

# Data-related Ethics Issues in Technologies for Professional Learning

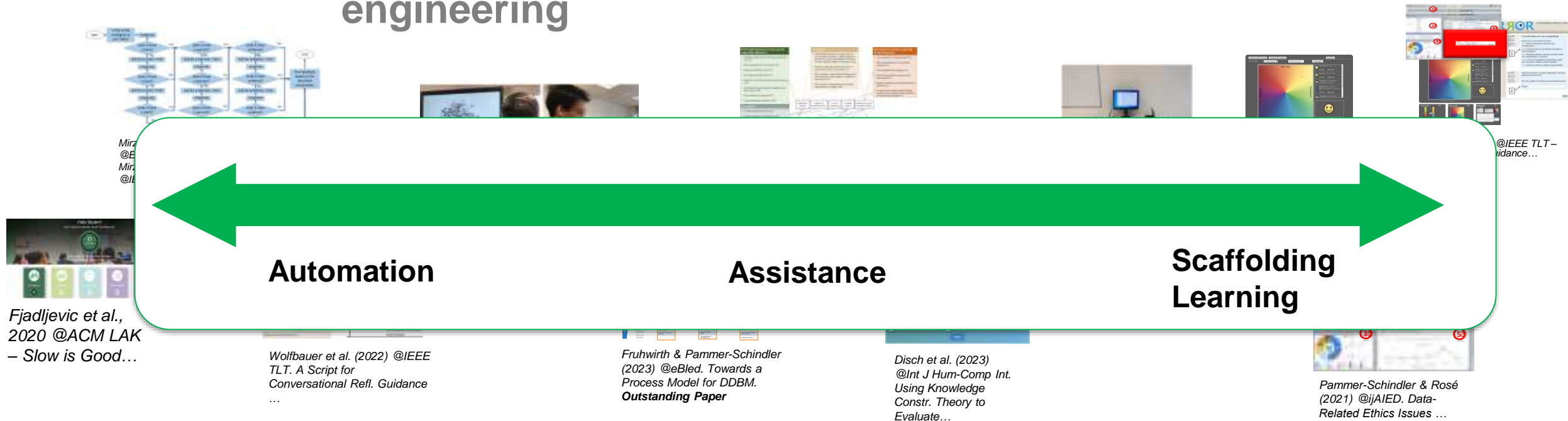
**March 3, 2025 - Professional Learning Analytics: repurposing workplace data for professional learning and development @LAK 2025**

**Viktoria Pammer-Schindler, Institute of Human-Centred Computing**

# HCI and EdTEch

## Designing interactive systems from a socio-technical and learning perspective

Education      Manufacturing, electrical + metal engineering      Innovation + open science      White collar work      Health sector





Institute of Interactive Systems and Data Science  
(7060)



## Designing Data-Driven and Adaptive Technologies for Reflective Learning in the Workplace

Viktoria Pammer-Schindler (aka: Viktoria Pammer)  
OrCID: <https://orcid.org/0000-0001-7061-8947>  
**Habilitation**  
Graz, April 2019



Pammer et al., 2015 @EC-TEL.  
The Value of Self-Tracking ...  
Pammer & Bratic, 2034 @CHI  
LBW . Surprise, surprise, ...-



Fessler et al. (2017) @IEEE TLT –  
In-app reflection guidance...



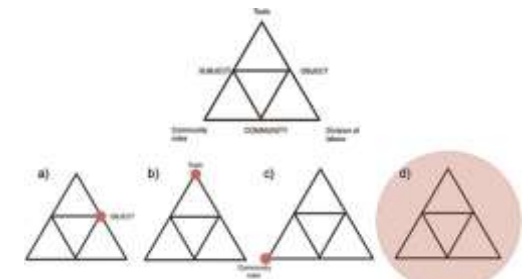
Rivera-Pelayo et al. (2017) @ACM toCHI –  
Mood tracking in a call center ...  
Fessler et al., 2012 @EC-TEL. Mood  
Tracking in Virtual Meetings.





Data + Reflection prompts = Learning

- 1) Data and UI represent relevant aspects of workplace/life activities
- 2) Learning relates to ongoing professional/private life experience



Pammer-Schindler & Prilla (2021) @IwC. The Reflection Object

# Learning analytics „works“ in formal education settings – what are additional/different challenges in professional learning?

## General challenges in LA

- Data
- Analysis
- Interpretation
- Action

## Additional challenges

(focus: informal professional learning)

- **Data:** Sensitivity and confidentiality of data
- **Analysis:** Contextualisation of data
- **Analysis:** Finding time and space to reflect on data for learning
- **Interpretation:** What can reflection achieve – not everything is a learning opportunity
- **Action:** Some insights may be out of scope to implement

# Data: Sensitivity and confidentiality of data

Pammer-Schindler & Rosé, 2021 @ijAIED



- Data-related ethics issues in field studies
- Ways forward: How might such issues be addressed by modern AI and data-based research?

Data are the foundation of modern AI

- addressing data-related ethics issues will be central to making LA and AIED work for informal and situated professional learning

# Multiple cases study, secondary analysis

Cases 1,2: Reflection on time management based on activity logging data (Pammer et al., 2015; Fessler et al., 2017)

Case X: Cancelled due to concerns around workplace surveillance rather than support for learning

Cases 3,4: Reflection on self-tracked mood data (Fessler et al., 2012; Rivera-Pelayo et al., 2017)

*Primary RQs around design and effect of interaction design incl data vis. + reflection prompts.*

**Secondary RQ: What ethics issues appeared in field studies?**



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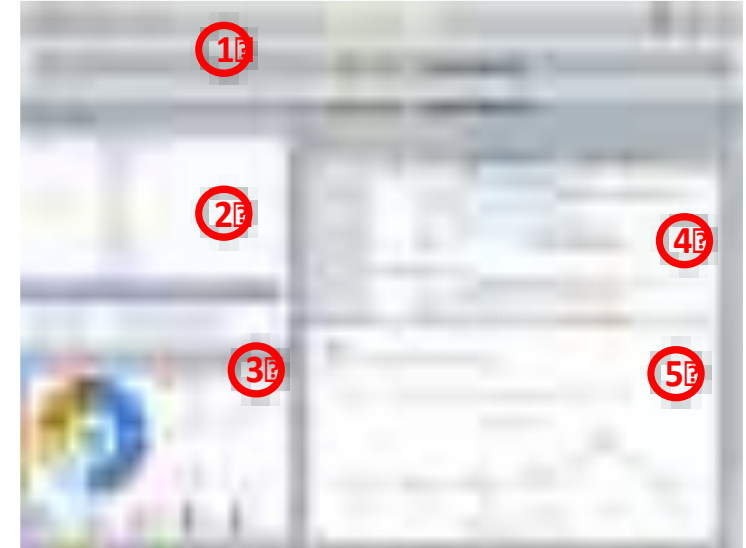
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# Issues around activity-log based data for reflection

- Sensitive data w.r.t. individual users
- *Activity on multiple devices*  
→ *challenges around data integration*
- Sensitive data w.r.t. others
  - Issues re-appeared in informal early design activities in the health sector, where data relevant for medical professionals' learning concerns patients.
- Confidential business/organisational data
- Review of automatically tracked sensor data is challenging



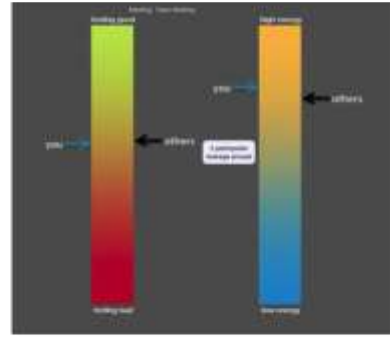
# Issues around mood self-tracking for reflection

*Supports social awareness and provides side-channel communication in collaboration and teamwork*

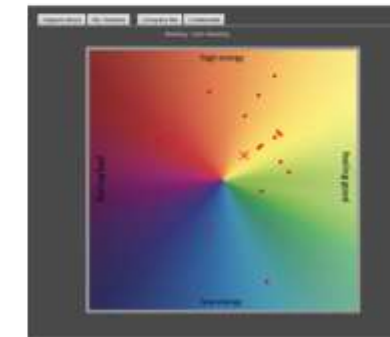
- Show user names?
  - + Makes data actionable, high interest in mood of others
  - Changes the nature of „self-tracking“
- Self-tracking (mood stmt + contextual note) gives high user control
- No concerns about touching on privacy of others, or confidentiality.



a) Capture mood and context



b) Compare Me View



c) Collaborative View



d) Example of a mood report

# Summary: Key themes

(Pammer-Schindler & Rosé, 2021 @ijAIED – Data-related ethics issues in technologies for informal professional learning)

## **Ch1: Data for learning is not only about the learner** (cf. also Pammer-Schindler & Prilla, 2021)

## **Ch2: Manual tracking may be a conduit for user control**

- In addition to facilitating learning by stimulating engagement.
- But sensitivity and confidentiality are still issues!

## **Ch3: Learning isn't a priori a shared goal of all stakeholders**

- Re-contextualisation of data may be critical
  - interpretation
  - ownership, confidentiality: using data logged for performance tracking for learning
  - workplace surveillance as barrier to learning

# Ways forward: How might such issues be addressed by modern AI and data-based research?

## W1: Manual notes in natural language as key data for LA

- High user control
- Logging as a reflection intervention
- New NLP capabilities (e.g., LLMs) support LA of such data.

ongoing

## W2: Socio-technical design processes

- ~ human-centred design; including identification of concrete data to be used or generated in design process.

ongoing

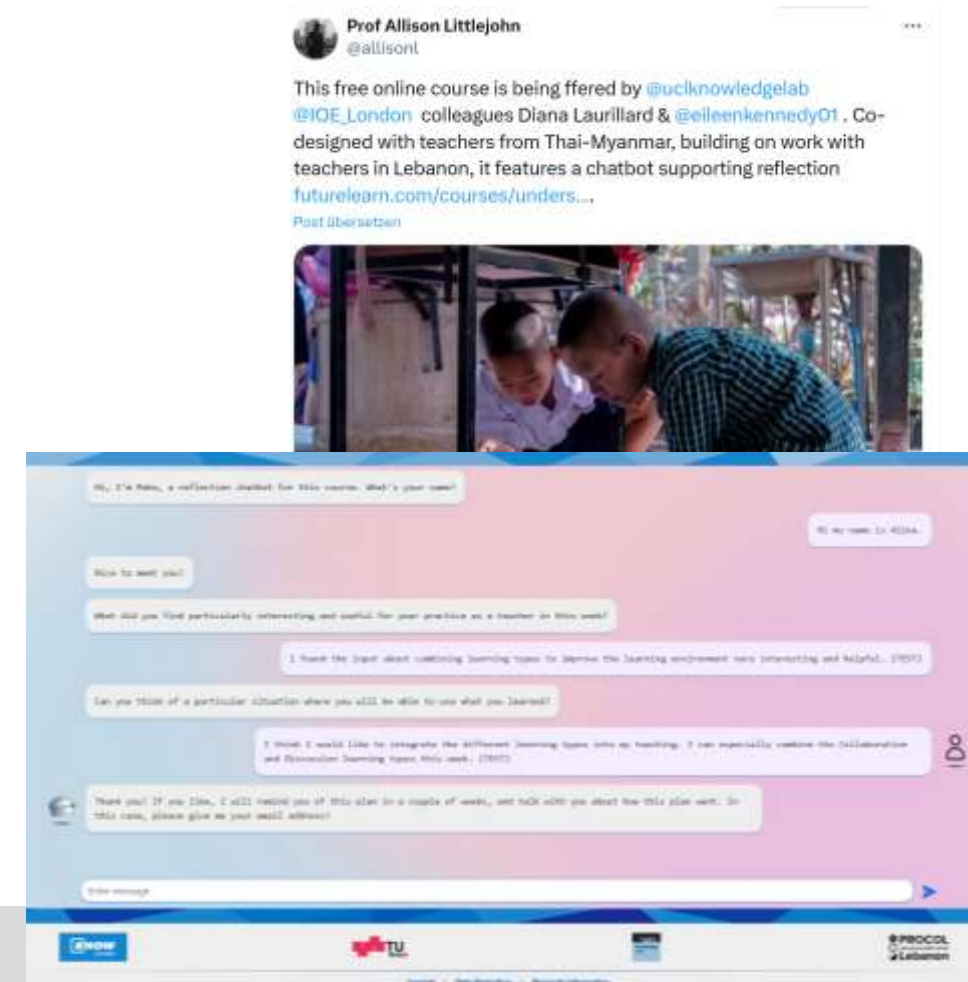
## W3: Scenario-based data collection in labs

???

- Develop as a community rich scenarios of workplace learning
- That can be replicated and used to structure lab experiments

# Ongoing: Manual notes in natural language as key data for LA

- Transfer from training to practice is challenging for professionals
- Planning + reflecting on transfer helps professionals
- This is what the chatbot does **for learners**.
- Keeping track of what happens with information from the training in practice is hard for teachers in MOOC settings.
- Getting such data is what the chatbot does **for teachers**.
- Interaction log and content analysis **chatbot data can feed into LA-based systems**.



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