of learners.

CoDe should begin by implementing the most efficient solutions, as they will provide learners the most value with the lowest implementation requirements. They should also take note of best practices found in the literature study section when implementing improvements to learning methods. Without this thesis, the CoDe team would need to research and develop a plan for improving the digital

upskilling methods and would not have the list of validated proposals identified in this thesis to start from. In general, this thesis can serve as a resource for current research on learning methods, and best practices.

There was a lack of research on digital upskilling methods in a corporate finance setting. Thus, articles from education and medical settings were used. There was also a lack of articles on combining different learning methods. Some mentions were found about combining micro-learning with gamification, and blended learning with hands-on learning. More research should be done on how age affects learning, how to maximise learning with only a short amount of available time, and further examples of how to implement different learning methods in a corporate setting.

This study was conducted with two surveys to two different groups, and nine interviews. One survey was aimed at competence development contacts and received five out of a possible eleven responses. The other survey received 45 responses out of about 2800 individuals. In both cases the sample sizes were limited with a potential for sample bias, meaning that critical respondents may have been missed, potentially leading to skewed results. Both surveys received quantitative and qualitative feedback. The interviews were conducted with every unit leader and competence development contact pair and should therefore be reliable. Using two different surveys and an interview is a form of method triangulation, in addition the results were validated by three different individuals, which is another form of triangulation. This triangulation leads to more reliable results than if no triangulation was performed.

All sources used in the literature study are published by reputable organizations.

With this thesis, the CoDe team now has a list of researched options to further improve their digital upskilling methods, as well as drive engagement. This can be used as a starting point when planning future learning initiatives.

References

Abrahamsson, E. and Dicksson, B. (2023) 'Upskilling the Workforce in the Context of Digital Transformation - Managers' Perspectives on the Learning Process'. Available at: <https://gupea.ub.gu.se/handle/2077/77507> (Accessed: 17 July 2023).

Admane, M.R. and Mondhe, P.J. (2021) 'Skill Development of Students through Hands-On Workshop', *Journal of Engineering Education Transformations*, 34(0), p. 250. Available at: <https://doi.org/10.16920/jeet/2021/v34i0/157151>.

Annansingh, F. and Bright, A. (2010) 'Exploring barriers to effective e-learning: case study of DNPA', *Interactive Technology and Smart Education*, 7(1), pp. 55–65. Available at: <https://doi.org/10.1108/17415651011031653>.

Arnab, S. *et al.* (2021) 'Designing Mini-Games as Micro-Learning Resources for Professional Development in Multi-Cultural Organisations', *Electronic Journal of e-Learning*, 19(2), pp. 44–58. Available at: <https://doi.org/10.34190/ejel.19.2.2141>.

Chandler, T. *et al.* (2013) 'The incorporation of hands-on tasks in an online course: an analysis of a blended learning environment', *Interactive Learning Environments*, 21(5), pp. 456–468. Available at: <https://doi.org/10.1080/10494820.2011.593524>.

Díaz Redondo, R.P. *et al.* (2021) 'Integrating micro-learning content in traditional e-learning platforms', *Multimedia Tools and Applications*, 80(2), pp. 3121–3151. Available at: <https://doi.org/10.1007/s11042-020-09523-z>.

Gascó, J.L., Llopis, J. and Reyes González, M. (2004) 'The use of information technology in training human resources: An e-learning case study', *Journal of European Industrial Training*, 28(5), pp. 370–382. Available at: <https://doi.org/10.1108/03090590410533062>.

Hadjati, S. *et al.* (2023) *LinkedIn Workplace Learning Report 2023*. LinkedIn Learning. Available at: https://learning.linkedin.com/content/dam/me/learning/en-us/pdfs/workplace-learning-report/LinkedIn-Learning_Workplace-Learning-Report-2023-EN.pdf (Accessed: 11 August 2023).

Hofmann, J. (2018) *Blended Learning*. Available at: <https://learning.oreilly.com/library/view/blended-learning/9781562861070/> (Accessed: 29 September 2023).

Hrastinski, S. (2019) 'What Do We Mean by Blended Learning?', *TechTrends*, 63(5), pp. 564–569. Available at: <https://doi.org/10.1007/s11528-019-00375-5>.

Lewis, S. and Harapnuik, Dwayne (2021) 'Blended Learning in Corporate and Workplace-Learning'.

Mikołajczyk, K. (2021) 'Changes in the approach to employee development in organisations as a result of the COVID-19 pandemic', *European Journal of Training and Development*, 46(5/6), pp. 544–562. Available at: <https://doi.org/10.1108/EJTD-12-2020-0171>.

Nanjappa, S. *et al.* (2022) 'Microlearning in corporate settings: practitioner perspectives', *Human Resource Development International*, 0(0), pp. 1–8. Available at: <https://doi.org/10.1080/13678868.2022.2160688>.

Neeley, T. and Leonardi, P. (2022) Developing a digital mindset, Harvard Business Review. Available at: <https://hbr.org/2022/05/developing-a-digital-mindset>.

Schröder, T. (2021) 'The workplace as a place of learning in times of digital transformation – models of work-related and work-based learning and in-company concepts', (17).

Van Nuys, A. (2021) *Workplace Learning Report - Skill Building in the New World of Work*. LinkedIn Learning. Available at: https://learning.linkedin.com/content/dam/me/business/en-us/amp/learning-solutions/images/wlr21/pdf/LinkedIn-Learning_Workplace-Learning-Report-2021-EN-1.pdf (Accessed: 1 August 2023).

Zainuddin, Z. *et al.* (2023) 'Andragogical principles in a gamification concept: how does it work for adult learners in an online class?', *Journal of Applied Research in Higher Education*, ahead-of-print(ahead-of-print). Available at: <https://doi.org/10.1108/JARHE-04-2022-0127>.

Appendices

Interview Questions

A. Interview Questions:

GENERAL upskilling

- What are your unit's priorities for 2023 until 2025?
- What are the top 3 challenges you face today to reach these priorities?
- Which are the competency gaps in your unit to reach short- and long-term priorities?

DIGITAL upskilling

- Does your team have a digital mindset?
- Most critical digital skills for your teams for the next few years, why?
- How much time should your team be allocated for upskilling weekly?
- What are the biggest challenges that your team faces when digitally upskilling?
- How do you see the current state of digital upskilling and initiatives in the case organization?

Competence Development Contacts Survey Questions

1. What unit do you represent?
2. There are many challenges when digitally upskilling, what strategies have you found to be most effective in overcoming these challenges?
3. What do you see as the strengths of the currently used digital upskilling methods? (Online learning, hands-on sessions, certifications, gamification, microlearning, group exercises, etc.)
4. What do you see as the weaknesses of the currently used digital upskilling methods? (Online learning, hands-on sessions, certifications, gamification, microlearning, group exercises, etc.)
5. How would you like to see the digital upskilling program (digital personas curriculum, living digital hands on, etc.) developed further?
6. Please rate the current digital upskilling experience for your unit.
7. What learning content would you need more from CoDe?
8. What are your units' preferred way of learning? (eg. hands-on learning, certifications, group exercises, online training, virtual sessions, face to face, coaching, mentoring, etc.)
9. Please rate the overall CoDe services

General Survey Questions

1. How eager are you to learn new digital skills 1-5 Not at all – Very eager
2. How would you benefit from learning new digital skills?
3. How eager are you to apply digitalization in your daily work? 1-5 Not at all – Very eager
4. How would you benefit from applying digitalization in your team?
5. How relevant is digitalization in your current work? 1-5 Not at all relevant – Very relevant
6. What, if anything prevents you from investing hours for learning on a regular basis?
7. Blended learning is the method in which learners will utilize online training, virtual training, group learning, and exercises to learn topics. The learners will generally learn material as individuals, then take classes in a group, and finally do group exercises to combine knowledge and have a practical example.
8. Hands-on learning is experiential learning, where learners will immerse themselves in a subject to learn it. This could be a project to create a report using a new tool in order to learn the tool.
9. Face-to-face workshops are the classic method of travelling to a physical location and learning from a teacher. This can enable learners and teachers to interface more and address more individual problems when compared to online learning.

10. Gamification is the adding of game mechanics into nongame settings. An example of this is adding earnable points or levels into learning content. This can add a feel of achievement into environments that don't normally have that interactivity.