



Measuring motivation and emotion regulation on-line

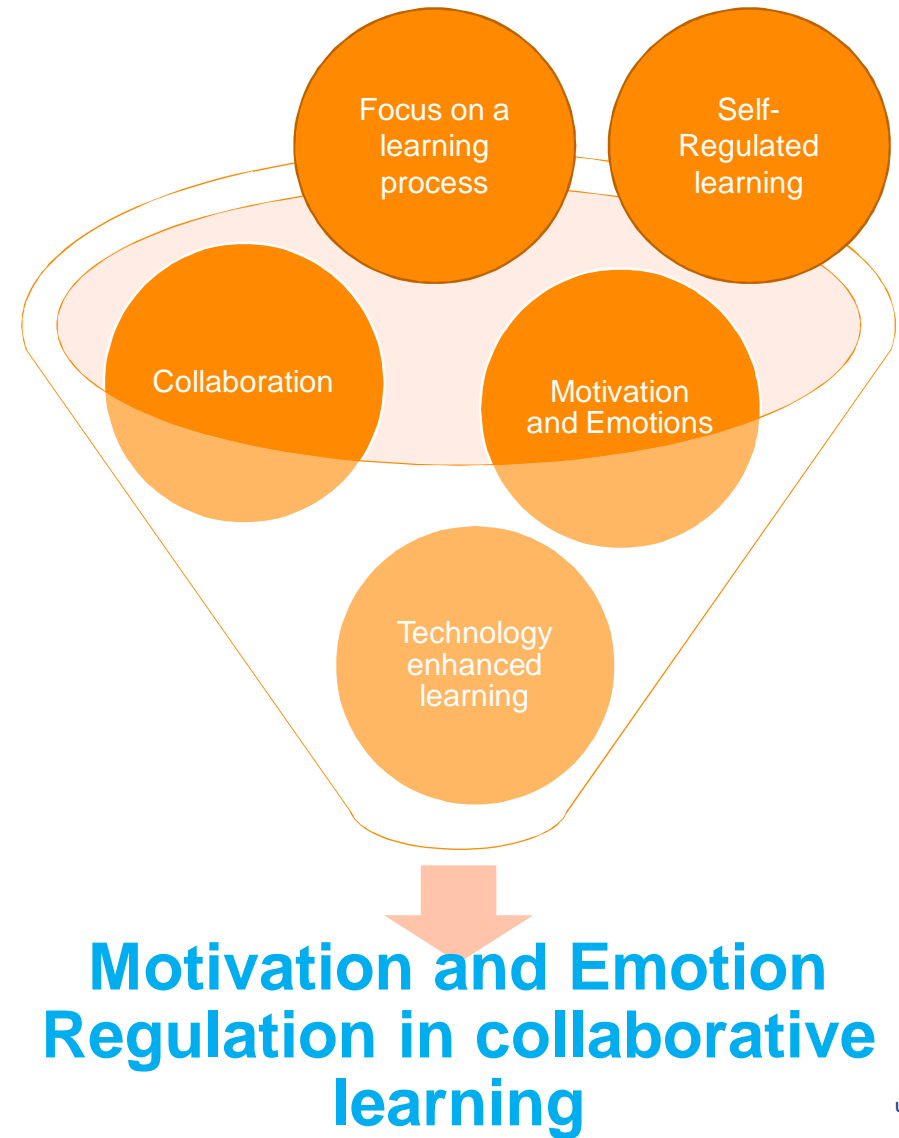
Hanna Järvenoja, Sanna Järvelä, Jonna Malmberg, Piia Näykki, Kristiina Kurki, Arttu Mykkänen, Tiina Törmänen & Jaana Isohätälä



LEARNING & EDUCATIONAL
TECHNOLOGY RESEARCH UNIT



Why we study motivation and emotions in the varying learning situations and contexts?





What is motivation and emotion regulation in learning?

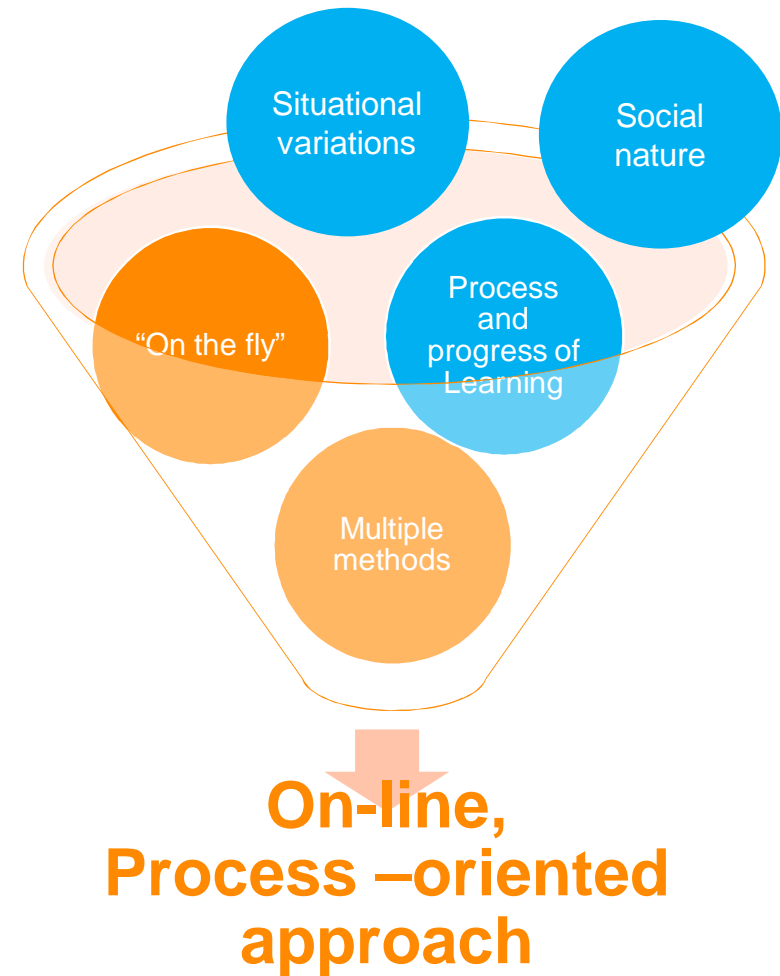
(Azevedo, 2014; Boekaerts, 2011; Hadwin, Järvelä, & Miller, 2011; Zimmerman, 2014; Winne, 2011; Wolters, Benzoni, & Arroyo-Giner, 2011)

- Reaction to a motivational challenges in personal, contextual, social and situational circumstances
- An integral part of the cyclical process of regulated learning
- Manifested on an individual and social levels:
Self-regulation, co-regulation, socially shared regulation
- Operationalized in a process of monitoring and controlling

-> methodological decisions: "on-line"



What do we mean by "on-line"?





CLAIM

CLAIM

CLAIM

CLAIM

Motivation is situation and context specific

Motivation in Learning is both individual and social

Effects of motivation and emotions in learning is multilayered

Motivation and emotion regulation matters in successful learning



CLAIM

+
METHODS

+/-
CHALLENGES

= **?**



METHDOLOGICAL NEEDS...

...Ecologically valid learning situations

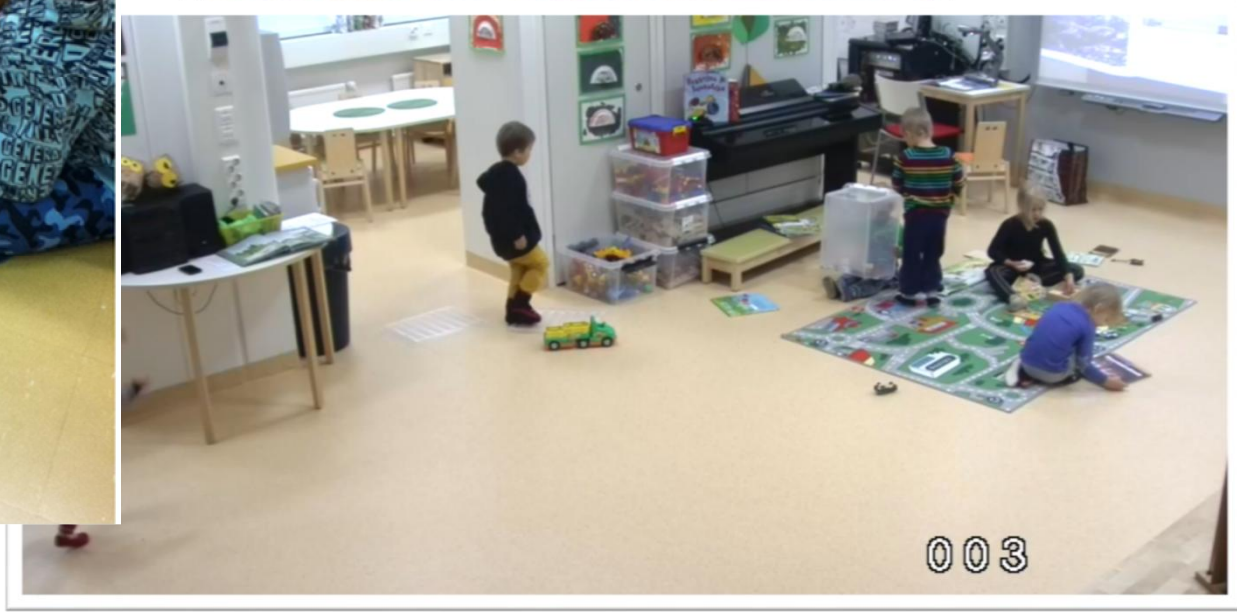
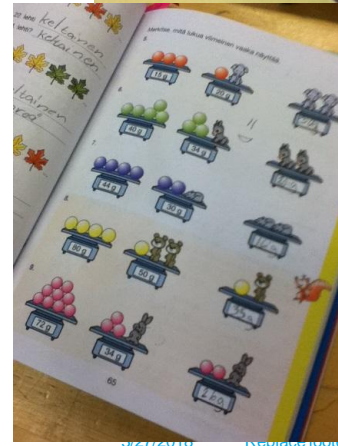
...Capturing motivation in situ, "on the fly"

CHALLENGES...

...control the complexity of different contextual and situational aspect of the real-life learning situations

...Generalization vs. situation – specificity


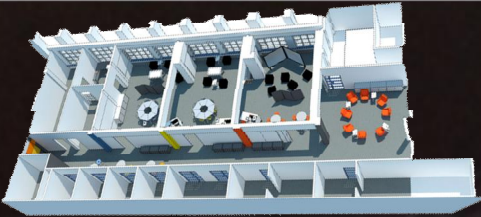
(Järvenoja, Järvelä, & Malmberg, 2016; Kurki, Järvenoja, Järvelä, & Mykkänen, 2017; Mykkänen, Järvelä, & Perry, 2015; Volet & Järvelä, 2001)



A5

Tässä lastu-aineiston screenshotteja. Valkkaa joku, jos kelpaa :)

Author; 17.8.2017



HTML5 apps for learning & data collection

Videodata

Multimodal data

HTML5 apps for learning & data collection

Videodata

Multimodal data

The main image shows a 3D architectural model of a learning environment in the top left corner, overlaid on a 360-degree panoramic view of a modern learning room. The room features a curved ceiling with recessed lighting and several tables where students are seated, working on laptops. Below the main image are three smaller images: three tablets displaying HTML5 learning and data collection apps, a video frame showing students at tables, and a multimodal data visualization showing various waveforms and graphs.



CLAIM

**Motivation in
Learning is
both individual
and social**

(Järvelä & Järvenoja, 2011; Järvelä, Järvenoja, & Veermans, 2008; Järvenoja & Järvelä, 2009; Järvenoja, Volet & Järvelä, 2012; Järvelä, Volet, & Järvenoja, 2010)

METHDOLOGICAL NEEDS...

Acting in an intersection of individual and social.

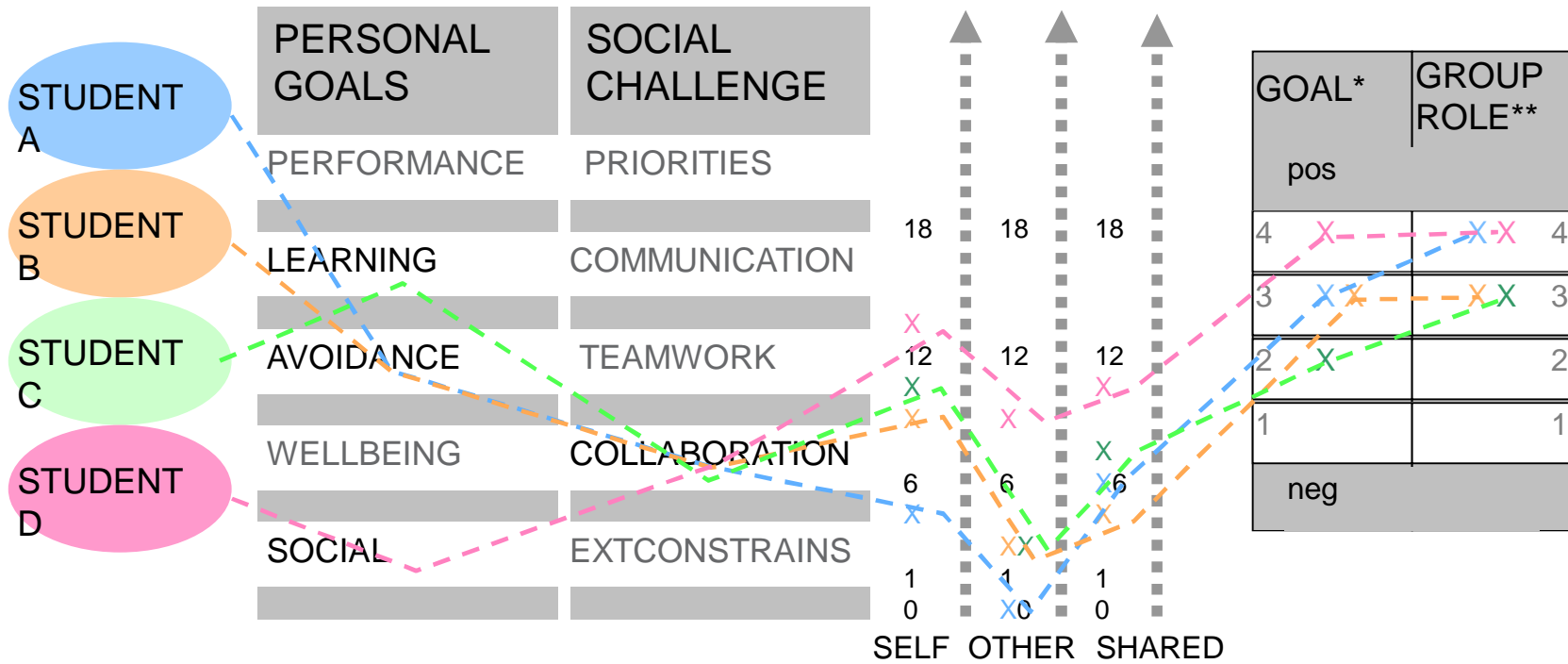
(Grau and Whitebread 2012; Volet, Vauras, & Salonen, 2009)

CHALLENGE IS...

... To combine individual and group level data



CONTROL OF SOCIAL CHALLENGE



Students' interpretations of:
 *GOAL = Achievement of the personal goal
 **GROUP = Group's role for achievement



CLAIM 3
Effects of motivation and emotions in learning are multilayered

METHODOLOGICAL NEEDS...

... Using multiple methods to grasp different aspects of motivation and emotions

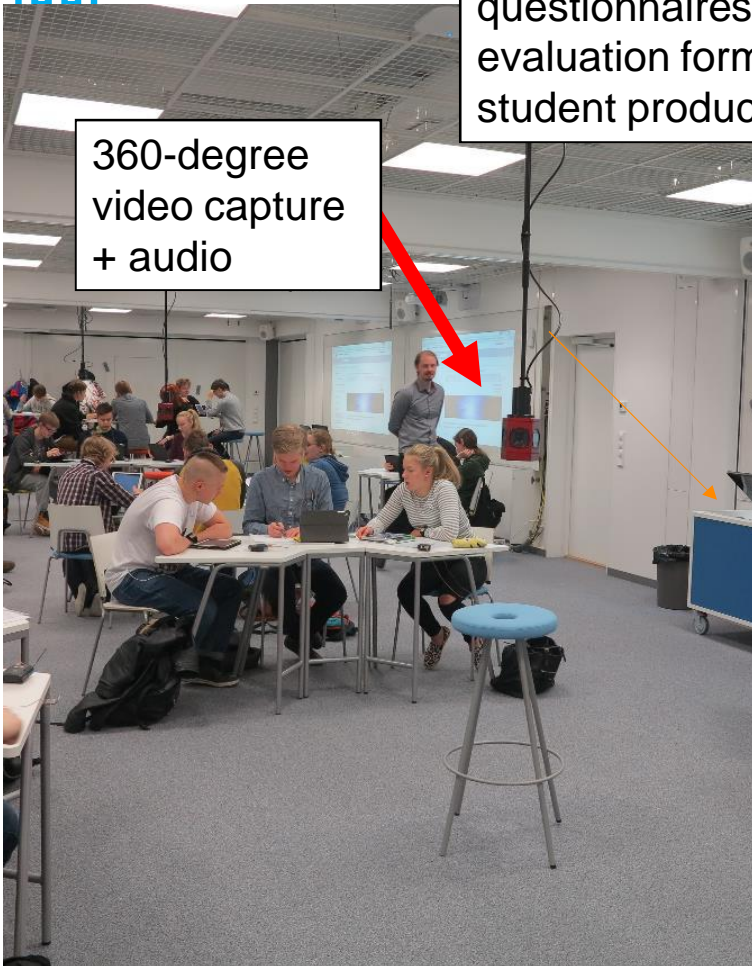
.... Recognising progress/time

CHALLENGE...

... variation in the sources of different data

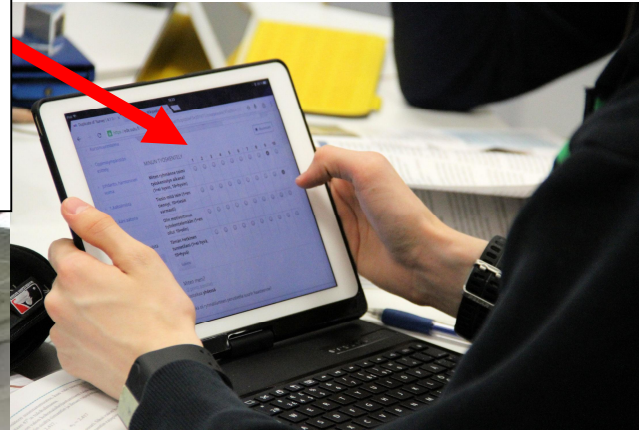
...integrating process data vs. data on subjective interpretation

(Järvenoja, Malmberg, & Järvelä, 2017; Malmberg, Järvelä, Alikhani, Juuso, & Seppänen, 2017; Malmberg, Järvelä, Holopainen, Siipo & Haataja, 2017; Näykki, Järvelä, Kirschner, & Järvenoja, 2014; Näykki, Isohätälä et al., 2017)



360-degree video capture + audio

EdX logdata, questionnaires, evaluation forms, student products



Mobile eye tracking

Empatica E3 multisensor devices that track student EDA and heart rate

VIDEO -process

INTERVIEW – interpretations

[46:21-47:30]

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What is said	What is done
Maria: Yes it narrowed down nicely. At first it was wider and then we made it more focused	Maria is talking with her hands, she smiles and the others are following
Erik: Is this ok to everybody	Erik turns to everyone, opens his arms
Maria: Yes, I think this is ok	
Erik: No one has anything more to say about it? Could it be this then?	Everyone is looking down papers
	Moment of silence
Maria: What does the professional researcher say?	Tiina lifts her eyes from the papers and lifts eyebrows
Tiina: Are you serious?	Maria laughs
Maria: I bet you have all the concepts so clear, so you could make a fine title	Moment of silence
Erik: Is there some tension in the air?	Tiina sits with arms akimbo down to her papers and stays quiet for 10 minutes
Maria: Well this is the social presence that we are studying and experiencing	

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What is said	What is done
Maria: So was there anything else?	
Anna: No, just to make this problem and next week work on our weblogs	
Maria: How will we find each others weblogs?	Maria is looking at Tiina, but Tiina does not reply to her, shakes her head, but looks back to Maria
	Avoidance focused strategy
Moment of silence	
Erik: This is not very collaborative if one person is not talking at all	Problem focused strategy
Tiina: I let you talk. I'm listening what you decide and everything is fine for me	Avoidance focused strategy

Students' interpretations of the group workings with a video-stimulus.

EMMA: "It was a huge shock to me; I was so surprised that people can talk to each other like that. So I shut down, and I thought, can I say what I think at all?"

ANNA: "I think we were overruled, and I didn't enjoy the group work after the conflict; it was just to get the course done. At first, I tried to negotiate, but in the end, I tried not to care and to agree on every solution"



METHODOLOGICAL NEEDS...

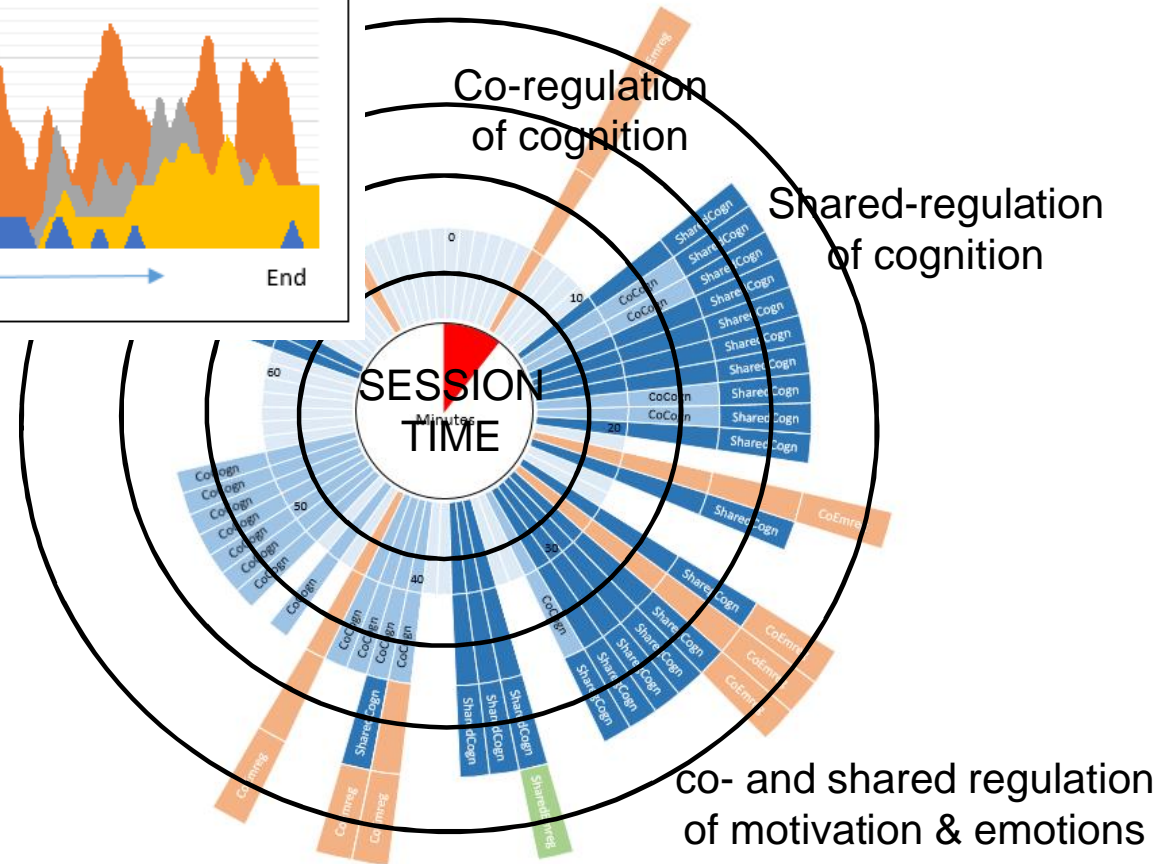
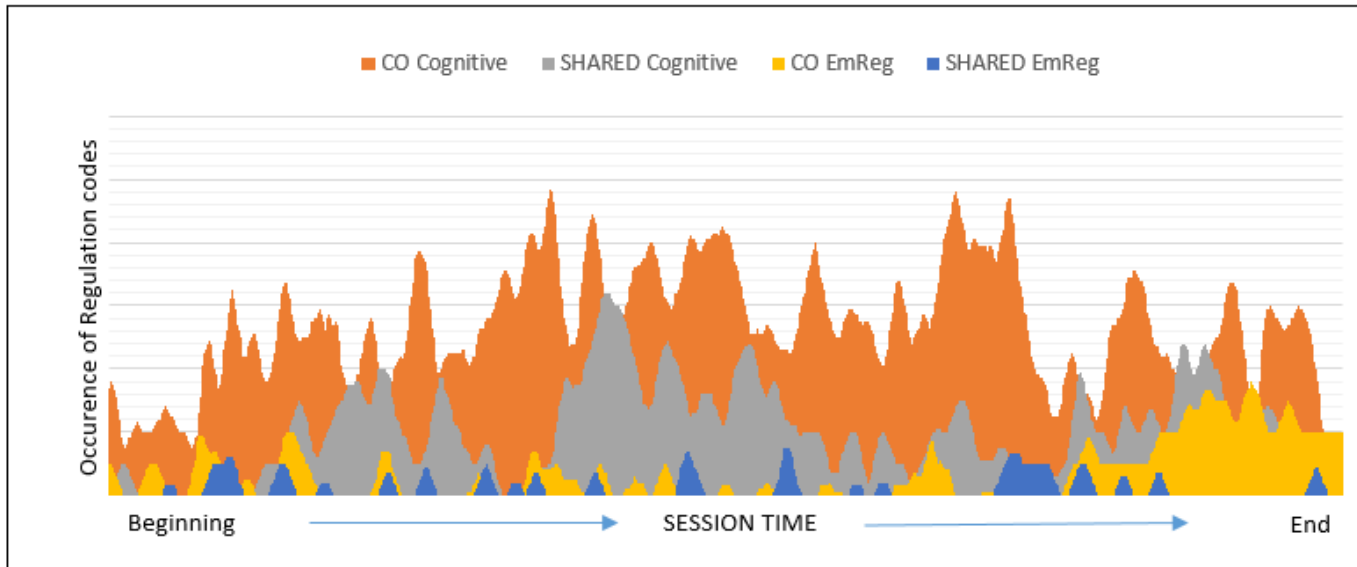
... analyzing motivation and emotion regulation interdependently with cognitive processes

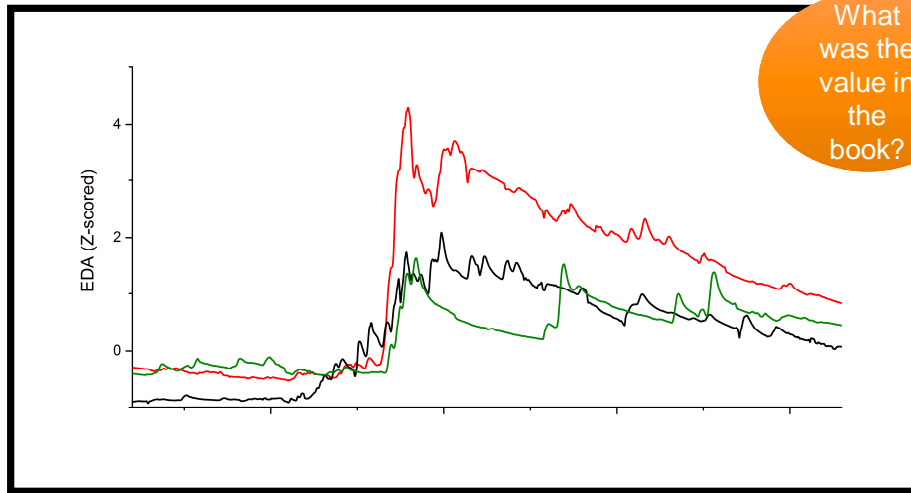
(Ucan & Webb, 2015)

CHALLENGES...

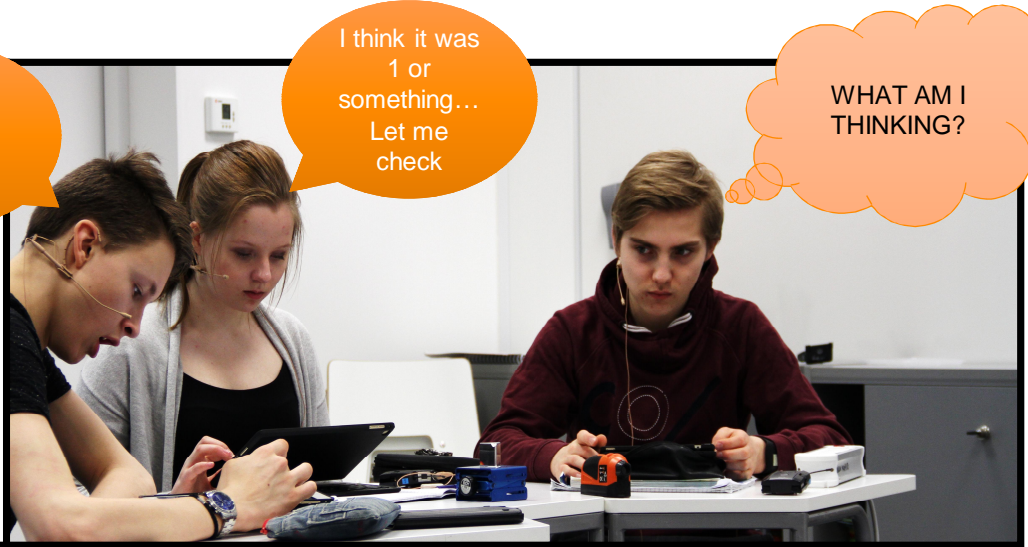
...the use of multiple data sources/channels resulting big and complex data (Azevedo, 2015; Bannert, Reimann, & Sonnenberg, 2014; Gašević, Dawson, & Siemens, 2015;).

(Hadwin, Järvelä, & Miller, 2017; Järvelä & Hadwin, 2013; Järvelä, Järvenoja, & Malmberg, Iso-Hätä, & Sobocinsky, 2016; Järvenoja, Malmberg, Törmänen & Järvelä, 2017)





What was the value in the book?

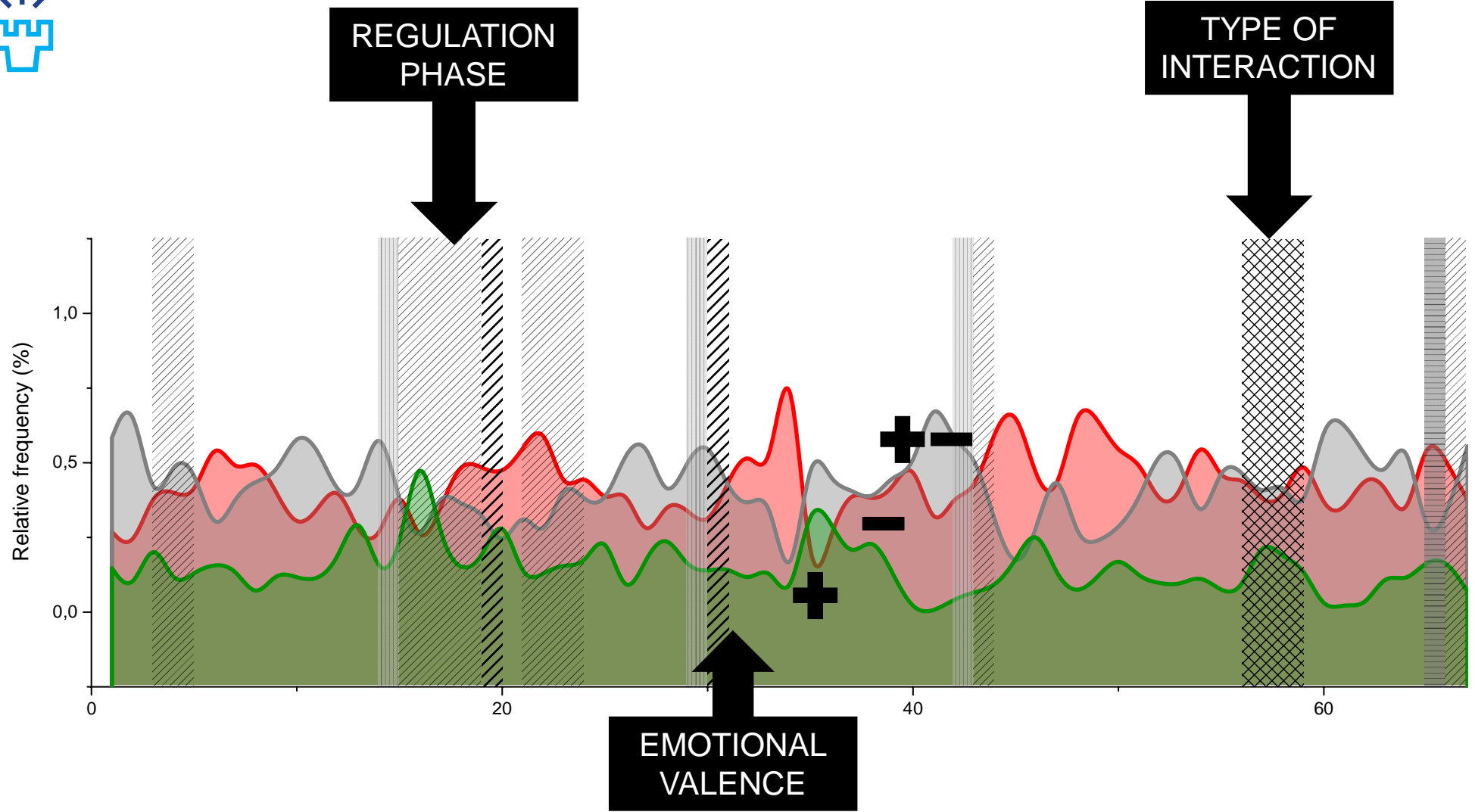


I think it was 1 or something... Let me check

WHAT AM I THINKING?

PHYSIOLOGICAL SENSOR DATA

VIDEO DATA





Discussion

- **Methodological means are there**
 - > **How can we move from in-depth case studies into a systematic knowledge about the progress of regulation?**
- **The complex designs produce a significant amount of multiple data**
 - > **how can we progress from “more data” to “deep data”?**
- **New analysis methods is needed (for big data)**
 - > **How can we capitalize the theoretical understanding?**
- **Research evidence is multifaceted**
 - > **How can we translate this back to the learners?**



IN GROUPS

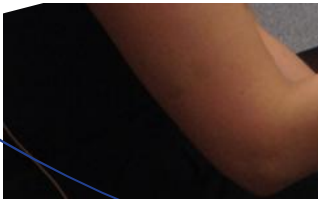
CONTEXTS

Motivated, active self-regulating learners

REGULATING

ATTENTION &

Tools to support and prompt individuals and groups in their regulation of motivation as the need emerges





Evaluation forms were used for prompting SSRL with retrospective dashboards

Meidän ryhmän tilanne



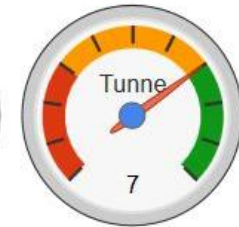
Collaboration



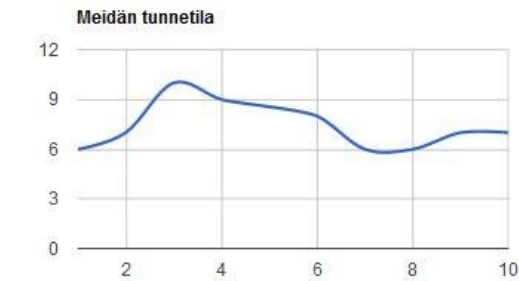
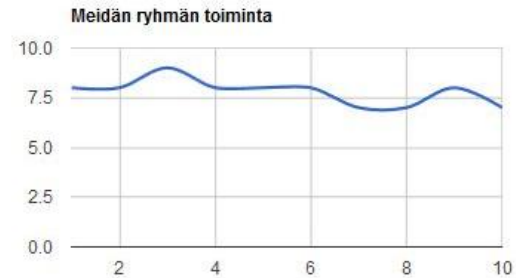
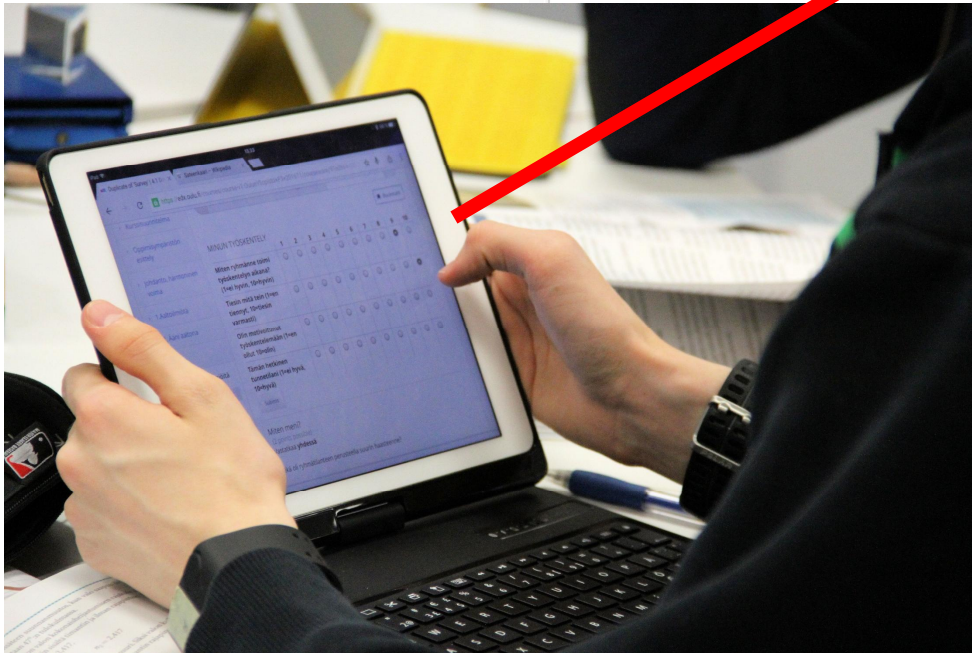
Cognition

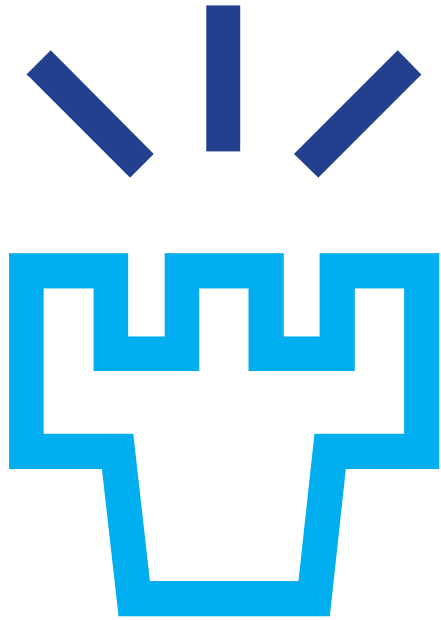


Motivation



Affect





**UNIVERSITY
OF OULU**



SUOMEN AKATEMIA
FINLANDS AKADEMI
ACADEMY OF FINLAND

Thank you!

Hanna.Jarvenoja@oulu.fi



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