

Lifelong learning: **The key to maintaining a skilled labour force**

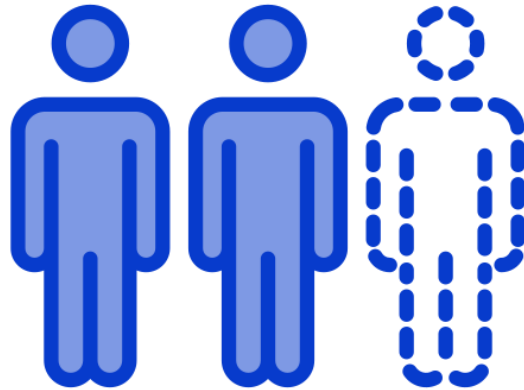
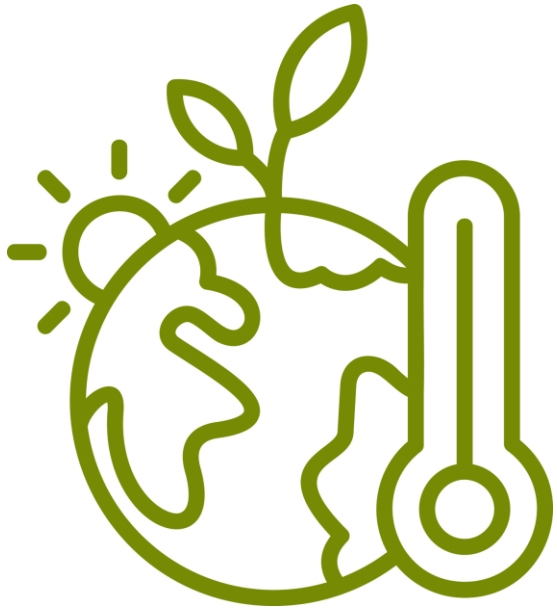


Dr. Linda Koopmans

TNO innovation
for life

PEROSH conference, 25 October 2024

The importance of lifelong learning



Third of businesses struggle with staff shortages: Randstad

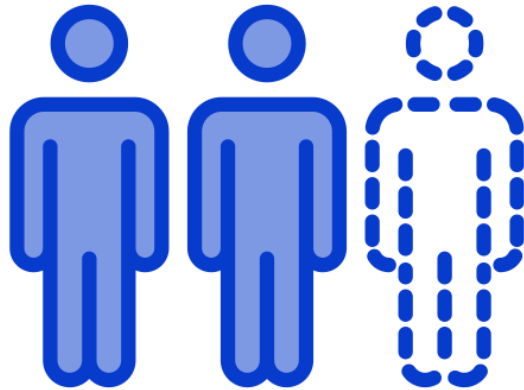
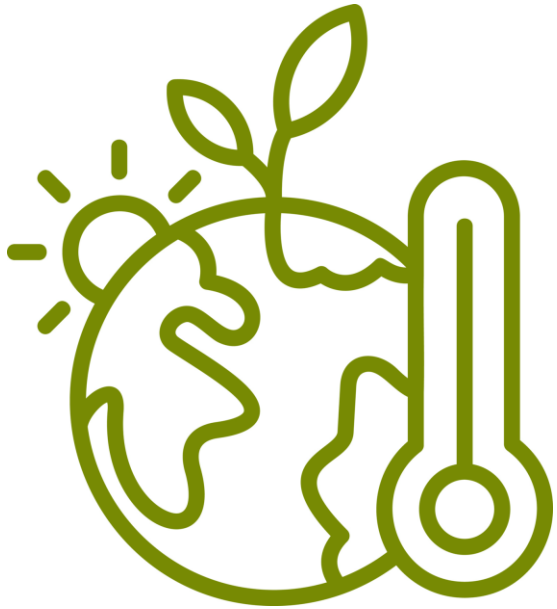
June 17, 2024



EU jobs crisis as employers say applicants don't have the right skills



The importance of lifelong learning



Anticipating and managing the impact of change

Human-robot interaction: What changes in the workplace?



How will AI change the future of work?

The level of impact AI will have on the nature of work and what organisations need to do to prepare their workforce on the impact of a digital future.



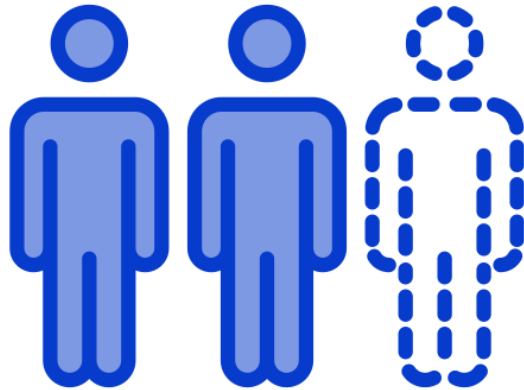
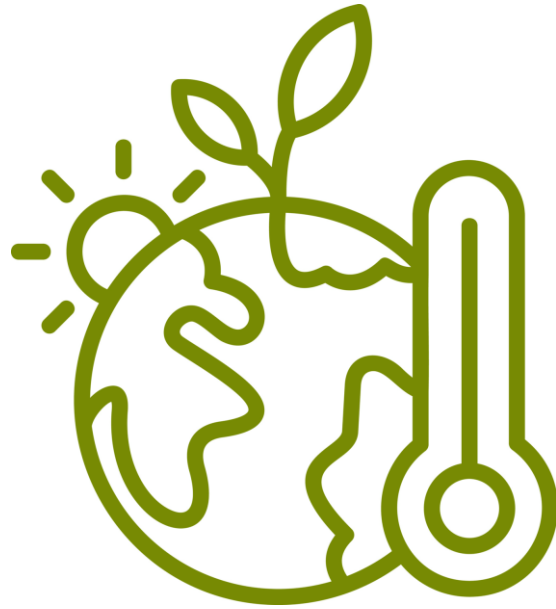
AI is moving fast. For success, you need to skate to where the puck is going. The AI trends that could benefit business in the very near future.

Will robots steal my job?

The short answer is: they might, but if you have the right skills, you'll get a better one. AI is the biggest business opportunity of the next decade. It's already automating manual and repetitive tasks. Soon it will augment human decisions. Along the way, it will add more to global GDP by 2030 than the current output of China and India—combined. That growth will be more than enough to create many good jobs, while it will also change how current jobs are being done.

Leaders will have to understand how AI will impact their workforces, then get them prepared: upskill some workers to do existing jobs, but with AI, and retrain and hire others for the new roles that AI will demand. Schools and parents will have to teach children both STEM skills and a culture of creativity and lifelong learning.

The importance of lifelong learning



Research questions

1. What are the effects of informal learning, formal learning and a combination of informal-formal learning on outcomes for employees 3 years later?
2. What are the effects of informal learning, formal learning and a combination of informal-formal learning on outcomes for employers 3 years later?
3. Do the effects differ for groups (age groups, education level, gender)?

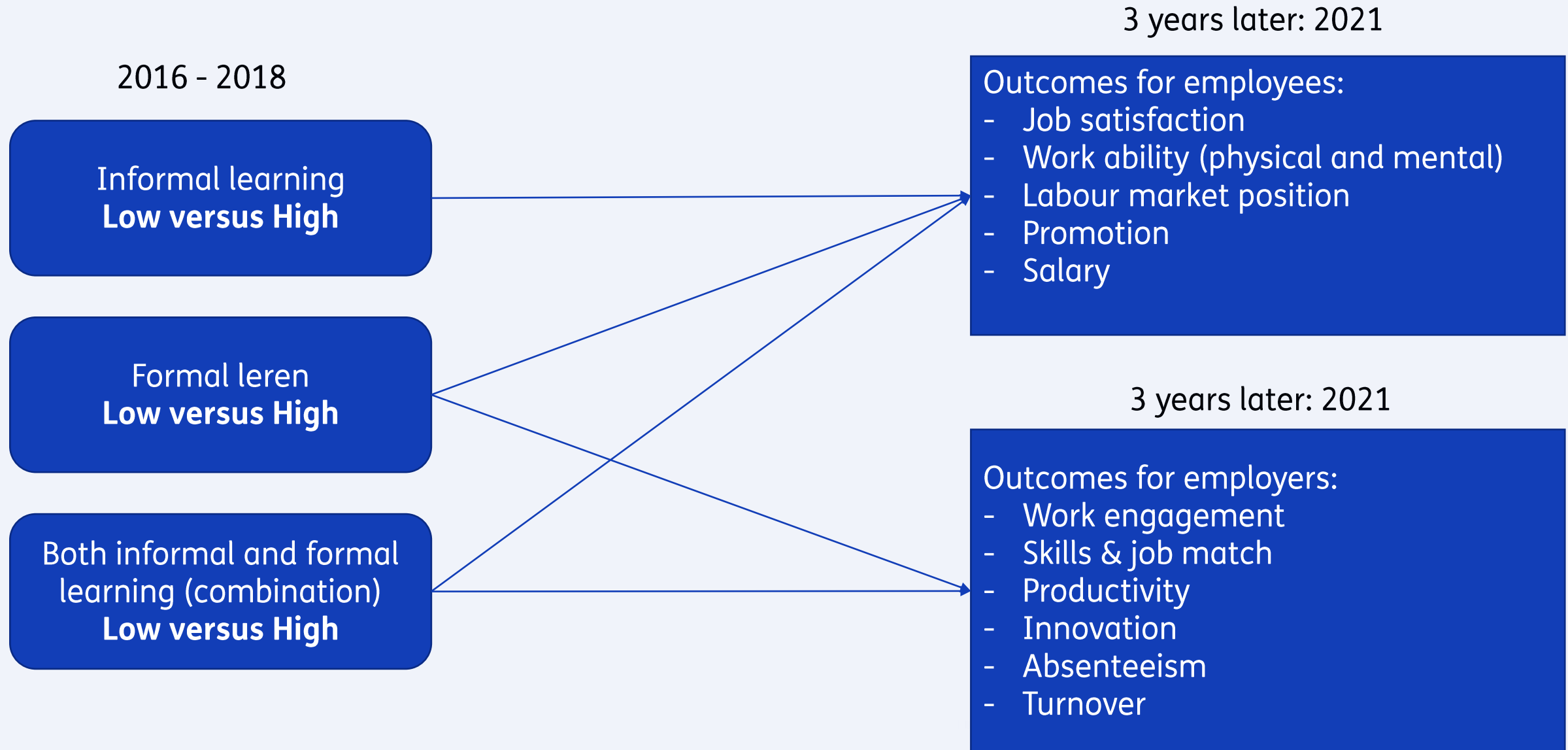
Methods

- Longitudinal data from the cohort study “Cohort Onderzoek Duurzame Inzetbaarheid” (CODI)
- Waves from 2016 (T1) to 2021 (T7)
- Sample size between $n=2.682$ and $n=3.816$
- Employees between 15-67 years of age, who did not change jobs or employers



[Read more
about CODI](#)

Methods



Methods

2016 - 2018

Informal learning
Low versus High

Formal leren
Low versus High

Both informal and formal
learning (combination)
Low versus High

Average of 2 items:

“In my job I try to continually learn new things”

“In my job I seek out people from whom I can learn”

Score 1-3 = Low

Score 4-5 = High

Methods

2016 - 2018

Informal learning
Low versus High

Formal leren
Low versus High

Both informal and formal
learning (combination)
Low versus High

1 item: "Did you participate in any of the following activities for your job in the past 12 months?"

Low: None of these activities.

High: Followed a training or instruction on the job, followed 1-5 days education, or followed more than 5 days education.

Methods

2016 - 2018

Informal learning
Low versus High

Formal leren
Low versus High

Both informal and formal
learning (combination)
Low versus High

Combination variable of informal & formal learning

Low = low score on both informal & formal learning
2016 through 2018

High = high score on both informal & formal learning
2016 through 2018

Methods

- Descriptive statistics
- Linear regression for continuous outcome measures (e.g. job satisfaction)
- Logistic regression for dichotomous outcome measures (e.g. promotion yes/no)
- Covariates: gender, age category, education level and level of the outcome variable at T1
- Moderation analyses to examine differences between groups



[Read more
about CODI](#)

Results

	Informal learning 2016-2018	Formal learning 2016-2018	Combined learning 2016-2018	
2021				
	++	+	++	Job satisfaction
	+		+	Work ability
	(+)	+	(+)	Labour market position
	++	+	++	Promotion
	+ 1484 Euro per jaar	++	++ 2004 Euro per jaar	Salary
	++		+	Work engagement
	++		+	Job & skills match
	(+)		(+)	Productivity
	+++	++	+++	Innovation
				Absenteeism
				Turnover



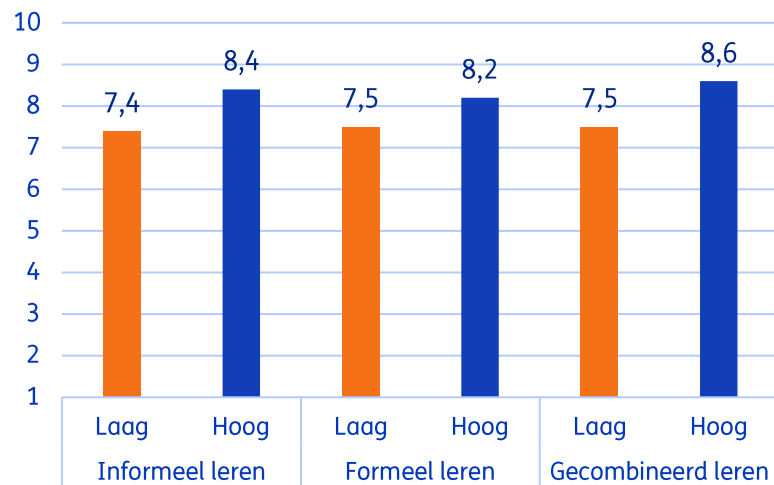
Note. (+) = significant but very small effect, + = small effect, ++ = medium effect, +++ = large effect

Results

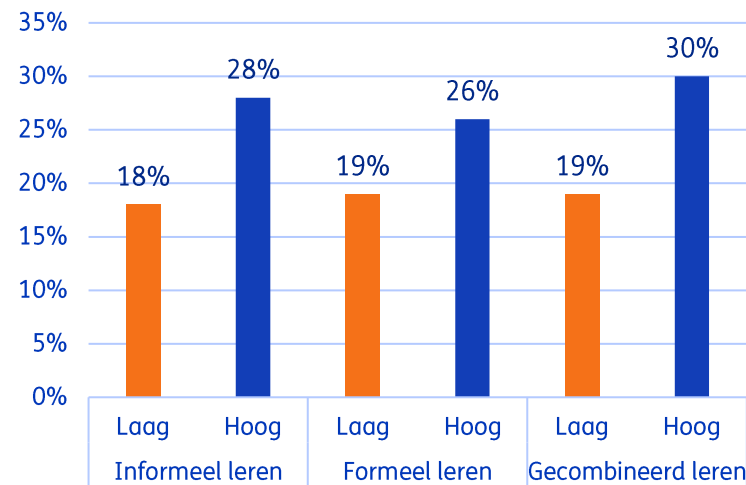


Employee

Job satisfaction 3 years later



Made a promotion 3 years later



Difference in yearly salary

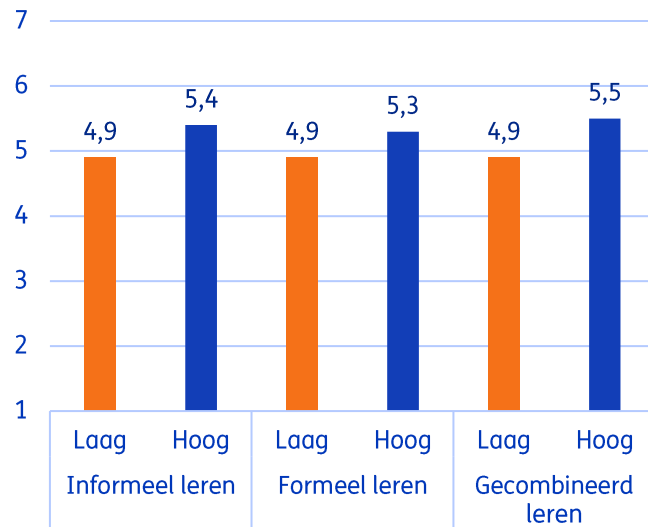


Results

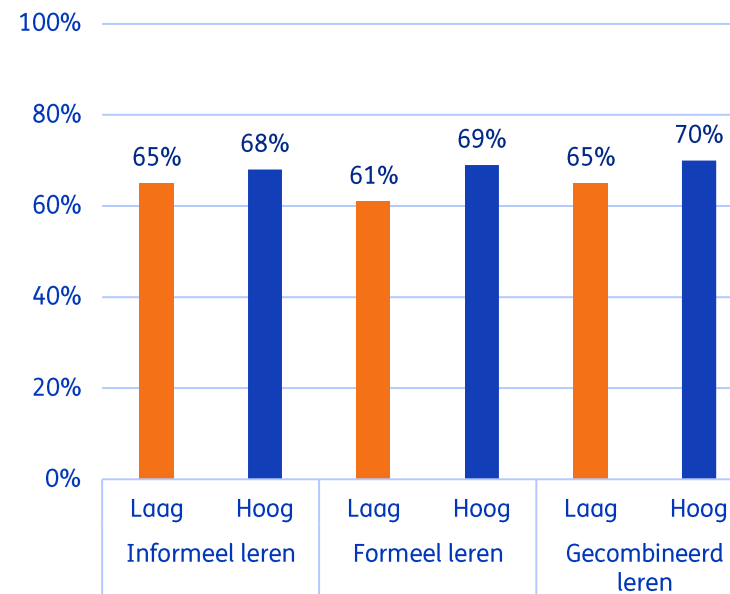


Employer

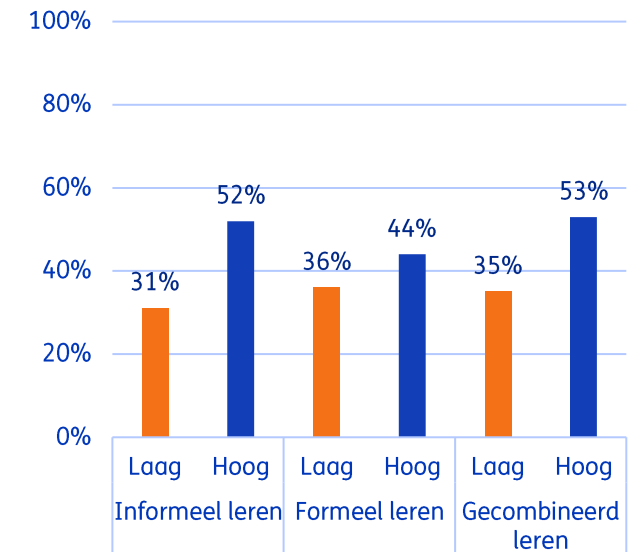
Work engagement 3 years later



Match between skills and the job



% of employees thinking along with innovations



Results

- No differences for gender
- Those with a practical education scored lower on informal and formal learning
- Age:
 - The effect of informal learning and combined learning on work ability was stronger for workers aged 45+
 - The effect of informal learning and combined learning on salary was weaker for workers aged 45+
 - The effect of informal learning on work engagement and innovative capacity got stronger with age

Future research

- Examining effects on a longer term
- What are the effects of different types of informal and formal learning?
- What are important predictors of informal learning and a combination of informal & formal learning?

What do the results mean?

- Investing in learning and development pays off, for employees and employers
- Only investing in formal learning is not very effective.
- Investing in informal learning and a combination of informal & formal learning is most effective.
- For older workers, this is especially beneficial for their work ability, work engagement and using their innovative capacity.

Thank you for your attention!



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Lange termijn effecten van leven lang ontwikkelen (LLO)

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