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**Seamless Learning Design:
supporting continuity of learning
across environments with technology**

Dr. Ellen Rusman, 17th of January 2023

*Webinar New Education Normal Webinar Series,
Singapore*







Features of Formal and Informal Science Learning

Informal learning - field trips

Voluntary
Unstructured
Unsequenced
Nonassessed
Unevaluated
Open-ended
Learner-led
Learner-centered
Out-of-school context
Non-curriculum-based
Many unintended outcomes
Less directly measurable outcomes
Social intercourse
Nondirected or learner directed

Formal learning - school

Compulsory
Structured
Sequenced
Assessed
Evaluated
Close-ended
Teacher-led
Teacher-centered
Classroom context
Curriculum-based
Fewer unintended outcomes
Empirically measured outcomes
Solitary work
Teacher directed

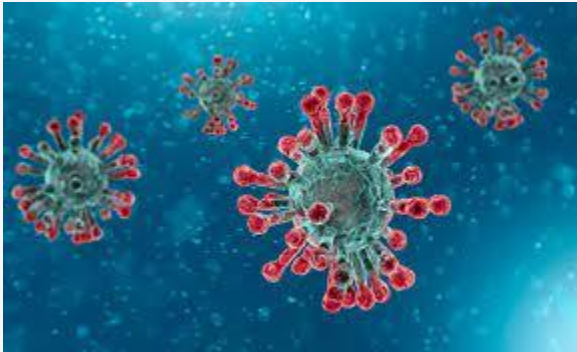
Modified from Wellington (1991, p. 365), based on Rommey and Gassert (1994).

Image source:

http://www.thegreatcourses.com/media/catalog/product/cache/1/image/800x600/0f396e8a55728e79b48334e699243c07/9/6/96631---base_image-1435315369.jpg



Technology



Mindset



“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).



To what extent did the Covid circumstances and availability of technology altered learning scenarios and activities in your daily educational practice(s)?

To a:

1. Great extent
2. Moderate extent
3. Low extent
4. Not at all



What is a seamless learning process?



Wong (2015) suggested the definition by Sharples et al. (2012, p.24) as most common denominator:

*Seamless learning is when a person experiences a **continuity of learning**, and **consciously bridges the multifaceted learning efforts**, across a combination of locations, times, technologies or social settings.”*





Facilitating “Continuity of learning”

- “**Continuity**’ defined as in Bronkhorst & Akkerman, 2016 (p. 20):
- Learners are connecting and relating experiences
- in various contexts of participation
- so that these experiences become part of
- an **intentional, consistent, coherent, non-disrupted and prolonged**
- learning and development process
- of (**reflection on**) **action and interaction**
- over time

Seamless learning design

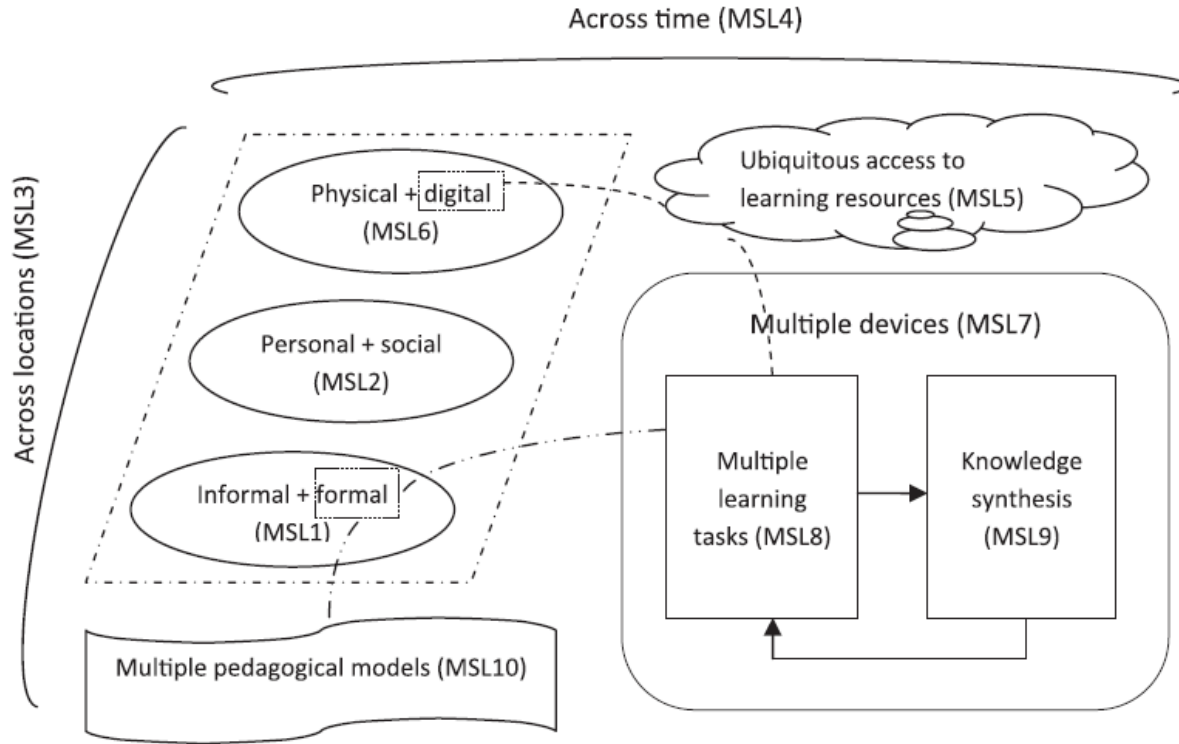


- supports learners to
- bridge seams
- with the help of (mobile and internet) technology
- through the **design of technology-supported learning scenario's**
- to facilitate a coherent and persistent ('continuous') learning process
- in and across environments, practices and settings learners engage with
- so that learners can optimally benefit from their experiences in and across contexts for their learning



Rusman, Nadolski & Spoelstra (draft 2022)

What kind of 'seams' or 'seam-awareness'?



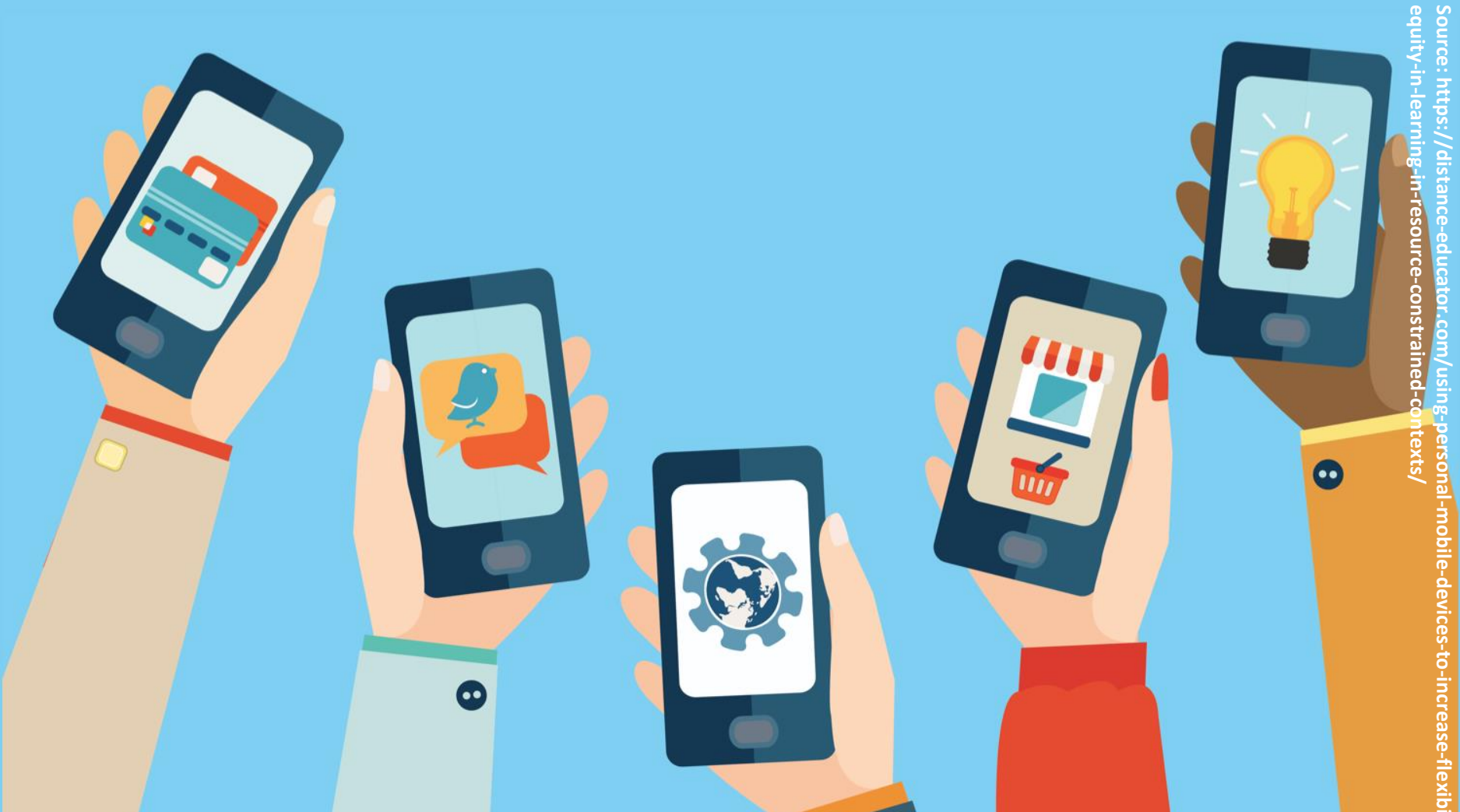
Between:

- formal, non-formal and informal learning
- theory and practice, induction and deduction
- contexts/ communities of participation and practice , e.g. personal/ professional ('perspectives')

Affordances of mobile devices

1. Facilitate 'seamless' learning and support **processes** (in, from and across personal contexts and practices) (Rusman, 2019)
2. Become a **boundary object** between various personal participation practices (Akkerman & Bakker, 2011; Bronkhorst & Akkerman, 2016)
3. Allow to change and merge **perspectives** on and **raise awareness** of phenomena in the real world, e.g. by augmented reality 'overlays'





Source: <https://distance-educator.com/using-personal-mobile-devices-to-increase-flexibility-in-learning-in-resource-constrained-contexts/>

Designing for seamless learning experiences (1)

- **in context/in-situ:** What can learners do/experience/learn (activity/action potential/opportunity) in interaction with this environment/at this location that has a specific surplus value compared to other settings?

<https://www.sanctamaria.nl/activiteiten/studierizen-en-excursies/veldwerk/>



<https://news.usc.edu/139316/gifts-supports-the-baum-family-maker-space-at-usc-viterbi/>





Designing for seamless learning experiences (2)

Support cross-over/cross context learning:

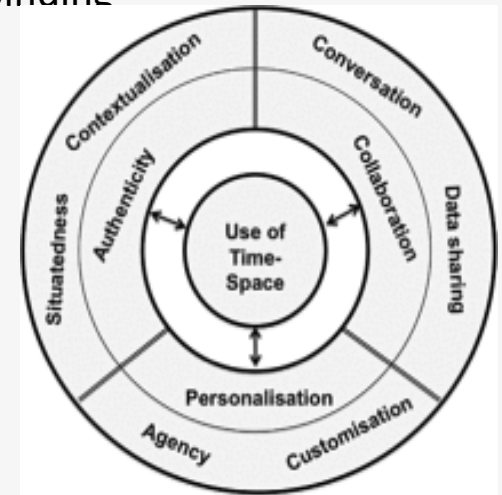
- How we support learners to accelerate/strengthen/enhance/re-inforce and integrate learning processes that currently take place in different environments/settings?
- How can we facilitate one coherent and persistent learning process across different environments/settings? (with help and surplus value of (mobile) technology?)



Facilitating an ‘overarching context’

Fostering personal and social learning processes and (inter) action through technology-enhanced learning design, e.g. processes like:

- Collaboration: knowledge co-construction, dialogue, argumentation, logics, cognitive conflict/grounding, organization, interpersonal trust and social binding
- Observation, imitation and practice
- Feedback
- Self-regulation
- Reflection and comparison (of performances, of experiences)
- Problem solving and critical thinking
- Story-telling and story-making (creation/construction)
- Inquiring/researching and designing/creating
- ..



Kearney et al., 2012, p.8



Why facilitating ‘Seamless learning’ by design?

- Enhance and enforce learning effects, e.g. retention and transfer of learning achievements to other situations
- Make learning more personal and meaningful (and thus impact motivation)
- Facilitate a state of flow
- Increase time spent on a learning trajectory or journal
- Support social learning and involvement of “third parties” in learning and development processes (e.g. parents, experts, stakeholders, alumni)
- Raise awareness of knowledge types (e.g. explicit, tacit/inert; conceptual/procedural, theoretical/practical) and different perspectives of the world
- Support behavioural changes of individuals and groups through awareness and reflection on personal behaviour, talents, experiences and emotions
- Support learning complex skills
- Support personal growth and self-regulation skills of a person, with lifelong learning attitudes and sustainable motivation

Knowledge and Understanding

- Knowing what or about something
- Learning facts or information
- Making sense of something
- Deepening understanding
- How museums, libraries and archives operate
- Making links and relationships between things

Skills

- Knowing how to do something
- Being able to do new things
- Intellectual skills
- Information management skills
- Social skills
- Communication skills
- Physical skills

Activity, behaviour, progression

- What people do
- What people intend to do
- What people have done
- Reported or observed actions
- A change in the way that people manage their lives

Enjoyment, inspiration, creativity

- Having fun
- Being surprised
- Innovative thoughts
- Creativity
- Exploration, experimentation and making
- Being inspired

Attitudes and Values

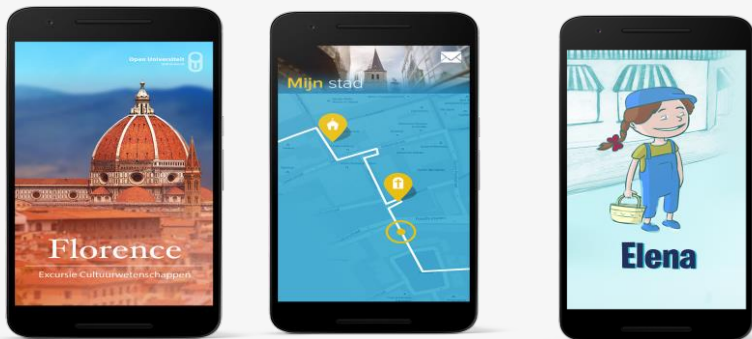
- Feelings
- Perceptions
- Opinions about ourselves (eg self esteem)
- Opinions or attitudes towards other people
- Increased capacity for tolerance
- Empathy
- Increased motivation
- Attitudes towards an organisation (eg a museum, archive or library)
- Positive and negative attitudes in relation to an experience

Generic Learning Outcomes of museum learning (GLO's)
Bollo, 2013

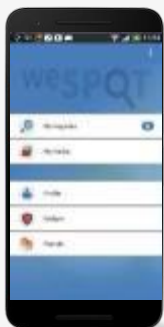




E X A M P L E S



Guided field-trips and **location-based games**



Process support

(e.g. IBL, feedback/reflection through formative assessment, self-regulation)
for learning skills



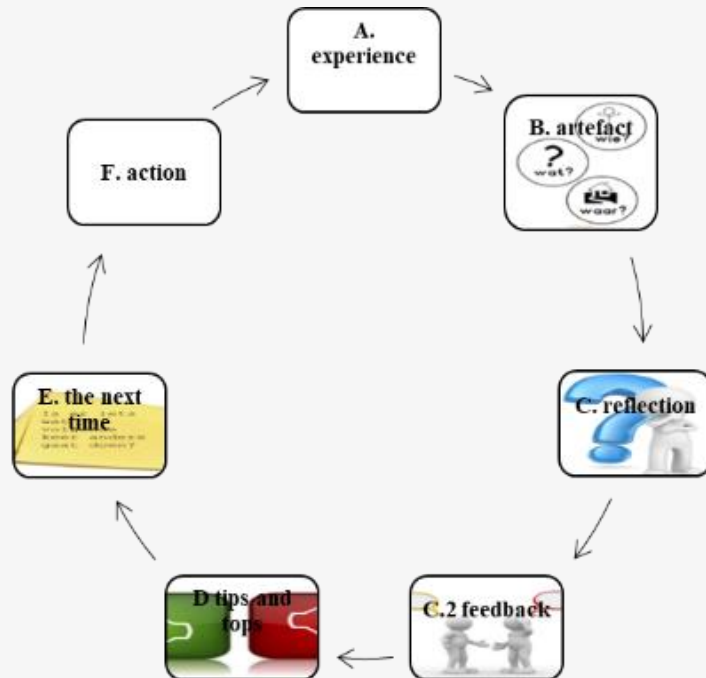
ELENA: Early second language learning and adult involvement in real-world context

Rusman, Ternier & Specht, 2018





Reflection support on 'everyday life' communication skills of children with language impairments



Rusman & van der Broek, 2020

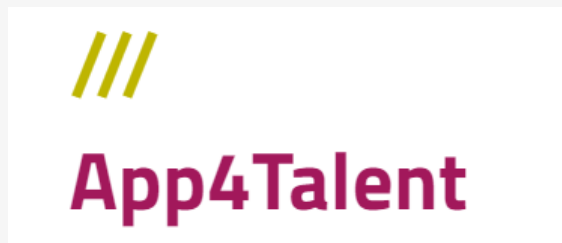
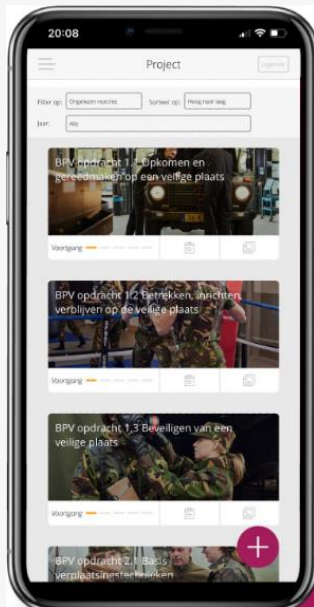


Tracking and monitoring 'time on study' behaviour to increase self-regulation and time-management skills

- Skills development and behavioural changes
- Capturing and reflecting upon own behaviour (e.g. time spend on learning activities, calories taken) (Tabuenca, Ternier & Specht, 2012; Tabuenca, Kalz, Specht, 2014)



Developing self-regulation skills with (p)reflection prompts during school and workplace learning



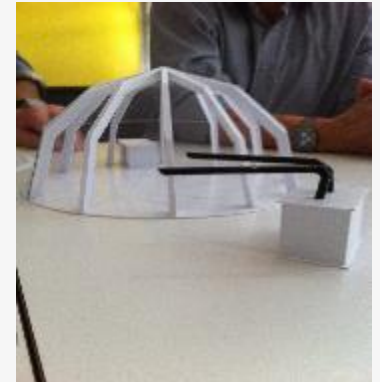
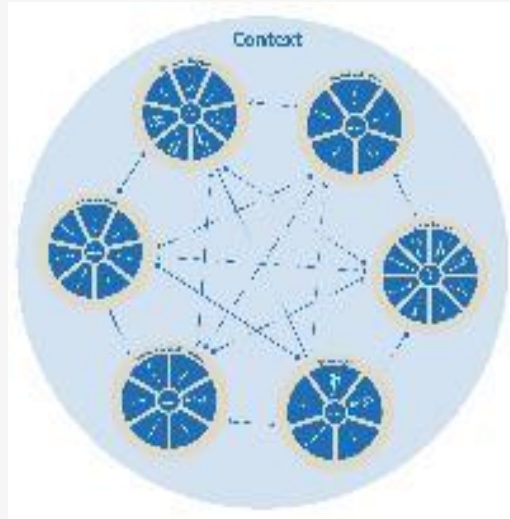
(Drexhage, 2021)

https://research.ou.nl/ws/portalfiles/portal/41722309/OWMDrexhage_30072021.pdf

weSPOT: Supporting individual and collaborative inquiry-based science learning



Tan, E., Rusman, E., Firssova, O., Ternier, S., Specht, M., Klemke, R. & So, H.J. (2018)

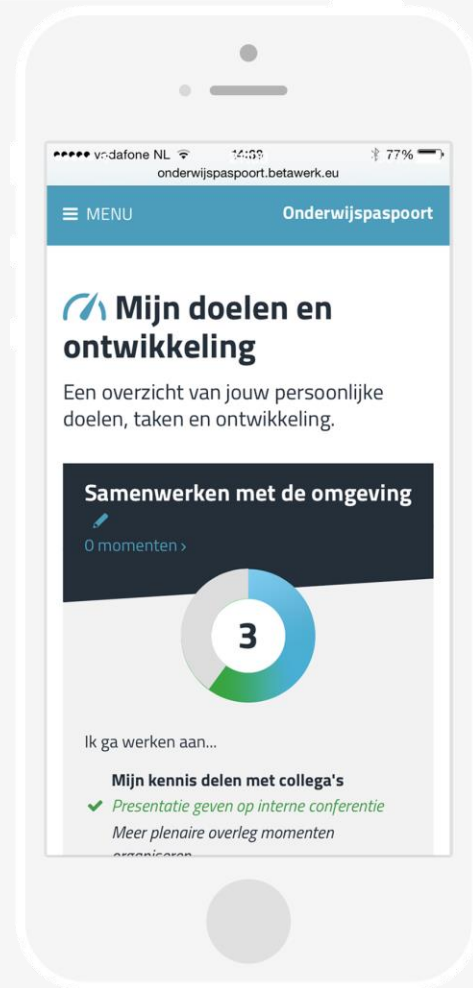


MirrorMe@work - Supporting professional personal development

- Professional personal development
- Learning from critical incidents
- Structured and frequent reflection on own competences and achievements
- Together with comparable 'buddies', e.g. 'starting teachers'
- Increasing awareness of own development and employability
- Increase 'ownership' and 'self-regulation' of own learning process

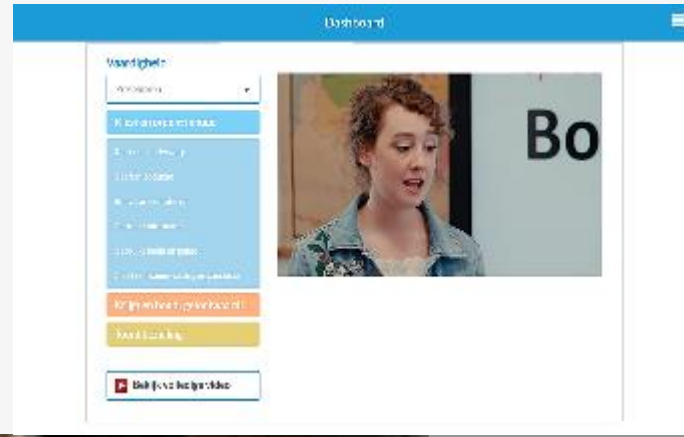
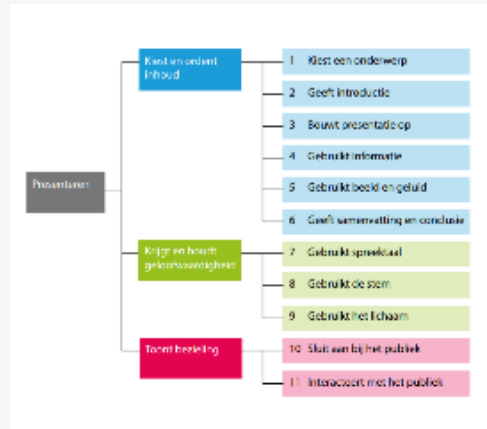
Rusman & Storm, 2022

based on work for 'Onderwijspaspoort' from Dr. Wendy Kicken and Jeroen Storm





Viewbrics and Pe(e)rfectly skilled: learning support for (online) skill development



'Like master, like man'

Ackermans, Rusman, Nadolski, Brand-Gruwel & Specht (2021a&b); Nadolski, Hummel, Rusman & Ackermans, 2021; Rusman, Nadolski & Ackermans (accepted); Rusman & Nadolski (accepted)



Pe(e)rfectly Skilled method (for students)

- Step 1 - Prepare
- Step 2 - Practice (including giving feedback on yourself and asking feedback)
- Step 3 - Provide peer feedback
- Step 4 - View and analyze feedback
- Step 5 - Set goals



“Mirror towards Skills’ Mastery”

Formative assessment, feedback and reflection cyclus with five (default) steps



Filter



Eindoordeel
 ★★★★★
 ★★★★★
 ★★★★★

Uw score
 Verbetering
 Verslechtering

Ronde 3 (t.o.v. ronde 2) 3

Opname Overzicht tips & tops Vergelijk 3 beoordelingen Terug

<https://research.ou.nl/en/activities/peerperfectly-skilled-proficiently-skilled-through-online-training>

Filter



Eindoordeel

★★★★★

Uw score
 Verbetering
 Verslechtering

Ronde 2 2

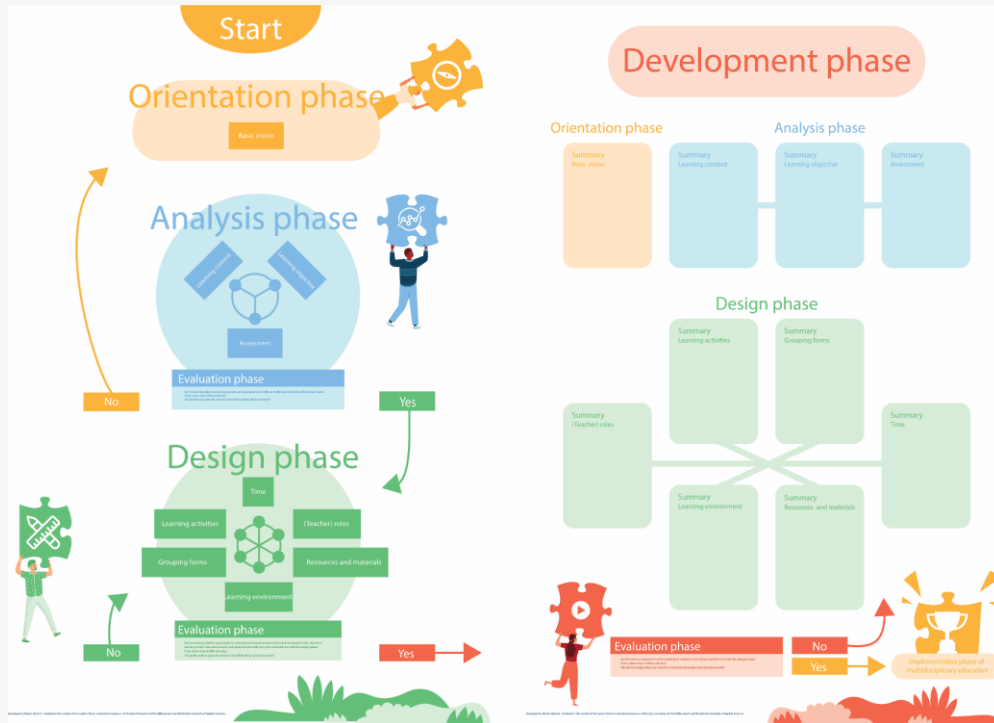
Opname Overzicht tips & tops Vergelijk peers 1 beoordeling Terug

Tip/top	Feedbackgever	Markeer
Voor mij zou je jouw presentatie boeiender maken als je meer gebruik maakt van stijlmiddelen. Ik vraag me af of je wel voldoende anticipeert op argumenten en emoties van de wederpartij. Ik zou hier meer aandacht aan schenken.	Anna Niem	★
Ik vind dat je de argumenten van jouw client helder hebt verwoord. Ik denk dat je de rechter daardoor logisch meeneemt, en dat jouw verzoek aan de rechter bij het slot van jouw pleidooi dus vanzelfsprekend is.	Anna Niem	☆

Multidisciplinary educational design framework to facilitate cross-boundary educational design



Selhorst-Koekkoek, 2022; Selhorst-Koekkoek & Rusman, 2022



Learning objectives

What is the purpose of the (re)design?

- What should the students know in their own context?
- What should the students be able to do in their own context?
- What attitude is expected of the students in their own context?
- What should the students know and be able to do as they work together on a multidisciplinary authentic task?
- What attitude is expected of the students when they collaborate on a multidisciplinary authentic task?

Where are the interfaces between the disciplines?

- Where do the disciplines influence each other in the making choices?
- What skills are needed with regard to the crossing the borders?
- What skills are needed for an optimal collaboration / problem solving process?

Example of card with help questions



Seamless learning design paradigm

Consisting of a specific set of (p.5 & 6, Rusman, 2019):

- Design rationales, characteristics, principles and approaches
- Design parameters and dimensions
- Design elements
- Learning and support processes
- Design mechanisms



Design elements (1)

Element	Example
Trigger	Learning objective, (emerging) question, interest, wonder moment, critical incident, problem, personal concern/decision, task, instruction
Intent	Personal goal/aim/objective
Activities and interactions between actors, instruments and artefacts	Reflect, provide feedback, collaborate, communicate, examine, monitor, coach
Nudge	Suggestion, notification, recommendation, ((p)reflection) prompt, change in affordance of environment

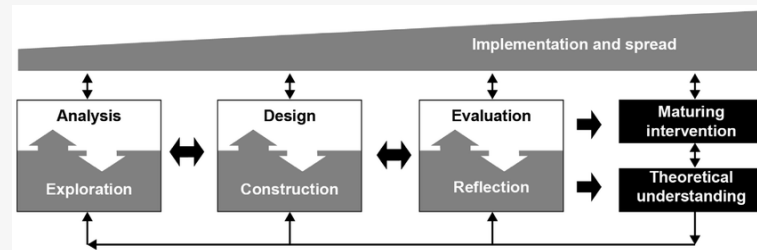
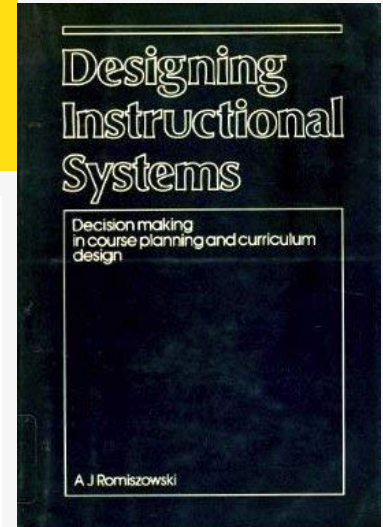
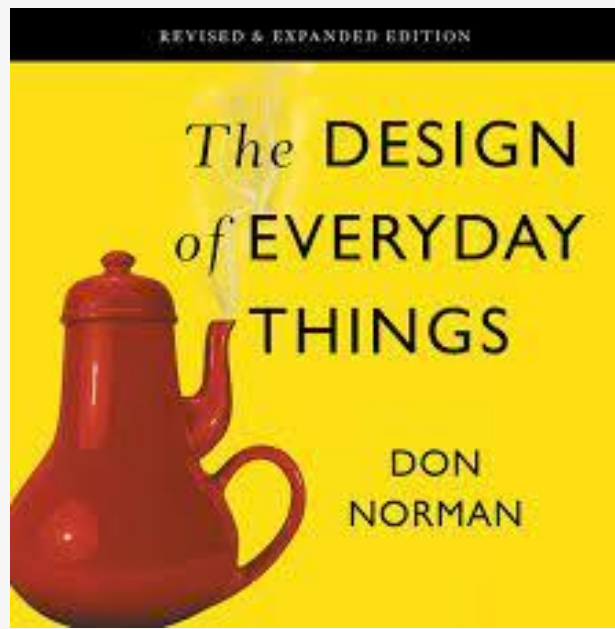
(Rusman, 2019, p. 5 & 6)

Design elements (2)

Element	Example
Actor	Learner, coach, teacher, expert, friend, family
Object	Book, report, Eiffel tower, car
Instrument	Hammer, recorder, tekst processor
Environment	Museum, virtual team space, classroom
Acknowledgement	Badge, diploma, grade, feedback report, benchmark, point/credits
Artefact/boundary object	Design; report; diary; description

(Rusman, 2019, p. 6)

Design principles and approaches





YOUNG PROFESSIONAL

Danny Molenaar, 25 jaar

Junior TCS Officer T-Mobile, Den Haag

Werk



Besteedbaar inkomen



Beschikbare tijd studie



Type opleiding



“ Ik wil verder komen. Ik ben, leef, leer en werk digitaal. Daarom kies ik voor de bachelor informatiekunde.

Mijn opleiding

BACHELOR INFORMATIEKUNDE



Studiemotieven

- Een beter salaris en een betere baan.
- Volgt de studie naast het werk: daarom de OU.
- Een fulltime job en geen andere verplichtingen. Het lukt hem daarom de komende zes jaar tussen 8 en 15 uur per week te studeren.

Achtergrond

- Danny, 25 jaar. Geen relatie.
- Opleiding Communicatie en Media Design Haagse Hogeschool, niet afgerond.
- Kamer Archipelbuurt Den Haag.

Lifestyle

- Hobby's: Skeeleren, wielrennen, surfen, pokeren.
- Activiteiten: Sporten, doe-het-zelven, chatten, games.
- Vakanties: Af en toe naar Turkije. In Azië geweest.
- Boodschappen: DFFN. Irid. Toko. reformzaak

WELVAREND

Glenda van Eijck, 46 jaar

Manager Casemanagers Atlant, Apeldoorn

Werk



Besteedbaar inkomen



Beschikbare tijd studie



Type opleiding



“ Ik wil verder komen in dit wetenschapsdomein en stappen kunnen zetten in mijn carrière. Ik doe de studie naast mijn werk.

Mijn opleiding

MASTER PSYCHOLOGY



Mijn merken

Studiemotieven

- Wil stappen kunnen zetten in haar carrière.
- Koos voor een parttime managementfunctie. Gaat haar lukken om de komende twee jaren tussen 15 en 20 uur per week te studeren.
- Via deze vorm van afstandsonderwijs kan ze studeren wanneer zij wil.

Achtergrond

- Glenda, 46 jaar, recent getrouwd. 1 Puber.
- Vrijstaande woning in de buurt van Apeldoorn.
- Werkt 32 uur in de zorg. Gemeenschappelijk besteedbaar inkomen: 2,5 x modaal.
- Wo-bachelor Gezondheidswetenschappen Universiteit Maastricht. Managementtrainingen en zorgopleidingen.

Lifestyle

- Hobby's: Fietsen, zwemmen, theater.
- Activiteiten: Doe-het-zelven, tuinieren, dierentuinbezoek, museumbezoek.

Learning design Technological affordances



Seamless Learning

**Learning processes
(Domain-related) competences**





THANKS
FOR
YOUR
ATTENTION

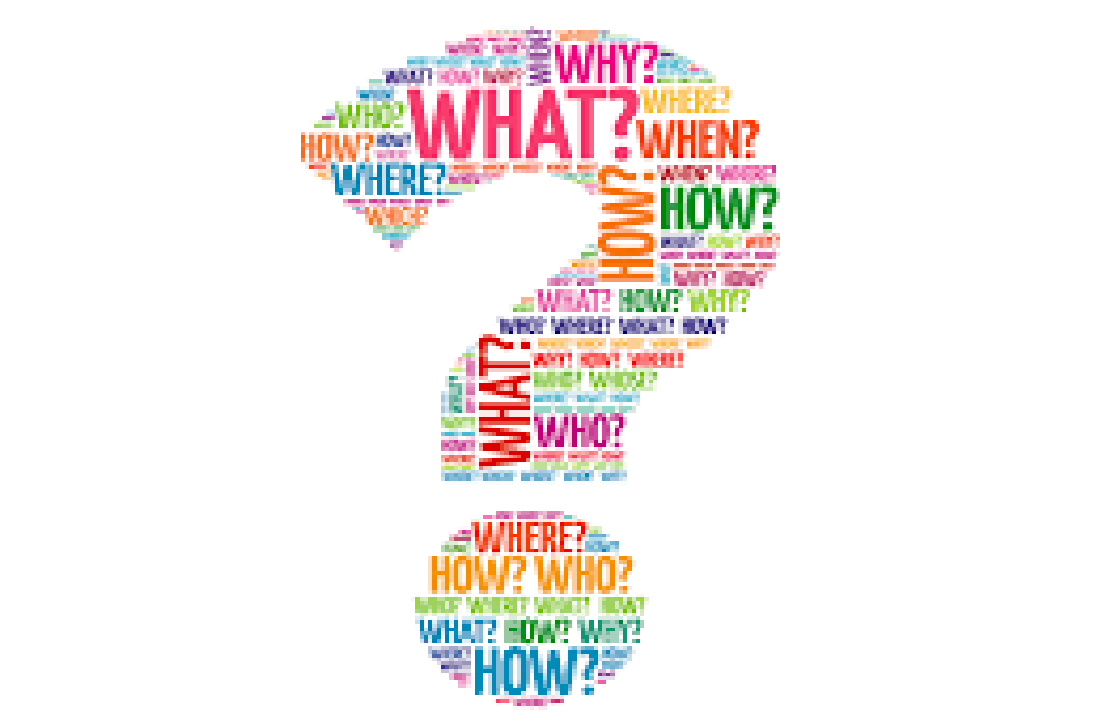
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WWW.OU.NL



Questions?





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Topic leader 'Seamless learning design'

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

<https://research.ou.nl/en/persons/ellen-rusman>



@EllenRusman



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