Training Silver Workers for Industry 4.0: Exploring Learning Method Preferences in the PSM Sector

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ABSTRACT,

As skills 4.0, such as automatization, Ai and smart machines become essential in the modern workplace, silver workers (employees aged 50 and above) face challenges to keep up with the evolving demands. Within the purchasing and supply management (PSM) sector the silver workers must adapt to digital changes while maintaining their relevance and value. However, existing learning methods often do not align with their learning preferences. This research aims to explore which learning methods silver workers prefer in the PSM sector. Through qualitative research interviews were conducted with procurement professionals in the field. Findings show a strong preference for experiential, classroom-based and collaborative learning. In contrast, the silver workers expressed low engagement game-based and digital self-paced methods. These findings highlight the importance of designing trainings that align with the learning preference of silver workers to support their sustainable employability and valuable contribution in an industry 4.0 context. Future research recommendation would be to explore how mixed-age learning environments influence learning outcomes of silver workers.

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1. INTRODUCTION: THE CHALLENGE OF AGING WORKFORCE AND DIGITAL CHANGE

Many older employees (silver workers) choose to stay in the workforce rather than retire (Lössbroek & Schippers, 2025, p. 7). They face increasing pressure to adapt to the fast-changing demands of industry 4.0 where technologies like automation, digitalization, AI and smart machines are reshaping the modern workplace. These developments are transforming the business in how they operate, making it crucial for older employees to adapt to these new digital changes and working methods by learning new digital tools and systems in order to remain effective (Delke et al., 2023, p. 4). While many businesses acknowledge these challenges they cannot support the silver workers to guide them in this. To stay competitive it is essential that companies find better ways to support older employees not only in adapting to new technologies but also in learning how to use them effectively (Malul, 2009, p. 811).

Although companies recognise these challenges many lack structured approaches to help silver workers learn new technologies, take on different tasks and adjust to workplace changes. Ensuring that older employees receive the right training is key, so they can continue to make meaningful contributions to the business. As Delke et al (2023, p. 4) points out, it is crucial for businesses to actively support silver workers through proper training and develop strategies to ensure they can keep up with technological changes. Without such efforts organizations risk underusing the skills and experience of older workers which could limit their ability to adapt to industry 4.0. Supporting silver workers not only benefit the individuals themselves but also helps companies maintain valuable knowledge and stay competitive in a rapidly changing environment (Burmeister & Deller, 2016, p. 87). Silver workers bring valuable qualities to the workplace including deep knowledge, endurance and strategic thinking (Alboher, 2024). Their experience and knowledge base enhances better efficiency and effectiveness in the workplace (Lössbroek & Schippers, 2025, p. 4). However, without appropriate training silver workers may struggle to keep up with the demands of industry 4.0. This can lead to decreased job stability, especially when they are not given the tools or opportunities to reskill (Komp-Leukkunen et al., 2022, p. 38).

While silver workers have valuable experience and skills they are often overlooked in the design of training programmes tailored to their learning preferences (Lössbroek & Schippers, 2025, p. 2). Many silver workers say they have no problem adapting to technology, especially when they see its benefits (EXPERTISE Consortium et al., z.d., pp. 17–18). Nonetheless, trainings especially designed for them remain limited. This makes it essential to identify which learning methods they prefer in order to design successful reskilling programs. Tailoring these programs to their specific needs is needed as most existing trainings do not fully address the technological limitations and support needed for older adults which may reduce their confidence, motivation and training effectiveness (Lima et al., 2025, p. 5).

To support successful adaptation to new technologies, training must align with silver workers' needs, preferences and motivations. In light of the growing digital skills gap and aging workforce, this study aims to explore the learning preferences of silver workers in the context of purchasing and supply management (PMS) in industry 4.0. The central research question is*:*

' Which learning methods for industry 4.0 skills are preferred by silver workers in the PSM industry?'

To systematically attain the needed information to answer this question, this research is divided into the following sub-questions:

1. What type of learning systems currently exist?
2. What kind of training methods are currently being offered?
3. What characteristics do silver workers value in learning methods?

To answer these research questions information from the literature section will be used along with additional insights gathered through seven interviews with procurement professionals from the Netherlands.

Although there's a growing awareness about the challenges of an aging workforce and the rise of industry 4.0 little research has focused specifically on how silver workers prefer to learn new technology skills. While existing studies highlight the importance of supporting older employees during digital transformation (EXPERTISE Consortium et al., z.d) and recognize their long-term value to organizations (Lössbroek & Schippers, 2025, p. 4), training programs are still rarely adapted to their specific needs. This research fills a gap in academic research by providing new insights into the learning preferences of silver workers in the PSM sector. Academically it contributes to a better understanding of how age, learning preferences and technology are connected in a real workplace setting. Based on the findings of this study a preferred learning method emerges that silver workers find suitable. This preferred learning method can be applied in practice allowing training programs to be offered in a way that aligns with how silver workers prefer to learn. When learning methods are matched with the preferences of the silver workers it helps them keep up with new technology and they can improve themselves so they remain a valuable asset to the company.

2. THEORETICAL BACKGROUND: THEORIES OF LEARNING AMONG SILVER WORKERS

2.1 The term silver workers

Silver workers are people aged 50 and older. They might work in the same job they always had, return to work after retiring or they even try something completely new, such as starting their own business (Henkens et al., 2025, p. 19). The term "silver workers" not only refers to their age, but also points to the experience and knowledge the silver workers have. There are a lot of reasons why a silver worker keep working. With better health and changes in retirement regulation working longer has become more realistic for many people (Lain et al., 2020).

The International Monetary Fund et al. (2025, p. 2) found that 70 year olds today have similar cognitive abilities to what 53 year old had back in 2000, which shows how much things have changed when it comes to aging and working ability. Still age discrimination or not having the same access to training opportunities as younger workers are often problems silver workers have to deal with (Lössbroek & Schippers, 2025, p. 1). That is why it is important to create policies that support older workers and make sure that they have chances to keep learning.

2.2 Common learning methods

Understanding and using different learning methods is essential for effective teaching. People learn differently in how they process, engage and remember information. In 'Table 1: common learning methods' is provided an overview what highlights the different learning methods and their key characteristics.

Table 1 - Common learning methods

Learning method	Key Characteristic	Examples
Visual Learning	Learns best by seeing pictures and visuals	Mind maps, infographics, videos
Auditory learning	Learns best by hearing and listening	Lectures, podcasts, group discussions
Reading/ writing	Learns best by reading texts and writing notes	Note-taking, essays, reading assignments
Kinaesthetic learning	Learns by doing and using hands-on activities	Lab work, simulations, building models
Experiential learning	Learns through work experience and reflection	Internships, fieldwork, service learning
Problem based learning	Learns by solving real-life problems and doing research	Case studies, research projects, scenarios
Collaborative learning	Learns best in groups through discussion and teamwork	Group projects, peer discussions, team tasks
Lectured based learning	Learns by listening to teacher and structured presentations	Classroom lectures, presentations
Game-based learning	Learns through games and fun challenges	Duolingo, Kahoot, educational quizzes
Online/ e-learning	Learns through flexible, digital tools at own pace	Coursera, Khan Academy, edX

Each learning method suits different kinds of learners. A well-known learning method is **visual learning.** With this learning method learners prefer to engage with information through images, diagrams, videos and other visuals. These individuals often prefer using tools, such as mind maps, infographics or color-coded notes to help understand and remember information (Alabi, 2024, p. 1). **Auditory learning** on the other hand is where learners learn information effectively through listening. They tend to learn most effectively in activities were instruction are spoken, such as lectures and audio-based materials (Oladele et al., 2024, p. 3). **Reading/writing** learning is where learners show a preference for reading texts and writing things down. These learners typically perform well when reading and writing are the centre of the learning process. They benefit from note-taking, written assignments and detailed reading exercises (Bay Atlantic University, 2022).

Meanwhile **kinaesthetic learning** is learning through physical activities and hands-on experiences. People learn most effectively by engaging in activities like experiments, simulations or building models (Ayala et al., 2013, p. 132). A similar approach is **experiential learning**, but it is more focused on learning through work experiences and afterwards reflecting on them to gain knowledge and skills. It emphasizes the importance of active involvement and learning that connects to work experiences (Kolb, 1984, p. 26). Similarly, **problem-based learning,** which encourages learners to explore complex, real-world issues and focusses on research. It encourage independent research, collaboration and critical thinking. This makes it especially suitable for diversified and applied learning (Lopes et al., 2020, p. 1, 5).

Collaborative learning is an educational approach where the focus is on working in groups. It typically involves small groups of people working together to solve problems, complete tasks or learn by talking through peer to peer engagement. This method enhances critical thinking, communication skills and it improves teamwork by promoting active participation and mutual accountability (Laal & Ghodsi, 2012, pp. 486–489). Even though there are many learning methods **lecture-based learning** remains the most popular form of education, because it is efficient in delivering large amounts of information. Its effectiveness works the best through interactive elements. This makes sure the learner stays engaged and studies have found that with interactive elements students learn the most (Deslauriers et al., 2019, pp. 19251–19253).

An increasingly popular strategy is **game-based learning** and gamification. These methods use games, challenges and rewards to make learning more fun and motivating. Think about apps like Duolingo or classroom games like Kahoot (Huang et al., 2019, p. 26). Finally, **online and e-learning** makes education more flexible and easier to access. Digital platforms like coursera, Khan Academy and edX give people the opportunity to learn from where ever they are. Online learning often includes video's, interactive assessment and lessons you can do at your own pace. Which suits different types of learners with their different types of lifestyle (Means et al., 2013, p. 3, 7).

2.3 Adult learning: Andragogy

One of the most important theories in adult learning is andragogy which is developed by Malcolm Knowles. Andragogy refers to the method and practice of teaching adult learners, who are different from children in how they learn (Knowles et al., 2005, p. 61). Knowles identified six core principles of adult learning: the need to know, the learner's self-concept, prior experience, readiness to learn, orientation to learning and motivation (Knowles et al., 2005, pp. 64–68). These principles are particularly relevant for silver workers who have already a lot of experience and expect learning to be immediate applicable to their work. In fields like purchasing and supply management it is important to use andragogical principles when designing learning methods. Silver workers have often many years of professional experience, they learn best in environments that respect what they already know, when it gives them control over their learning and when it focuses on solving problems. If learning methods fail to follow these ideas they risk of losing the interest and the motivation of the silver works which eventually can limit the benefits that the silver workers bring to the organization (Henkens et al., 2025, pp. 18–19).

2.4 Learning preference in different age groups.

People who are aged 50 to 55 usually still learn very well, but they can start to notice some small changes in how fast they process information or how they remember things. This doesn't stop them from keeping the motivation to learn, especially when it helps them grow in their personal or work life (Salthouse, 2009, p. 508). Learners in this age group often like clear and structured lessons that have a practical use. They are more likely to stay motivated with what they are learning when it connects directly to their everyday job. Giving them some freedom while also helps them connect with new ideas and combining it with what they already know can really help them stay interested and remember more information (Knowles et al., 2005, p. 67).

Adults aged 55 to 60 often experience little cognitive changes in processing speed and working memory capacity. Still they have a strong ability to learn, especially when their educational experiences are connected to their needs (Ahmad et al., 2022, p. 10). They learn best from practical, experience based learning approaches. Creating supportive low-pressure learning settings can enhance their confidence and motivation leading to improved engagement (Ahmad et al., 2022, p. 8).

Learners aged 60 and above face more cognitive and sensory changes, however they still have the ability to learn effectively when they are supported. Methods that include repetition, reflection, learning that is organized and work relevant are the most beneficial for adults aged 60 and above (Ahmad et al., 2022, p. 10). Due to age-related changes in brain function, such as reduced neural adaptability during learning older learners may require more time and repetition to effectively acquire new skills (Rueda-Delgado et al., 2019, p. 45). This makes step-by-step instruction, consistent feedback and extended practice particularly important. The study by Rueda-Delgado et al. (2019, pp. 9–10) suggest that applying similar methods, clear guidance and repetition can also support outcomes in cognitive and professional learning environments for older adults.

2.5 Preferred Methods: Silver Workers

Individuals like to take initiative on deciding their own learning needs, set goals, find resources, choose learning strategies and evaluate their progress with or without help from others (Murad et al., 2010, p. 1058). These preferences can be linked to the learning method self-directed learning, which is learning where learners take responsibility for identifying what they need to learn, setting personal learning goals, choosing appropriate resources and assessing their own progress (Schenarts et al., 2021, p. 547). The flexibility in learning schedules and the ability to choose their own learning path are crucial for silver workers who may have various commitments and learning paces (Findsen et al., 2011, p. 132). It enables the silver workers to identify their learning needs and pursue relevant information on their own pace. Self-directed learning increases motivation and better learning outcomes among adult learners. The autonomy in self-directed learning is really important, because silver workers value the ability to control their learning process (Findsen et al., 2011, p. 147). Self-directed learning methods can be online modules, webinars and modular courses.

Alongside self-directed learning many silver workers also prefer experiential and problem-based learning (PBL). Experiential learning is based on the idea that people learn best through experience. Which encourages learners to solve work problems as part of the learning process. This aligns with Knowles' andragogical assumption that adults are motivated to learn when they recognize the relevance of the content to real-life situations (Knowles et al., 2005, pp. 196–197). A study from Park University (2025), also noted that older adults benefit from learning activities that are directly applicable to their work context. Problem based learning has an positive impact on practical skills and individual development among older adults. PBL not only helps learners approach deeply with real-world issues but also builds confidence and teamwork abilities. These factors can be essential for effective learning (Azzahrani, 2024, p. 3).

Another important element is collaborative learning which gives silver workers the chance to share their experience and learn from others through peer discussions and group work. This learning method helps people share what they know and this method may be especially beneficial to older adults. Research suggest that older adults' memory is improved when they remember together versus remembering individually (Wolfe et al., 2024, p. 460). Older adults learn better when they have the chance to talk and learn with younger learners, because it keeps them mentally active and it acknowledges the knowledge they already have (Findsen et al., 2011, p. 140). Collaborative learning can also help older adults remember information better and stay more motivated. The social side of learning makes it easier for the older adults to stay more engaged (Wolfe et al., 2023, p. 4).

2.5 Offered Learning Methods

In the Dutch purchasing and supply management sector there are several training programs available. One of those training providers is NEVI, which offers a variety of programs including classroom-based options and blended learning. This blended format combines face-to face instructions with digital self-study. This allows the learner to prepare independently using e-learning modules or instructional videos. Classroom based learning is then used for applying knowledge trough group exercises, reflection and discussion (NEVI, n.d.). Another provider is KPMG's Learning Academy, which provides different learning formats, such as digital, blended and classroom based courses that integrate subject matter expertise with modern instructional design and online learning platforms (KPMG, n.d.) Another provider of training is ICM, which also uses a blended learning model. In their programs participants get theoretical knowledge before the in-person sessions leaving more time during meetings to engage in peer learning. Their structure includes a mix of physical classroom days and live session via Microsoft Teams allowing both flexibility and interaction (ICM, n.d.).

3. METHODOLGY: A QUALITATIVE RESEARCH

3.1 Research design

To explore the learning preferences of silver workers in the PSM industry this study applies a qualitative research design. Qualitative research is appropriate when researching complex topics like how people learn, what motivates them and what they prefer. As Yin (2011, pp. 13–14) explains qualitative research works well when the goal is to explore how people think, feel and act in real-life situations. The data collection process involves research through semi-structured interviews. This format provides enough structure to ensure key topics are covered, while allowing for flexibility in how questions are asked or followed up on. This is essential when aiming to explore personal experiences in depth and allows for new themes to emerge during the interviews. According to DeJonckheere and Vaughn (2019, p.1), semi-structured interviews offer a good balance between structure and openness which makes it possible to collect both reliable and detailed data. Ruslin et al. (2022, p. 24) also note that this method enables the discovery of unexpected yet meaningful patterns in interviewees responses.

3.2 Sampling

For the interviews a purposive sampling strategy was used to select interviewees who can provide relevant and meaningful insights about learning preferences and experiences of silver workers in the context of industry 4.0. A purposive type of sampling method is often used in qualitative studies when the goal is to speak to people with specific knowledge or experience that relates directly to the topic (Etikan et al., 2016, p. 2). More specifically, homogeneous purposive sampling is used to select participants who matched the specific criteria relevant to the research question. Homogeneous sampling is when all participants have traits which are common this makes it simpler to explore their shared experiences and points of view. The ability to collect detailed data from participants who are familiar with the context being studied is one benefit of using homogenous sampling (Etikan et al., 2016, p. 2). In this case the main shared traits were age group, professional background and have experience with 4.0 skills. To be specific every participant was a silver worker, which is defined as someone who's 50 years of age or older, has experience in the purchasing supply management and is working with 4.0 skills. While this sample design strengthens focus on the target group it does limit the applicability to other populations, including younger workers or workers in different sectors (Palinkas et al., 2013, p.3). However, homogenous purposive sampling was the best option, because the aim of this study is specifically to explore the learning preferences of silver workers. A total of seven procurement specialist from the Netherlands were interviewed for this study. The interviewees varied in age, gender and job roles within the field of procurement. An overview of their profiles is presented in 'Table 2 – profiles of the interviewees'.

Table 2 - Profiles of the interviewees

Characteristic	**Interviewee**						
	1	2	3	4	5	6	7
Age	50-55	50-55	60+	55-60	55-60	55-60	60+
Gender	male	male	male	male	male	female	male
Job title	Purchasing manager	Purchasing director	Manager procurement	Procurement advisor	Relationship manager & trainer in PSM	Purchasing manager	Supply chain engineer
Years of experience	25+	25+	30+	30+	35+	34+	23+
Length interview (min)	30-45	30 -45	30-45	30-45	45-60	30-45	45-60

3.3 Data collection

To better understand the learning preferences of silver workers in the purchasing and supply management (PSM), this study used semi-structured interviews to collect data. A question guide was made beforehand to ensure all key topics would be addressed. The development of the interview questions was strongly informed by existing academic literature on adult learning. Each section of the interview was linked to relevant learning theories and research findings, as outlined in the theoretical framework of this thesis, see 'Theoretical background: Theories of learning among silver workers.' For example, questions about whether participants preferred learning by listening, doing, watching or discussing were inspired by the learning styles framework of Kolb (1984) and the work of Findsen et al. (2011). Preferences for structured or self-directed formats were based on adult learning theories from Knowles et al. (2005), while insights into collaborative versus individual learning drew from Wolfe et al. (2023) and Laal and Godshi (2012). By grounding the interview questions in theory the guide ensured both relevance to the research aim and consistency with prior academic knowledge. This question guide can be found in 'Appendix: 1. Interview questions.' During the interviews following up questions were asked. This way it was more helpful to collect more detailed answers or asking for examples when participants mentioned something interesting. By asking following up question during the interviews there was the possibility to dig a little deeper and to ensure some consistency across the interviews (Jordan et al., 2021, p. 3). The interviews were held in Dutch to ensure a comfortable and natural atmosphere for the interviewees. All interviews were held trough teams. Recordings were made with the participants permission to enable transcription of the interview data.

3.4 Data Analysis

After the interviews the data's were transcribed and analysed using thematic analysis based on the method from Braun and Clarke (2006, p. 87). This involves going through the transcripts carefully to get familiar with the content then picking out key ideas that come up often. These key ideas will be grouped into bigger themes that relate to the research question.

The first step was to read all the interviews transcripts to become familiar with the content. This helped to get a general idea of how silver workers talked about learning. The second step was to highlight important parts of the interviews and these important parts were assigned codes to eventually group those parts together. These codes were directly linked to specific characteristics of learning methods. For example statements about liking hands-on activities were coded under "practical learning". In the third step similar ideas were grouped together into themes that showed the main ways silver workers prefer to learn. These themes were then reviewed in the fourth step to ensure they represented the data and were clearly different from each other. In the fifth step each theme was named defined to show how it is related to the research. Finally, the sixth step involved writing up the results where each theme was explained in detail and supported by quotes from the interviewees. This table can be found in 'Appendix: 2. Quotes from interviewees.' This made it possible to show how common patterns appeared in the data while still keeping the voices of individual interviewees visible (Vaismoradi et al., 2013, p. 402).

4. RESULTS: THE KEY FINDINGS

4.1 Silver workers' learning themes

To better understand the learning preferences of the silver workers the results of the seven semi-structured interviews are conducted and summarized in 'Table 3 – Learning preferences by interviewees' see below. If a interviewee spoke positively about a certain characteristic it is marked with an "X", while a dash (-) shows that they were not in favour of that characteristic. Based on this overview several clear themes emerged from the interviews. These themes became more meaningful when looking closer at how interviewees talked about their experiences.

Table 3 - Learning preferences by interviewees

Learning characteristics	**Interviewee**						
	1	2	3	4	5	6	7
Seeing pictures			-				
Reading and writing				-			-
Hands - on experiences	x		x	x		x	x
Experience and reflection	x	x	x	x	x	x	x
Group discussions and teamwork settings	x	x		x	x	x	x
Solving real-world or theoretical problems	x	x		x			x
Instructor-centred with structured delivery of content	x	x	x		x	x	x
Gamification to motivate and engage	-				-	-	-
Flexible, self-paced and technology driven	-	-				-	-

4.1.1 The value of practical application and clear guidance

All interviewers had a dominant and consistent preference for learning in practice. Interviewers 3, 6 and 7 emphasized that they learn best and most effectively when educational content is immediately applicable to their daily operations. Interviewees 1, 3, 4, 6 and 7 expressed the importance of applying learned theory directly in practice. As interviewee 7 noted, "*I'm a practical man. I like theory, but I need to be able to work with it*." Or as interviewee 4 explains: *"I learned the most on the job, that is the way I like to learn."* This perspective was supported by interviewee 3, "*It has to be connected to what I do every day, otherwise I don't see the point*." This was further reinforced by interviewee 7, "*If you can apply it immediately at work, it sticks better."*

The interviewees didn't only value content but also structure. Several interviewees emphasized the importance of clarity and a logical sequence in training sessions. A well-organized training session was seen as crucial for maintaining engagement. As interviewee 7 explained*, "When the process is approached step by step people know what to expect and understand the purpose behind it."* This not only helps learners follow along but also gives meaning to the learning process. Structure was also appreciated as a way to manage time and maintain discipline. Interviewee 6 pointed out that, *"I find structured learning the easiest. It also forces you to actually make time for it,"* suggesting that having set learning moments helps learners stay committed. Similarly interviewee 1 valued knowing what's ahead in the schedule, which allowed for better preparation.

Besides the need for structure they also highlighted that for them it is important that there is guided learning by an expert. They clearly valued instructors who not only know the material but can also explain it well. As interviewee 2 said, *"That is something you learn after taking several courses, not all instructors who teach actually have the necessary knowledge."* Interviewee 5 agreed saying, "*I enjoy it when it is guided by a knowledge expert."* Trust was a big factor in staying engaged. Interviewee 7 noted that even small directions from someone who has experience creates trust, *"still add value to a course, creating a sense of trust among the students."* On top of that being able to ask questions when something is unclear was also important as interviewee 3 explained, *"When you don't understand something it is important to be able to receive meaningful feedback."*

4.1.2 limited enthusiasm for standalone digital learning

While expert guidance and the ability to ask questions were seen as essential for effective learning these elements were often missing by digital formats. In fact interviewees often said that digital learning doesn't offer enough support, explanation or clear purpose. *" If I get a link to a video I might watch it, but then nothing happens afterward (Interviewee 1)."* Interviewee 2 also mention that watching videos is not really his thing. Similarly interviewee 7 explained that digital content is often not really interesting, *"An online course. Yeah, I have zero interest in that. I feel nothing for it and then I think, well what am I supposed to do with it? And yeah, nothing sticks."* Making it difficult to relate the material to daily work tasks.

Furthermore it was also noticeable that game-based learning was not met with enthusiasm among the interviewed silver workers. Several interviewees expressed disinterest in training formats that incorporate games and point systems. *" Online games would be the last thing I would choose. Everything has become some kind of game and then I think is the goal to win the game or to actually understand the material (interviewee 1)."* He added, " *I don't need to score 100 points, because I think what are you supposed to do with those 100 points."* Interviewee 5 also questioned the practical value of game-based learning explaining, "*Sometimes I think that it is a bit overrated. I find it difficult to make a good transfer from a game environment to my own practical work environment."* Interviewees 6 also didn't express any positive remarks about gamified training. The game-based learning reduces the perceived seriousness of the training.

Most interviewees didn't really talk about visual learning or reading and writing as preferred learning characteristics . Interviewee 3 said, "*I don't prefer visual learning,"* and interviewee 4 mentioned, *"I find learning from a book awful,"* showing that they don't like those ways of learning. The other interviewees didn't bring up these characterizes at all.

4.1.3 Importance of peer interaction and contextual relevance

A theme that was mentioned a lot was the value that the interviewees placed on learning through interactions with other peers. Almost all the interviewees expressed a preference for collaborative settings over learning alone. They found that learning with others made the process more engaging, but also helped them better understand the material. This was supported by interviewee 5 who noted, "*Sharing different perspectives building on each other's input that gives me new insights too. I really enjoy that*." Interviewee 1 also mentioned, *"Well in principle it is nicer when you did it with multiple people."* Beyond just understanding the content interviewees also highlighted the creative benefits of group learning. Interviewee 7 reflected, *"Group work encourages creativity and allows you to learn from each other's perspective."* According to interviewee 6, this way of learning also aligns with future work trends: *"Actually only with other people, because the future is really about collaboration and communicating with many different people."* While many interviewees acknowledged the value of group learning interviewee 2, 3, 4 and 5 also emphasized that it only works well when peers are on a similar level of knowledge and experience. Interviewee 3 shared, *"In my experience when you do something in a group there are always people who are faster and others who are slower. At some point, I start to feel bored and I have a hard time dealing with that.* Interviewee 4 preferred learning: *"With people who know what they're talking about,"* while interviewee 5 noted*, "Preferably with like-minded peers, that's when my energy starts flowing again."* Explaining gaining motivation with working with people that can stimulate each other.

This strong preference for collaborative learning was closely linked with another key insight, which is the preference for

repetition and the connection of the learning content to work situations. Interviewee 2, 3, 6 and 7 stressed that they learn more effectively when they can regularly review and apply the material. Interviewee 3 noted, *"I need to do it about ten times and ideally it should be practiced weekly."* Similarly, interviewee 7 emphasized the value of consistent repetition stating, "*If you do it every week, it sticks*." This repetition was especially effective when tied directly to work. As interviewee 6 explained, *"I remember it best when it is also relevant to my work environment."* While interviewee 3 echoed this by saying, *"It has to be connected to what I do every day, otherwise I don't see the point."*

4.2 Learning preferences across ages

The interviewees represented different age categories, early 50s, 50 to 60 and 60 plus they all shared a consistent preference for practical and collaborative learning. Those in their early 50s, such as interviewee 1 and 2 emphasized the importance of structured learning and expert guidance. Interviewee 1 explained the importance of a clear framework stating: *"You know what is coming next week, so you need to have certain things prepared and completed."* While interviewee 2 expressed the value of immediate support during the learning process, indicating that having guidance helps them stay engaged and to better understand the material. Interviewees aged 55 to 60, interviewee 4, 5 and 6 placed value on low pressure settings and practical, socially engaging environments. For example interviewee 4 said, *"It's best done in a small group,"* suggesting a need for supportive environments where they could feel comfortable. Interviewee 6 explained, *"That forces you to make time for it,"* referring to structured sessions and stressed the importance of relevance by saying, *"I remember it best when it's also relevant to my work environment."* Among the interviewees aged 60 and older, like interviewee 3 and 7 placed particular emphasis on repetition and practical application. Interviewee 7 emphasized that repetition build confidence over time stating, *"When people repeat a process several times they start to build confidence."* Interviewee 3 supported this by explaining the need for training that demonstrates practical value and is built around work situations.

5. DISCUSSION: REDEFINING LEARNING FOR SILVER WORKERS

5.1 Interpretation of results

This research aimed to better understand how silver workers prefer to learn industry 4.0 skills within the PSM sector. The findings indicate that silver workers had a strong preference for three key themes: the importance of practical application, the value of learning through peer interaction and the need for structured and guided learning environments.

First, the silver workers showed a strong preferences for learning that has practical application. Findings support that silver workers learns best when they could learn by doing or when it is directly connected to their daily work. This strong preference for practicality aligns with Knowles' theory of andragogy (2005), which explains that adults are motivated by learning experiences that are relevant and they already know This is reinforced by Kolb's experiential learning theory (1984) where learning happens best through active involvement and learning that connects to real life. Silver workers in this research expressed that they remember knowledge better when learning activities are linked to work tasks. Second, peer interaction and group learning were highly appreciated. The interviewees expressed preferences for learning with others, such as through discussions or group tasks. They believed this made the learning process more engaging and helped them understand the material better. This supports the collaborative learning theory (Laal & Godshi, 2012), which emphasizes that learners benefit from sharing ideas and experiences. It also relates to Wolfe et al. (2023), who showed that social learning keeps older adults more motivated. However, findings showed that silver workers pointed out that group learning only worked well when all interviewees were on a similar knowledge level. If some learners were much faster or slower it could make the experience frustrating. This suggests that for silver workers group interaction is only effective when the group is well-matched in terms of knowledge and experience. This is supported by existing literature, which shows that learners in homogeneous groups were the most satisfied when their group work was more effective by having teammates with the same ability and found that high-achievers in mixed ability groups felt the learning process was hindered by constantly needing to stop and assist weaker peers which negatively affected overall performance (Ghanbari et al., 2020, p. 11).

Third, the preference for structured learning environments challenges some existing literature, particularly the one with an emphasize on self-directed learning (Findsen et al., 2011). While the literature suggest that autonomy increases motivation and performance among adult learners the findings in this research indicate that silver workers often preferred guided training. They valued structured content, instruction and clear communication. This aligns with what Knowles et al. (2005) said that adults like learning that is well-organized and thus structure based. Findings described that silver workers get frustrated when training didn't had a clear build-up. Findings also expressed the importance of having a trainer who had work experience in the sector and the ability to explain things clearly. Silver workers made it clear they preferred learning from someone who truly understands the topic rather than a generic teacher. Someone who could share real examples, so it was easier to understand and easier relatable to work scenarios. When a trainer had hands-on experience participants felt more confident asking questions and felt the answers were more useful and realistic. Trainers who lack contextual understanding of the work environment may struggle to meet those expectations. Theory from Ahmed et al. (2022), fits with the need for supportive learning environment and clear communication, but doesn't really discuss the need for an expert trainer instead of just a general teacher. Another significant insight concerns digital and game-based learning methods. Although becoming more popular in the literature for their fun and engagement (Huang et al., 2019), they were unpopular among the findings. The silver workers explained these methods as lacking relevance and personal connection. This supports recent findings, which

emphasize that the design of online learning environments for older adults should promote cooperation to help them feel socially connected a factor shown to be important for their engagement and motivation (Ahmad et al., 2022, p. 6)

Fourth, the lack of preference for visual learning methods can explained by silver workers discomfort with digital learning formats which often rely heavily on visual input, such as videos or online lectures. The findings show that many older learners struggle with digital environments due to a lack of practicality or in person guidance. As Ahmad et al. (2022) also point out that older adults usually learn better in low-pressure settings where they can learn by doing rather than through online or self-guided learning. Reading and writing were also characteristics that weren't popular among the silver workers in this study. This could be, because these learning styles are often more passive and less interactive. Silver workers tend to prefer more practical and hands-on ways of learning, especially when it connects directly to their work. Also, reading based learning often feels disconnected from real work setting, which was something many interviewees said was important to them. Instead of learning through books or writing exercises, they preferred training that involved discussion, real examples and guidance from someone with experience.

5.1.2 Shared learning preferences

The literature on adult learning suggests that different age groups have different preferences in their learning needs. Salthouse (2009) explains that adults in their early 50s still learn effectively, but may begin to experience small changes in memory or in processing speed. These learners benefit from structured and practical lessons (Knowles et al., 2005), which was confirmed by interviewees 1 and 2 who emphasized the importance of clear structure and expert guidance. They also mentioned the value of repetition and clarity, which are preferences often linked with older learners (Rueda-Delgado et al., 2019). According to Ahmad et al. (2022), adults aged 55 to 60 preferred most experience based learning in low-pressure and supportive environments. This matches what interviewees 4, 5, and 6 said they emphasized how important it was to learn in small groups, have social interaction and keep the training relevant to their job. For adults over 60, research also shows that things like repetition and guidance can really help them understand the material better (Rueda-Delgado et al., 2019). This was strongly reflected in the preferences of interviewees 3 and 7. However they also expressed a preference for structure and relevance which were also referred to the younger silver workers. These findings suggest that while some preferences may be more typical for certain age groups the key learning values such as practicality, clarity and support are preferred by all the silver workers.

5.1.3 Preferred learning methods for silver workers

Based on the findings of this study three learning methods emerged as most effective for silver workers looking at the learning characteristics they valued the most. These learning methods are experiential learning, collaborative learning and lecture-based learning. One of the clearest findings was the preference for experiential learning, training that is practical and directly connects to daily work tasks making the content more relevant and easier to remember. This supports Kolb's learning theory (1984) and Knowles' (2005) ideas about adult learners being motivated when the learning is useful and can be applied directly in practice. While the literature highlights problem-based learning as a key approach where learners solve real-world problems to build knowledge (Azzahrani, 2024). The findings show that the silver workers valued experiential learning where they have the ability to apply knowledge directly in to practice. This aligns with Kolb's (1984) experiential learning theory, which emphasizes the importance of work experiences and practicality in adult learning.

Collaborative learning was another important method that was found the most preferred. The silver workers expressed value in working in groups, having discussions and just being able to talk with others. The opportunity to share their own knowledge and hear the experiences of others added meaning and relevance to the learning process. This fits with Laal and Godshi (2012), who argued that collaborative learning enhances motivation, promotes active engagement and the development of critical thinking. Similarly Wolfe et al. (2023) explains how social interaction supports motivation. Lecture-based learning is expressed in the literature as the most commonly used form of education, because it allows a lot of information to be shared quickly and clearly. Although not widely emphasized in the literature as a preferred method for silver workers. Much of the adult learning literature suggest that older learners benefit more from flexibility and autonomy (Findsen et al., 2011). This stands in contrast with lecture-based learning where the elements structure and expert guidance are key elements. The findings supported this, because the silver workers value structure and expert guidance as well. Especially when the training was well-structured, guided by an expert and included opportunities to ask question or engage in discussions. These elements helped learning feel more interactive and supportive which aligns with findings by Deslauriers et al. (2019), who noted lecture-based learning will keep the learners engaged and helps them understand the material better.

5.2 Theoretical implications

These findings contribute to the existing literature by exploring the learning preferences of silver workers in the PSM industry, a group that has received limited attention, especially in relation to Skills 4.0.

First, while adult learning theories (Findsen et al., 2011) often emphasize learner independence and autonomy, this study found that silver workers actually preferred structured guidance and support from experienced trainers. They indicated that they learn best when training is well-structured and led by someone with work experience in the field. This suggests that the need for structure and guidance remains important even for experienced professionals. Second, the findings challenge age-related learning theories that emphasize distinct preferences across age groups. While the literature often suggests older aged learners need more repetition or slower instruction, this study found that key preferences such as structure, guidance and practical application were shared across all silver workers age groups.

This means that adult learning theory might place too much emphasis on age differences, while in reality many learning strategies work well for all silver workers. Third the importance of immediate applicability and work context supports Kolb's experiential learning theory (1984). This theory states that learning is most effective when connected to work situations which aligns with silver workers' preference for training that is directly applicable to their jobs. In addition, the preference for peer interaction supports the collaborative learning theory (Laal & Ghodsi, 2012), which emphasizes the value of sharing ideas and experiences. Silver workers enjoyed group learning, but only when participants had similar knowledge levels. When differences were too large in knowledge it led to frustration. This suggests that adult learning theory should consider the importance of well-matched group composition for effective learning among older adults.

5.3 Practical implications

The findings of this research offer practical insights for training developers, HR professionals and educational providers working with silver workers in the PSM industry. The findings show that silver workers prefer experiential learning, collaborative learning and lecture-based learning. These preferences can directly guide the design of more effective training programs.

To improve training effectiveness training providers organizations can use these insights to adjust their existing programs, for example many current training rely on blended learning. This includes a combination of online self-study and in-person sessions. They could adjust their approach by reducing the amount of self-directed online parts, since the silver workers in this study didn't really prefer those. Instead they could focus more on collaborative lecture-based learning. Adding things like practical exercises, group discussions and expert guidance helps learners stay motivated and remember the material better to apply what they have learned into their daily work.

6. LIMITATIONS AND FUTURE RESEARCH RECOMMENDATIONS

While this research offers valuable insights into the learning preferences of silver workers there are some limitations that need to be considered. First of all this study includes only seven interviewees. Having such a small number of interviewees means that the findings may not fully represent the opinions and experiences that exist among all silver workers. A second limitation is that all interviewees were based in The Netherlands, which may affect how widely the finding can be applied. Cultural norms, workplace dynamic and expectations around training and learning can vary across countries. This means that the findings might not apply in the same way to people working in different countries were learning culture or workplace expectations could be different. Due to the fact that this study focused only on Dutch silver workers it is possible that their preferences for structured, practical and guidance learning might be linked to how learning and work usually is done in The Netherlands. A third limitation is that this research is mostly focused on age as a factor influencing learning preferences. However, learning preferences can also be influenced by other factors like educational background, personality or familiarity with digital tools. Some silver workers might already have experience with skills 4.0 which could make them choose other learning characteristics then silver workers with less experience with skills 4.0. These elements were not taken into account for this research which means that important influences on learning behaviour may have been missed. Further research with more interviewees and with different backgrounds and culture could help to build on these findings and make them more applicable to a wider group of learners.

Future research could look more into how mixed-age learning environments might improve learning for silver workers. While this study focused on learning preferences of silver workers you can also research learning environments. In the learning environment you can mix different age groups and this could provide benefits in the learning process. Silver workers often bring a lot of work experience and practical knowledge into the workplace while younger workers might be more familiar with digital tools and new skills. Studying how these groups interact during learning activities could show how they can support each other, increase motivation and build better teamwork. It could also help organizations design more effective training programs that encourage learning from each other and leading to stronger workplace connections.

Another area for future research is to measure how different learning methods affect silver workers over time. This study found that many prefer experiential, classroom-based or collaborative learning but it is not yet clear how well these methods support long-term growth. Future studies could follow silver workers over a longer period of time to see how these learning methods impact job performance, skill development and satisfaction. This would help organizations better understand which training styles have lasting value and how they can support silver workers in staying confident, capable and motivated in their work. These recommendations aim to support the development of trainings that are better suited to the needs of silver workers.

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APPENDIX

1. Interview questions

Interview questions

Introduction

- Brief self-introduction of the interviewer.

- Explain the purpose of the interview and research:
  "We are exploring what learning methods silver workers in the PSM industry prefer when learning Industry 4.0 digital skills."
- Explain that: Participation in this interview is completely voluntary and you can withdraw at any moment or choose not to answer specific questions if you prefer.
- Question: "Do you have any questions before we start?"

Section 1: background information

Question 1**:** **Could you briefly describe your current role and your experience in the PSM industry?**

Question 1a: **How long have you been working in this role?**

Question 2: **In which age category do you fall?**

Back-up:

- 50–55 / 55–60 / 60+

Question 3: **Have you received training in your job?**

Question 3a: **If yes, what kind? (Was it digital, hands-on, classroom-based or a combination?)**

Question 3b: **How did you experience it?**

Section 2: learning preferences and styles

Literature: People learn in different ways, especially as they age. Some prefer visual input like diagrams or videos (Alabi, 2024, p. 1), others learn best by doing, such as through hands-on activities or simulations (Kolb, 1984, p. 26). Listening to lectures or discussing in groups can also support learning depending on personal preferences and context (Findsen et al., 2011, p. 140; Deslauriers et al., 2019, p. 19252).

Question 4: **Would you rather learn something by listening (lectures), seeing (videos/visuals), doing (simulations/practice) or discussing (group tasks)?**

Question 4a: **Which of these methods helps you understand things the quickest?**

Question 4b: **Which method helps you remember information for longer?**

Literature: Experiential learning involves learning through hands-on activities, reflection and real-world application (Kolb, 1984, p. 26). This includes approaches like trial and error, practice and simulations which are commonly used in adult education (Findsen et al., 2011, p. 132; Azzahrani, 2024, p. 3).

Question 5: **Do you prefer learning by doing like through practice, trial and error or simulations**?

Question 5a: **Do you find it easier to understand things this way compared to reading or watching?**

Question 5b: **Do you feel more motivated when you can immediately apply what you are learning?**

Question 5c: **Do you learn faster when you are actively engaged instead of just listening or reading?**

Literature: Collaborative learning involves working with others to share knowledge, solve problems and engage in discussions (Wolfe et al., 2023, p. 4). It can support communication and critical thinking. In contrast self-directed learning allows individuals to study independently, control their pace and reflect on content in their own way (Knowles et al., 2005, p. 67). Some approaches combine both offering moments for individual work and group interaction.

Question 6: **Do you prefer learning alone, in groups or a combination of both and why?**

Question 6a: **Do you like to ask questions and exchange ideas or do you prefer to figure things out yourself?**

Question 6b: **What makes learning alone or in a group easier or more difficult for you?**

Question 6c: **Do you enjoy discussing ideas with others while learning?**

Literature: Structured learning formats often include clear goals, step-by-step instructions and instructor guidance, such as classroom training (Ahmad et al., 2022, p. 10; Rueda-Delgado et al., 2019, p. 9). Flexible or self-paced learning formats, like e-learning or online modules allow learners to choose when and how they engage with material, promoting autonomy and individualized pacing (Findsen et al., 2011, p. 132; Knowles et al., 2005, p. 67).

Question 7: **Do you prefer structured learning formats (like classroom training/ step-by-step) or more flexible, self-paced ones (like e-learning)?**

Question 7a: **Can you explain why you prefer that type of learning?**

Question 7b: **Do you feel more motivated when there is a clear schedule or when you can decide for yourself?**

Question 7c: **Have you had experience with both formats? If so, which one worked better for you?**

Literature: Learning digital or technical topics can depend heavily on the environment in which they are taught. Some environments offer structured and guided support, which helps with understanding complex tools or systems (Ahmad et al., 2022, p. 8). Others provide more hands-on or experiential settings, such as workshops or simulations allowing learners to actively practice new skills (Kolb, 1984, p. 26). The environment may also vary in terms of pressure, pace and access to support all of which can influence learning outcomes.

Question 8: **What kind of learning environment works best for you when learning digital or technical topics?**

Question 8a: **Do you prefer a quiet space, group sessions or support from a coach or mentor?**

Question 8b**:** **Do you feel more comfortable learning at work, at home or in a dedicated training space?**

Literature: Older adults can benefit from clear explanations, a calm pace and opportunities to repeat or review information when trying to understand or remember something new (Ahmad et al., 2022, p. 10; Rueda-Delgado et al., 2019, p. 9). Having enough time to process information and connect it to past experiences can improve retention (Knowles et al., 2005, p. 67). A supportive environment along with content that feels personally relevant or meaningful also enhances motivation and memory (Findsen et al., 2011, p. 147).

Question 9: **What helps you most when trying to understand or remember something new?**

Question 9a: **Think of a recent situation when you had to learn something what helped you most?**

Question 9b: **Can you describe a moment when something "clicked" while you were learning? What helped make it clear?**

Section 3: past experiences and reflection

Literature: The effectiveness of a learning experience often depends on how well it aligns with a person's needs, pace and prior knowledge (Knowles et al., 2005, p. 67). Experiences that are practical, clearly structured and allow for active involvement tend to be more effective (Kolb, 1984, p. 26). Training that feels too fast, irrelevant or lacks support may lead to frustration or disengagement (Ahmad et al., 2022, p. 10). Emotional factors like confidence, motivation and a sense of purpose can also strongly influence how someone evaluates a learning experience (Findsen et al., 2011, p. 147).

Question 10: **Can you describe a training or learning experience that was especially effective or ineffective for you and why?**

Question 10a: **What elements (characteristics) made it work well (or not)?**

Question 10b: **Was it the content, method or trainer?**

Question 11: **Rank these different learning methods which would be your top choice and why?**

Question 11a: **Why did you rank it in this order?**

Question 11b: **What makes your top choice effective for you?**

Question 11c: **What method did you avoid and why?**

Table 1 - Common learning methods

Learning method	Key Characteristic	Examples
Visual Learning	Learns best by seeing pictures and diagrams	Mind maps, infographics, videos
Auditory learning	Learns best by hearing and listening	Lectures, podcasts, group discussions
Reading/ writing	Learns best by reading texts and writing notes	Note-taking, essays, reading assignments
Kinesthetic learning	Learns by doing and using hands-on activities	Lab work, simulations, building models
Experiential learning	Learns through real experiences and reflection	Internships, fieldwork, service learning
Collaborative learning	Learns best in groups through discussion and teamwork	Group projects, peer discussions, team tasks
Problem based learning	Learns by solving real-life problems and doing research	Case studies, research projects, scenarios
Lectured based learning	Learns by listening to teacher or presenter	Classroom lectures, presentations
Game-based learning	Learns through games and fun challenges	Duolingo, Kahoot, educational quizzes
Online/ e-learning	Learns through flexible, digital tools at own pace	Coursera, Khan Academy, edX

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literature: Designing effective training often involves balancing structure, relevance and flexibility. Adults generally prefer training that is practical directly applicable to their work and allows for active participation (Knowles et al., 2005, p. 67; Kolb, 1984, p. 26). Elements such as step-by-step guidance, time for practice, visual support and the chance to ask questions or reflect can make digital tool training more effective and engaging (Ahmad et al., 2022, p. 10; Findsen et al., 2011, p. 147). The ideal setup may differ per person but often includes clear goals, relevant tasks, and some control over pace or format.

Question 12: **If you could design your own ideal training for a digital tool in your work what would it look like?**

Question 12a: **What methods or characteristics would be used?**

Question 12b: **How long should it be? How often? What support would you need?**

Question 13: **What advice would you give to companies trying to train older employees in digital skills?**

Question 13a: **What should companies avoid doing?**

Question 13b: **How can companies make digital training more motivating**

Question 14: **Before we wrap up is there anything else you would like to share about your learning experiences or what helps you most when learning something new?**

Closing

From my side there are no further questions. Is there anything else you want to bring up before finishing the interview?

Thank you for participating in the interview.

2. Quotes from interviewees

Table 4 – Quotes from interviewees

Thema	Characteristics	Interviewee	Quotation
Visual learning	- Seeing pictures	3	"I don't prefer visual learning (interviewee 3)."
Reading/ writing	- Reading and writing	4	- " I find learning from a book awful (interviewee 4)." - "because I hate reading (interviewee 7)."
Kinaesthetic learning	- Practicality - Hands-on experience	1, 3, 4, 6 , 7	-" What I value most is when the theory can be applied directly in practice (interviewee 1) ." - "I think kinaesthetic learning appeals to me the most (interviewee 3)." - "I've mostly learned on the job. That's the way I prefer to learn (interviewee 4)." - "You learn the most when it is supported with practical examples (interviewee 4)." -"Being able to apply that knowledge immediately (interviewee 6)." - "What does it actually achieve? If it doesn't bring any real result in practice then I'm not going to do it (interviewee 7)." -"I like practical work. I enjoy theory too, but I need to be able to work with it (interviewee 7)."
Experiential learning	- Repetition - Applicable to daily operations - Practicality - Applying	1, 2, 3, 4 5, 6, 7	- There simply has to be a practical case included (interviewee 1) ." "There has to be a connection to what is being discussed, so it can be better connected to someone's practical work situation (interviewee 2). " - "I need to do it about ten times and ideally it should be practiced weekly. Otherwise I find myself having to recall how it worked again (interviewee 3)." - "It has to be connected to what I do every day, otherwise I don't see the point (interviewee 3)." - "You learn the most when it is supported with practical examples (interviewee 4)." - "So it's mainly about applying it. If you're talking about learning effectively (interviewee 5)." - "For me, I remember things best when they are relevant to my work environment (interviewee 6)." - "If you can apply it immediately at work, it sticks better (interviewee 7)." - "When people repeat a process several times they start to build confidence (Interviewee 7)."
Collaborative learning	- With peers - Same knowledges and experiences	1, 2, 3, 4, 5,6, 7	- "Well in principle, it's nicer when you do it with multiple people (interviewee 1)." - "I believe it helps to first read about it then practice and ideally work on it together with others (interviewee 2)." - "Encourage that exchange of knowledge with peers at the same level, that's where you really see the added value (interviewee 2)." - "In my experience, when you do something in a group, there are always people who are faster and others who are slower. At some point, I start to feel bored and I have a hard time dealing with that (interviewee 3)." - "I prefer working in a small group (interviewee 4)." - "With people who know what they're talking about (interviewee 4)." - "Sharing different perspectives building on each other's input that gives me new insights too. I really enjoy that (interviewee 5)." - "Preferably with like-minded peers that's when my energy

			starts flowing again (interviewee 5)." - "Actually, only with other people, because the future is really about collaboration and communicating with many different people (interviewee 6)." - "Group work encourages creativity and allows you to learn from each other's perspectives (interviewee 7)."
Problem-based	- Practicality - Context relevance	1, 2, 4, 6,	- "What are the essentials? What do learners truly need to understand first? And then what does digital learning add in a real-world context (interviewee 1)?" - "They still want to hold on to something familiar and consistent with what they're used to (interviewee 1)." - "He covered all the topics ensuring they were meaningfully connected to the overall context of the lesson (interviewee 2)." -"You really have to apply it to a current problem that's when you learn best (Interviewee 3)." - "I find problem-based learning the most comfortable (interviewee 4)." - "I like working with case studies, especially when you can then apply certain frameworks to them (interviewee 6)."
lectured-room based	- Instructor-centred - Structured delivery of content - Theory	1, 2, 3, 5, 6, 7	- "You know what's coming next week, so you need to have certain things prepared and completed (interviewee 1)." - "That's something you learn after taking several courses not all instructors who teach them actually have the necessary knowledge (interviewee 2)." - "When you don't understand something it's important to be able to receive meaningful feedback (interviewee 3)." -"I prefer it to be structured and planned (interviewee 5)." - "But personally, I find structured learning the easiest. It also forces you to actually make time for it (interviewee 6)." - "When the process is approached step by step people know what to expect and understand the purpose behind it (interviewee 7)."
E- learning	- Digital learning - Game-based learning - Online	1, 2, 5, 6, 7	-"You watch a video, but then you think it was interesting but what am I supposed to do with it (interviewee 1)." - "Online games would be my last choice. It all feels just a game and I think, are you supposed to win the game or actually understand the material (interviewee 1)." - "I don't need to score 100 points, because what am I supposed to do with those 100 points (interviewee 1)." - "Watching videos isn't really my preferred way of learning (Interviewee 2)." - "Watching an online video, I find it deadly boring after five minutes and then I lose interest (interviewee 5)." - " Game-based learning is probably the method I connect with the least (interviewee 5)." - "I relate the least to online e-learning and game-based learning (interviewee 6)." - "That's an online course. Yeah, I have zero interest in that. I don't feel anything for it and then I think what am I even supposed to do with it? And yeah nothing sticks (interviewee 7)." - "Look, those games and fun challenges I think, yeah okay that's nice. But it depends (interviewee 7)."