Learning factories’ trainings as an enabler of proactive workers’ participation regarding “Industrie 4.0”

Manfred Wannöffel, Melissa Reuter
Office of Cooperation RUB/IG Metall
7th Conference on Learning Factories
TU Darmstadt, 5th of April 2017
Socially embedded factory

- WHY?
- WHAT?
- HOW?
- WHO?

Financial System
Product System
Technical System
Personal System
Workers` participation: Basic rights

- **CO-DETERMINATION**
  - **WHO?**

- **SOCIAL RIGHTS**
  - **CONSULTATION**
    - **HOW?**
  - **INFORMATION**
    - **WHY?**
Practical example

Learning factory training for workers` representatives regarding assistance systems
Learning goals

• General learning goal
  • to strengthen the participants’ ability to shape future work life.

• see chances
  • such as ergonomic improvements, the discharge of simple and repetitive working activities, job enrichment and extended scopes of action, …

• be aware of possible negative impacts
  • such as job losses, issues of employees` data protection, dequalification tendencies, a growing “digital divide” or performance and behavior control, …

• technological innovations in general are neither “good” nor “bad”

• see themselves as “enablers”: proactively initiating and designing innovation processes
Spotlight on assistance systems

- Spotlight on assistance systems
  - interfaces between „human-technology“ and „human-organization“
  - play an important role for the increase of requirements on employees` competencies dealing with digital technologies
  - close proximity to work places
- Prototype of a workers` assistance system for maintenance (APPsist)
  - transferred to our learning factory setting
    - assembly line scenarios
    - maintenance scenarios (lathe and milling machine)
Evaluation cycles in the learning factory training for assistance systems

- simulation of three development stages of assistance systems
  - „rigid assistance“
    - access to machine and operating data
  - „adaptive assistance“
    - machine and operating data as well as personnel data
    - personalised instructions depending on competence levels („basic“, „advanced“, „expert“ user)
    - including „learning nuggets“, simulating learning on the job
  - „networked assistance“
    - offering the same functions as the „adaptive“ version
    - connected to the MES (additional access to planning and order data)
Didactical approach

- based on evaluation cycles
  - each cycle includes four steps:
    - „practice“ and „observation“
    - „evaluation“ and „analysis“

- Evaluation is based on an instrument from work science to measure the degree of a learning friendly work environment („Lernförderlichkeitsinventar (LFI“)
Conclusions

• Workers` representatives are key actors within the Industrial Relations system in Germany

• they play an important role as enabler of digitalisation processes (social manufacturing)

• a sucessful implementation requires qualified employees who can participate in the design, implementation and improvement of digital technologies

• Beside technological and economical aspects, learning factories should include issues of workers` participation

• workers` representatives as a target group of learning factories` trainings should be extended
Thank you very much for your attention
Contacts

MELISSA REUTER
RUHR-Universität Bochum
Gemeinsame Arbeitsstelle RUB/IG Metall
Kontakt:
0234/32-26899
MELISSA.REUTER@RUB.DE

HENNING OBERC
RUHR-Universität Bochum
Lehrstuhl für Produktionssysteme
Kontakt:
0234/32-27348
OBERC@LPS.RUB.DE