Supporting Seamless Learning experiences: What is it (about) and why should we care?

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Topic introduction for Adulet seminar on Technology-enhanced learning (TEL) in Higher education, 21st of May, Delft

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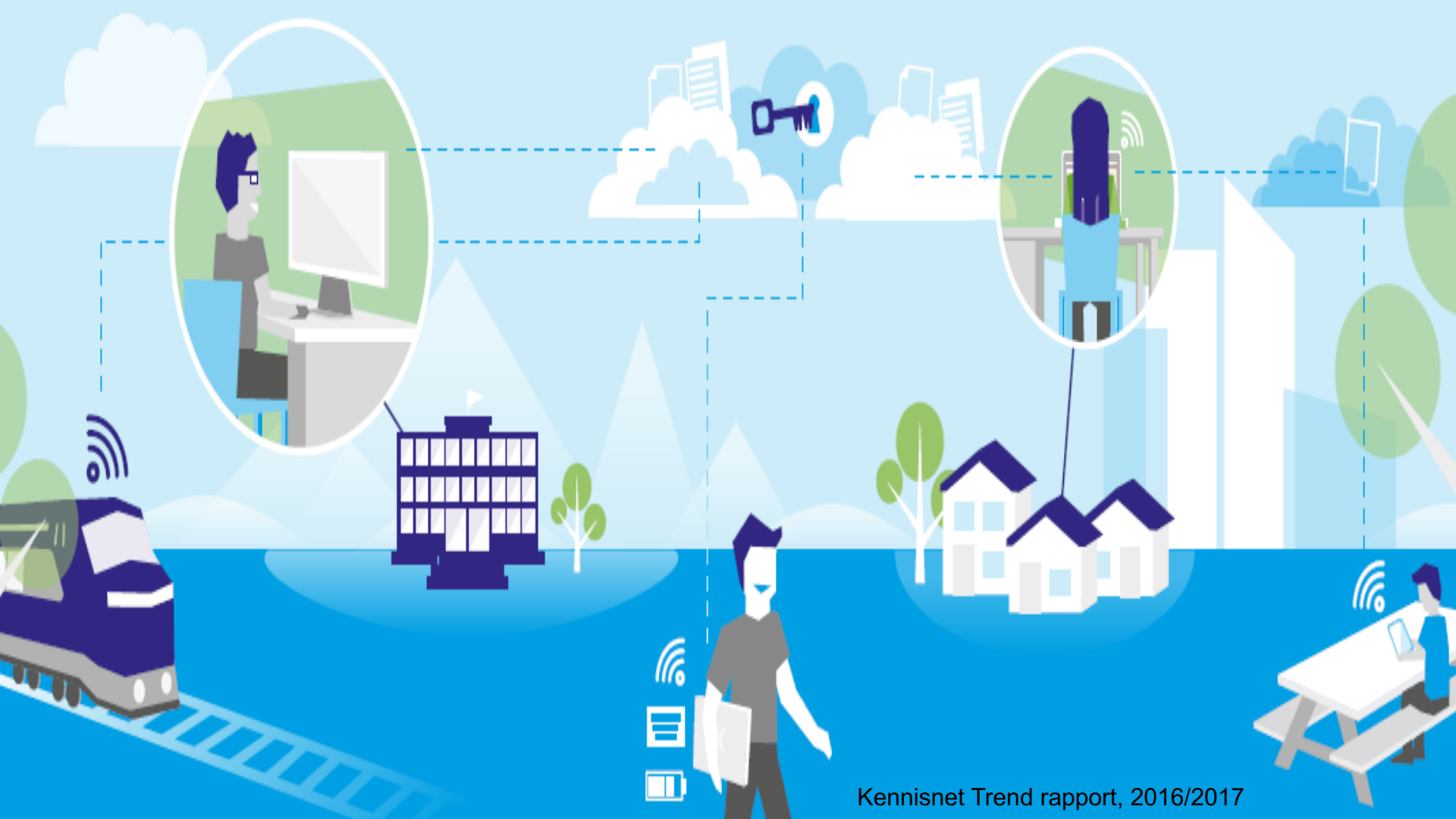
Seamless learning topic team

https://www.ou.nl/welten-seamless-learning-design



Kennisnet Trend rapport, 2016/2017

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Trend study mobile technology use within (higher) education

apparaat	Bench-mark NL	Student mbo	Student hbo	Student wo	Docent mbo	Docent hbo	Docent wo	Onder-zoeker	Mede-werker
Mobiele telefoon	99%	99%	100%	99%	100%	98%	96%	94%	95%
Smartphone	61%	89%	93%	83%	78%	72%	74%	65%	66%
Desktop computer	62%	46%	37%	33%	81%	68%	60%	57%	66%
Laptop	75%	77%	90%	90%	76%	82%	81%	76%	69%
Tablet	33%	29%	26%	20%	57%	63%	47%	51%	56%
e-reader	13%	5%	7%	12%	28%	22%	21%	16%	22%

SURFnet/TNS, August 2013

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“We spend a lot of time trying to change people. The thing to do is to change the environment and people will change themselves”.
(Watson, 2006, p. 24).

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Seamless Learning

What is ‘Seamless’ Learning?

- **Connecting (learning) experiences and learning activities**
- through **technology-supported** learning scenario’s **using wireless/handheld devices**
- That learners **experience through participation in various contexts** (e.g. formal/non-formal)
- And hereby **supporting, improving and enhancing learning processes**
- So that learners experience a **continuity of learning across environments and settings** at different times
- and are, for their learning process, **optimally benefiting from their experiences** across contexts

(adapted from Sharples et al., 2012, p.24)

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Seamless Learning

A network of learning sites

Looi, C.-K., Seow, P., Zhang, B., So, H.-J., Chen, W., & Wong, L.-H. (2010). Leveraging mobile technology for sustainable seamless learning: A research agenda. British Journal of Educational Technology, 41(2), 154-169. doi:10.1111/j.1467-8535.2008.00912.x

https://sites.psu.edu/knkeane/2015/11/01/seamless-learning-and-the-socio-cultural-perspective/

Seamless Learning

Image source:
http://www.thegreatcourses.com/media/catalog/product/cache/1/image/800x6
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Seamless Learning

What is context?

Context =

mental model created by humans
of the setting of an event, statement, or idea
through their **interaction** with objects, ideas, instruments, processess and actors (people)
in an **environment** (Wager & Atlas, 2015; Westera, 2012)

Context arises from the **activity**.

It is not just ‘there’, but is **actively produced**, maintained and enacted (Dourish, 2004)

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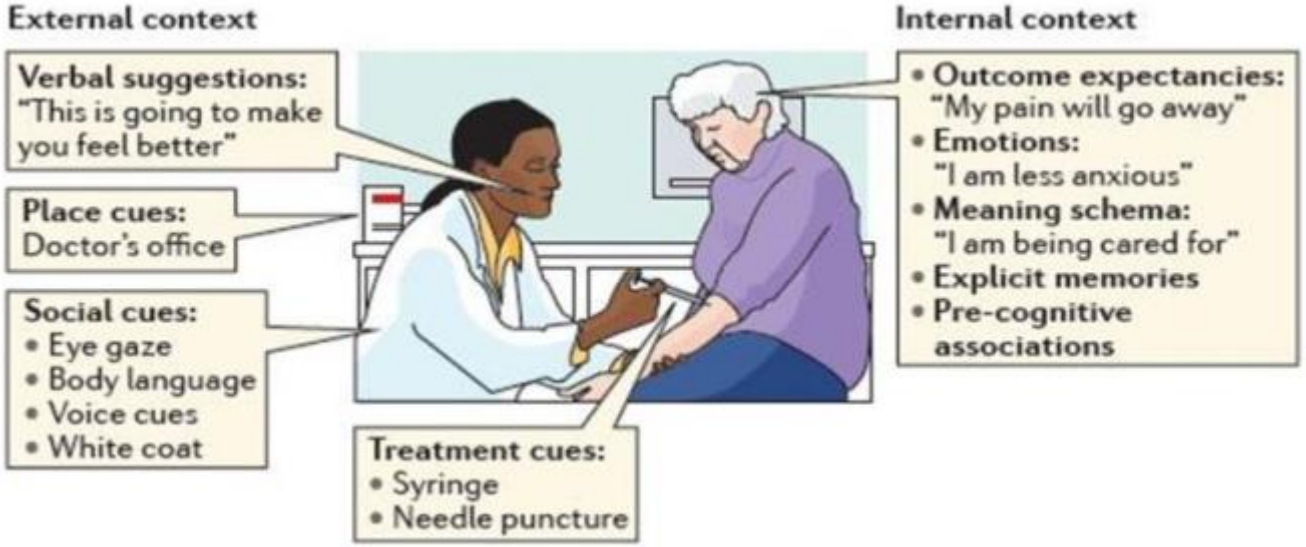
Example setting



Wager & Atlas, 2015, The neuroscience of placebo effects: connecting context, learning and health

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Why is context important for learning?

- Link between concepts and ‘real world’ (abstract vs. concrete) (Westera, 2011, p.201):
  - With senses experiencing and learning about properties of things (e.g. smell) (Schank & Cleary, 1995 in Westera, 2011; Greeno, 1998)
  - Put knowledge into action: It allows learners to apply knowledge, skills and attitudes, see their effects and that they are useful to achieve objectives in the real world (meaningful and situated learning, Lave & Wenger, 1991)
  - Learning as a social and contextualized ‘sense-making’ and co-construction process (Scardamelia and Bereiter, 1999, 2005)
  - Retention and transfer of learning achievements in various contexts

http://www.spring.org.uk/2016/03/higher-wisdom-type-dance.php

Seamless Learning

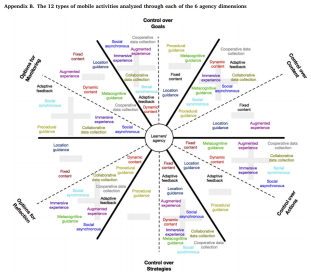
Why ‘Seamless learning’ in and across contexts?

- Applicable knowledge
- Awareness of knowledge types (e.g. explicit, tacit/inert) and different perspectives of the world
- Supporting behavioural changes of individuals and groups through awareness and reflection on personal behaviour, experiences and emotions
- Learning complex skills
- Personal growth of a person, with lifelong learning attitutes and sustainable motivation
- Retention and transfer of learning achievements to other situations
- Social learning and involvement of third parties in learning process (e.g. parents, experts, stakeholders, alumni)

Seamless Learning

Where does technology come into play?(1)

- Look at the available **technological functionality** specific for a **mobile device** (e.g. smartphone, tablet, smart watch), for example gps, qr-code, communicaton functionality, making pictures/videos, sensors
- Link to ‘wished-for’ **learning-and support processes in and across contexts**
- To discover the **affordance (perceivable action possibilities of an object (Norman, 1988)) and surplus value** of a technology for a learning scenario supporting this learning-and support processes



Example of Suarez et al (2018) supporting learners’ agency in Inquiry based learning

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Where does technology come into play? (2)

Mobile technologies offer specific affordances for the design of seamless learning scenario's, e.g. inquiry-based learning (Suarez et al, 2018)

Table 11
Learner's agency dimension for each type of mobile activities.

Types of mobile activities		Learners' agency dimensions					
		goals	content	actions	strategies	reflection	monitor
Direct Instruction	*Location guidance*	✗	✗	✗	✓	✗	✗
	Procedural guidance	✗	✓	✗	✗	✓	✓
	Metacognitive guidance	✗	✓	✓	✓	✓	✗
Access to content	*Fixed content*	✗	✗	✓	✓	✗	✗
	Dynamic content	✓	✓	✓	✓	✓	✗
Data collection	*Cooperative data collection*	✓	✓	✓	✓	✓	✗
	Collaborative data collection	✓	✓	✓	✓	✓	✓
Peer-to-peer communication	*Social asynchronous*	✓	✓	✓	✓	✓	✓
	Social synchronous	✓	✓	✓	✓	✓	✓
Contextual support	*Augmented experience*	✓	✗	✓	✓	✓	✗
	Immersive experience	✓	✓	✓	✓	✓	✓
	Adaptive feedback	✓	✓	✗	✓	✓	✓

Design of 'phygital' (combination of physical circumstances/objects and digital) learning scenario's and environments (Vate-U-Lan,Quigley & Masouras, 2016).

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Example scenario's

Guided field-trips and location-based games for raising **awareness**

Process support (e.g. IBL, feedback/ reflection through formative assessment) for learning skills

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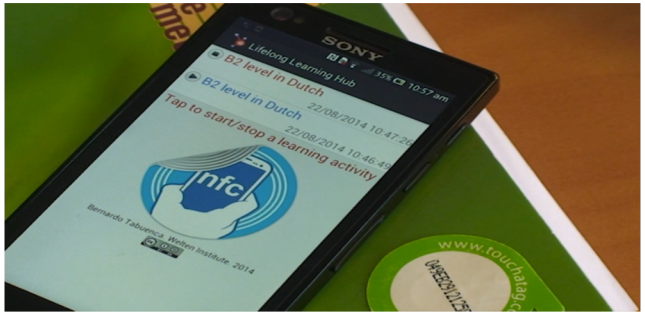
Example Supporting Seamless Learning Experiences: ‘Incidental’ learning

- Objectives: Skill development and/or behavioral changes
- Capturing ‘critical incidents’ in daily practices (e.g. by means of audio/video recording, photo’s) or capturing own behaviour (e.g. time spend on learning activities, calories taken) (Tabuence, Ternier & Specht, 2012; Tabuenca, Kalz, Specht, 2014)
- Reflection and community support
- Connect to ‘formal’ learning processes and objectives



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Where does technology come into play? (3)

Use of affordances of mobile technology for learning, specifically to (based on Simons in Rubens, 2005 (p.4 & 5)):

- Make **connections** (between information (just-in-time, contextualized), people and practices/places)
- **(Co-)Create** knowledge and artefacts
- **Communicate and interact** (with teachers, peers, experts, coaches, parents etc.)
- Make process, progress and results **transparent, explicit, available and visible**
- **Show and share** ('tangible' results, boundary object)
- Support **of feedback and reflection processes** (immediate feedback; in and across contexts)
- **Competence-based assessments** in context
- Change **organization** of learning processes
- **Flexibility of learning** (own time, place, space, content and tempo)

Seamless Learning

Design-based research

How can we, by pedagogical and technological design, facilitate seamless learning processes,

so that learning becomes

more meaningful, transferable, effective (e.g. in terms of retention, decrease of inert knowledge), efficient and/or enjoyable

for learners?

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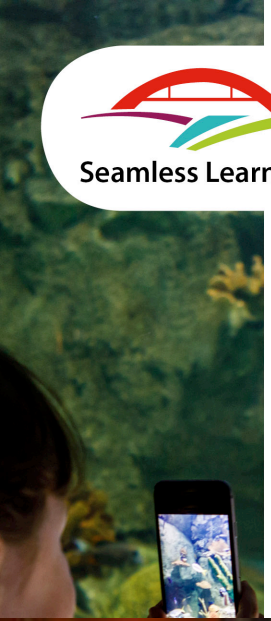
Theoretical background

- Situated cognition (Brown, Collins, & Duguid, 1989) and cognitive apprenticeship (Collins, Brown & Newman, 1988)
- Experiential learning (Kolb, 1984)
- Anchored instruction (Bransford, Sherwood, Hasselbring, Kinzer & Williams, 1990)
- Distributed cognition (Hollan, Hutchins, and Kirsch (2000) and group cognition (Stahl, 2006)
- Self-determination theory (Deci & Ryan, 2000)
- Activity theory (Nardi, 1996; Engeström, Reijo & Raija-Leena, 1999) and boundary-crossing theory (Bronkhorst & Akkerman, 2016)
- Theory of Reasoned Action (Ajzen & Fishbein, 1980) and Theory of Planned Behaviour (Ajzen, 1985)
- Formative assessment, feedback (Hattie & Timperley, 2007), self-regulation (Zimmerman, 2008) and self-directed learning
- Design patterns, scenario-based design and learning systems-and process design.

Our research group makes use of pedagogical scenario's like Storytelling, Expert modeling, Inquiry-based-, Play-based-, Collaborative-and networked-, Problem-based-, project based-, design based- and competency based-learning.



Seamless Learning

With whom and for whom?

For various target groups and stakeholders, but predominantly for:

- Learners, teachers, parents, domain experts and managers in high schools (principally secondary education) and (distance learning) universities
- Learning professionals on the job

Seamless Learning

Interested?
Join our Seamless learning design workshop to experience and learn more!

We are going to:

- **Explain** (more into depth):
  - factors you have to consider when designing seamless learning scenario's
  - several example technology-enhanced seamless learning scenario's
  - set of digital tools supporting these scenario's

- **Experience** the 'seamless learning' design space yourself:
  - design a seamless learning scenario for a relevant domain
  - in small groups (4/5 people)
  - through the use of a poster design template
  - be prepared to present your result to the rest of the group

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Interested? Contact us!

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Topic leader ‘Seamless learning’

https://www.ou.nl/welten-seamless-learning-design

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