

# Too Old to Learn?

## Specific Needs of Senior Workplace Learners

Tobias Haertel, Monika Radtke, Claudius Terkowsky,  
Dominik May, Daniel Neubauer  
TU Dortmund University  
Engineering Education Research Group (EERG) at the  
Center for Higher Education,  
Dortmund, Germany  
tobias.haertel@tu-dortmund.de

Johanna Dehler  
GlobalGate GmbH  
Dortmund, Germany  
johanna.dehler@globalgate.de

**Abstract**—Due to Demographic change universities, vocational trainings, and advanced trainings are challenged to educate learners with diverse backgrounds such as age, country of origin and educational achievement. These groups of learners are supposed to have different, individual learning requirements. However, there is still only sparsely knowledge about their needs and how to take them into account in appropriate learning scenarios. Especially the aspects of senior learners aged 50 years and older are hardly explored. In this contribution, the results of a literature review and an expert workshop on the specific needs of senior learners are presented and discussed. Firstly, an overview on current age sensitive learning scenarios is given. These do all have the claim to be attached to the professional experiences, learning interests and needs of older employees. Secondly, the different approaches lead to main requirements for designing such learning scenarios in an ideal way. Thirdly, participants of an expert workshop representing different perspectives from science and practice agreed that with regard to demographic changes, educating senior workers will become an important issue for most companies. However, they expressed very diverse and sometimes contradicting opinions on how learning scenarios for senior workers should be designed. The workshop showed that it still has to be considered, how far these findings about senior learners differ from “good” approaches of teaching and learning in general.

**Keywords**— senior learners, learning ergonomics, demographic change

### I. INTRODUCTION

The demographic change is an issue that becomes more and more important for companies that are dependent on qualified employees such as engineers. Due to aging societies in Europe, companies inevitably need the workforce of their older employees [1]. However, companies that are involved in the development of industry 4.0 are faced with a tremendous technological change. This change makes it necessary to qualify employees, and especially older employees who are not used to handle networked mobile devices [2]. In the professional world, the proportion rises to mental work, while physical and low-skilled jobs are going to be reduced. Therefore, lifelong learning is regarded as a key strategy to cope with these changes.

Unfortunately, the practice shows that older persons, who have just crossed the age limit of 50 years, are barely invited to participate in further education offers [3]. The group of 50- to 64-year-old workers shows by far the lowest educational activities in the fields of education and vocational training [4]. The reasons for the lack of participation of older workers in company developments are different: most training formats focus on the learning needs of younger employees. Sometimes older learners lack of willingness to learn or are afraid of failure. Some recruiters even doubt the learning ability of older workers, they sometimes even think that older employees learn less content or need more time than younger ones do [3]. Against this background, there is a requirement for appropriate training formats that are adapted to the specific learning needs.

Solving this problem with a pilot learning scenario for older employees is an aim of the research project ABEKO<sup>1</sup>, which is located in the logistics branch in Germany. In the following, we present the results of a literature review and an expert workshop that delivered valuable hints for designing age sensitive learning scenarios for further engineering education.

### II. LITERATURE REVIEW ON AGE SENSITIVE LEARNING SCENARIOS

An approach for designing age sensitive learning scenarios in further engineering education built a literature review with the following questions:

- What is the current status of age sensitive learning scenarios?
- Considering the demographic changes—how should such learning scenarios ideally be arranged?

#### A. Current age sensitive learning scenarios

Generally, age-sensitive learning should be attached to the professional experiences, learning interests and needs of older employees. This can be accomplished by:

##### 1) Further qualification of older workers

Older employees, whose capacity to work is particularly at risk because of the high physical stress they have endured over

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numerous years, acquire competencies with the objective of improving, enhancing and consolidating their company-specific experience [11].

### 2) *Mixed-age teams to foster intergenerational learning*

Mixed-age teams are considered, to nurture intergenerational learning for inhibiting age-specific flaws among employees and for keeping the expertise and experience of older workers within corporations [7].

However, practice indicates that this give-and-take needs stimulation and support from managers when the teams are formed, because complications may come up due to existing monopolies of knowledge and/or worry of losing one's job. Therefore, it is essential to train managers accordingly for setting up and operating with mixed-age teams [11].

### 3) *On-the-job training*

Participants learn information relevant to their workplace, while at the same time processes can be directly reviewed and optimised in actual operations. Such measures are successfully used primarily in warehouse management or for professional drivers. For example, in warehouse management, training is organised for temporary and seasonal employees to improve operating procedures. When it comes to professional drivers, effective on-the-job training measures would involve new employees accompanying them on regular day trips [11].

### 4) *Experiential workshops or projects in companies*

These facilities aim at concrete problem solving processes and the related experiences to foster a conscious learning process [6].

### 5) *Specific technical training for older workers*

Since older workers have the biggest backlog on working with new technologies, IT and foreign languages the workshops and projects should be enhanced with Specific technical training opportunities for older workers [5].

### 6) *Job rotation schemes and mixed work*

Employees can get the opportunity for increasing their fields of action with arrangements of job rotation. Extending the field of activity allows employees continuously to reactivate and to nurture their competencies [11].

### 7) *Employee discussions on specific topics*

Employee discussion sessions are pioneering way of involving even those who avoid participation in ordinary training. The goal of this measure is not learning in a narrow or formal sense but through social interaction. They focus on selected specific topics and employees informally learn from each other by sharing and discussing their experiences and expertise [13][14]. These discussions can comprise employees from different areas, age groups and qualification levels. However, the discussions need to be moderated for a balanced and equal sharing of ideas in this heterogeneous group. "Companies that use this approach reported that employees who have never participated in CVET activities became more willing to take part in educational measures as a result" [11].

## B. *Recommendations for age sensitive learning scenarios*

Summarizing approaches of age-sensitive learning [7] [9][10][12] shows the following requirements:

- User interfaces of learning devices should be designed simple and clear, without too much information, animation or experimentation.
- Information should be clear and visible (large font size on learning materials). Functions for help should be easily accessible, as well as face to face support.
- Learning Software should not be complex, only a few buttons and navigation menus are suitable for senior learners. A clear and consistent structure of contents helps older learners to understand and learn. Learning contents should be introduced in small steps.
- E-learning scenarios should be organized collaborative rather than individual. For senior learners, blended learning is more suitable than e-learning.
- Older people need more time for repetitions than younger people do. The learning process is more susceptible to interference for senior learners; therefore breaks often reduce their learning success.
- Practical exercises have considerable significance for the learning success of older learners. Whenever possible, learning and working should be integrated in order to lead to better performance. The choice of learning centers (the location where learning takes place) is important
- Intrinsic motivation to learn has very strong influence on the learning success of senior learners. Specific interests of senior learners should be used for connections with the learning contents.
- Learning scenarios should be tailored to the individual skills and competences of the senior learners. Learning contents should be linked with existing knowledge and experience. Factors such as high practical relevance and references to everyday life are very helpful.
- The possibility of self-control should be provided during the learning processes, for example by exercises that are performed by the participants. Individual learning pace should be taken into account.

## III. EXPERT WORKSHOP

The second method for designing age sensitive learning scenarios in further engineering education was a workshop with experts representing different perspectives from science and practice. Therefore, representatives from various stakeholder organizations were invited to participate. A special focus was laid on unions in order to represent the perspective of employees as learners and users of technical learning systems. Surprisingly, unions were not very interested in this

issue. Two major unions were invited to participate, the state associations of ver.di<sup>2</sup> and IGM<sup>3</sup> in North Rhine-Westphalia. While ver.di did not show any interest in the needs and wants of senior workers with regard to further education, IGM stated that they took this issue very seriously, but felt unable to send at least one representative to the workshop. Fortunately, TBS<sup>4</sup>, the Technology Advice Center funded by the German Federation of Trade Unions, was very interested and sent two representatives for the perspective of senior employees.

#### IV. METHOD

Summarized, representatives of the following organizations participated:

- Entrepreneurs Association Metal Dortmund
- Technology Advice Center North Rhine-Westfalia
- Fraunhofer Institute for Material Flow and Logistics
- Research Association for Gerontology (FfG)
- MAHLE AG

The expert workshop took place all-day on February 19<sup>th</sup> 2015. After a short introduction about the research project ABEKO and the general questions about designing learning scenarios for senior workers in further engineering education, all experts were asked to introduce themselves and to answer three questions:

- How important are older employees in companies? To what extent are they a focus group?
- What developments do you expect in your area of activity in terms of demographics, what is being discussed?
- What does that mean for the development of older workers?

All statements were collected and discussed. Afterwards, approaches on further education for senior workers found in the scientific literature so far were presented and discussed. Based on this, all experts were invited to participate in a world café. Each of the three world café tables represented two of these questions:

- Do older workers learn in a different way than younger learners?
- What are the specific needs of senior workers that should be considered for further engineering education?
- Are blended learning scenarios suitable for senior learners?

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<sup>2</sup> ver.di: Vereinte Dienstleistungsgewerkschaft (United Services Union)

<sup>3</sup> IGM: Industriegewerkschaft Metal (Industrial Union of Metalworkers)

<sup>4</sup> TBS: Technologie Beratungsstelle

- How should learning scenarios for senior workers be designed?
- What general advantages do older workers have compared to younger workers?
- Should further engineering education take place in learning groups with workers of the same age or should the groups be mixed up?

At least in the end of the workshop, the experts were asked to design learning scenarios for senior workers.

#### V. FINDINGS

Overall, the experts agreed that further education for senior workers becomes more and more important. However, senior workers are not a focus group for further education at present. From their points of view, most companies do not care about training senior workers in particular. On the contrary, the expert from the Entrepreneur Association Metal stated that really good companies do not need to educate and keep senior workers in the company, because it's part of their self-image that they could get new, young and well educated workers anytime. But experts agreed that with regard to the demographic change, educating senior workers will become an important issue for most companies. New technologies would make further education necessary for almost every company that is affected by the developments of industry 4.0. Actually, a lot of companies do not see the importance of further education for senior workers at the moment, just as the union ver.di in North Rhine-Westfalia. The experts affirmed the insights of [3][4]. From their experience, companies prefer to send younger employees to further education courses because of the better return on investment. Overall, there are great differences in the way companies value their older employees. While some companies focus on younger employees and look at older employees burdened with problems, other companies esteem older employees as more efficient. But the experts were sure that in a few years this problem will become crucial, and right now would be exactly the right time to start thinking about solutions. Besides didactical reflections, political decisions would become important as well: Under the present conditions, early retirement would be a counter-productive institution that older employees could achieve too easily. The representatives from the TBS favored smart models of partial retirement whereas the representative from the Entrepreneurs Association Metal took longer working periods into account.

Another central result of the workshop is the finding that senior workers *do* have specific needs regarding further education. The experts agreed that these needs depend on the individual learning biography. Workers that are used to learn by constantly attending further education offers have fewer specific needs than workers that have stopped learning after finishing their education and training with the carrier entry. Even workers learning habits in their spare time, independently from their vocational activities, influence the extend of specific needs. For example, workers who read books and use their holidays for educational trips are more used to learning than workers that use their spare time to watch TV and spend their holidays with holiday packages at a beach only. Senior learners who are not used to learning have to adapt to the new teaching

and learning methods. They might have experienced education as a rather instructional process without the usage of modern technologies. Learning scenarios that are based on self-learning, collaborative learning and learning with the help of web2.0 technologies and mobile devices are unfamiliar. Furthermore, for senior learners, the gap between their older knowledge and the new knowledge to be learned is much bigger than for workers who regularly attended further education offers. The bigger the gap, the bigger the need of flexibility to accept and arrange oneself with the new knowledge, techniques and procedures to be learned. After all, from the experts' points of view, unfamiliarity is no reason to avoid e- or b-learning scenarios.

However, there are specific needs that are shared by all older learners: Learning ergonomics is an important aspect for them. While ergonomics standards provide strict regulations for workplaces, there are no standards for ergonomics in further education. Sitting on a non-ergonomic chair for 8 hours a day at a non-adjustable desk and working with non-ergonomic learning devices is not desirable for learners of any age – but older learners feel the negative effects more directly than younger learners. That means to equip seminar rooms with ergonomic chairs, desks and electronic devices and to make more breaks especially for older learners. This conclusion leads the experts to another insight: In addition to the didactical aspects found in the literature, older learners seem to be a “problem group”. This is how one expert called them and all others agreed – at the same time they also agreed that older learners must never be treated as a “problem group”. Because of this, experts agreed that senior learners should learn together with younger learners and not in their own “senior learning group” (another reason for this was the transfer of knowledge between those different groups).

Taking the didactical aspects given by the literature review into account, the experts could not decide in how far these recommendations differ from general principles for good learning scenarios. Senior learners benefit from all the aspects mentioned in the checklist as well as younger learners. But with regard to their practical experience, a lot of further education programs do not consider these principles. The experts expressed their wish, that all further education courses should respect these didactical requirements.

The suggestion of peer learning scenarios where older employees learn from younger colleagues and vice versa was discussed critically. Older employees often have reservations regarding younger workers and want to be respected as experienced experts rather than incomplete learners. This could be a problem for any further education course as well: The teacher or moderator should address older learners as experts and must not behave nerdy or superior.

The usage of technology should be pondered carefully in further education offers for or with older learners. From the experts' experience, some further education courses use technology when it is not necessary. Older learners need to understand and accept the necessity and sense of the usage of technology, otherwise they tend to refuse it.

## VI. CONCLUSION

The group of experts underlined the importance of lifelong learning. If employees never stop learning, special approaches for senior further education courses will not be necessary. From their point of view, the non-existence of learning ergonomics is an important problem that should be addressed.

Overall, only little work is done in the field of further education for senior workers, and a lot of work is still to be done. The experts thanked the organizers of the workshop for bringing the different perspectives together. Each participant valued the presence of representatives from different and partial opposite positions as a personal benefit. They all said that they had been encouraged to think more serious than ever about further education for older employees.

Some questions remained unanswered. For example, the experts found no sufficient way of designing a learning scenario in further education for senior employees that could not be identified as a special offer for a special group. They confirmed that older employees must never get the feeling that they are regarded or treated as a problem group. There is a fine line between supporting older workers and discriminating them.

However, the ABEKO project will still work on this problem and design a prototypic learning scenario for older employees in the logistics branch. The acceptance of special learning scenarios as well as the usage of learning techniques and software will be analyzed in the project. The results will be made available for all further education institutions and interested companies. But ABEKO is limited to more or less existing technologies, although radically new technologies enter the further education market. Data glasses, immersive learning environments and the usage of remote laboratories will become important not only at universities, but in further education for engineers as well. These technologies are much further away from the learning experience of older (and even younger) learners so that more work has to be done. Taking into account that age-sensitive learning is just one aspect of the changes driven by the demographic change (others are e.g. native background, health and so on), a lot more work has to be done.

Finally, the experts had a critical view on the development called industry 4.0. The new technologies will provide crucial changes that will be a challenge not only for older employees but for whole companies as well. They all expressed their hope, that companies will be able to manage this change appropriately. These changes would promote fears; companies could use the new technologies to reduce their staff, which would be the wrong way from the experts' point of view. They would like the companies to use new spare time due to automatization for sending all their employees to further education courses. Because this is the most important factor of employees' and companies' success in industry 4.0: never stop learning!

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