

Towards a methodological approach for designing learning environments: focus on task design

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*"Quand tu veux construire un bateau,
ne commence pas par rassembler du bois,
couper des planches et distribuer du travail,
mais réveille au sein des hommes le désir de
la mer grande et large." (Saint-Exupéry)*



Look who's listening ...

- * Take your neighbour's hand and close your eyes ...
- * Describe ...



Look who's talking ...

- * 'Difficult' student
- * Teacher of French (1980 - 1986)
 - * Trips to Paris, Mont Ventoux, 'Exercice des bras lourds', video camera, les Régions de France, poetry ...
- * CALL developer (1986 - 2004)
 - * Successful applications versus less successful
- * Editor CALL Journal (2004 ...)
- * Prof. Instructional Design & Computer Assisted Language Learning (2004 - ...)
 - * Personal Goal Theory
- * Director LINGUAPOLIS (2004 - 2017)
- * Coordinator of ECHO (2018 - ...)

My memoirs

- * The Inmates Are Running the Asylum
- * One Flew over the Cuckoo's Nest
- * They Shoot Horses don' t they?

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JACK NICHOLSON
ONE FLEW OVER
THE CUCKOO'S NEST



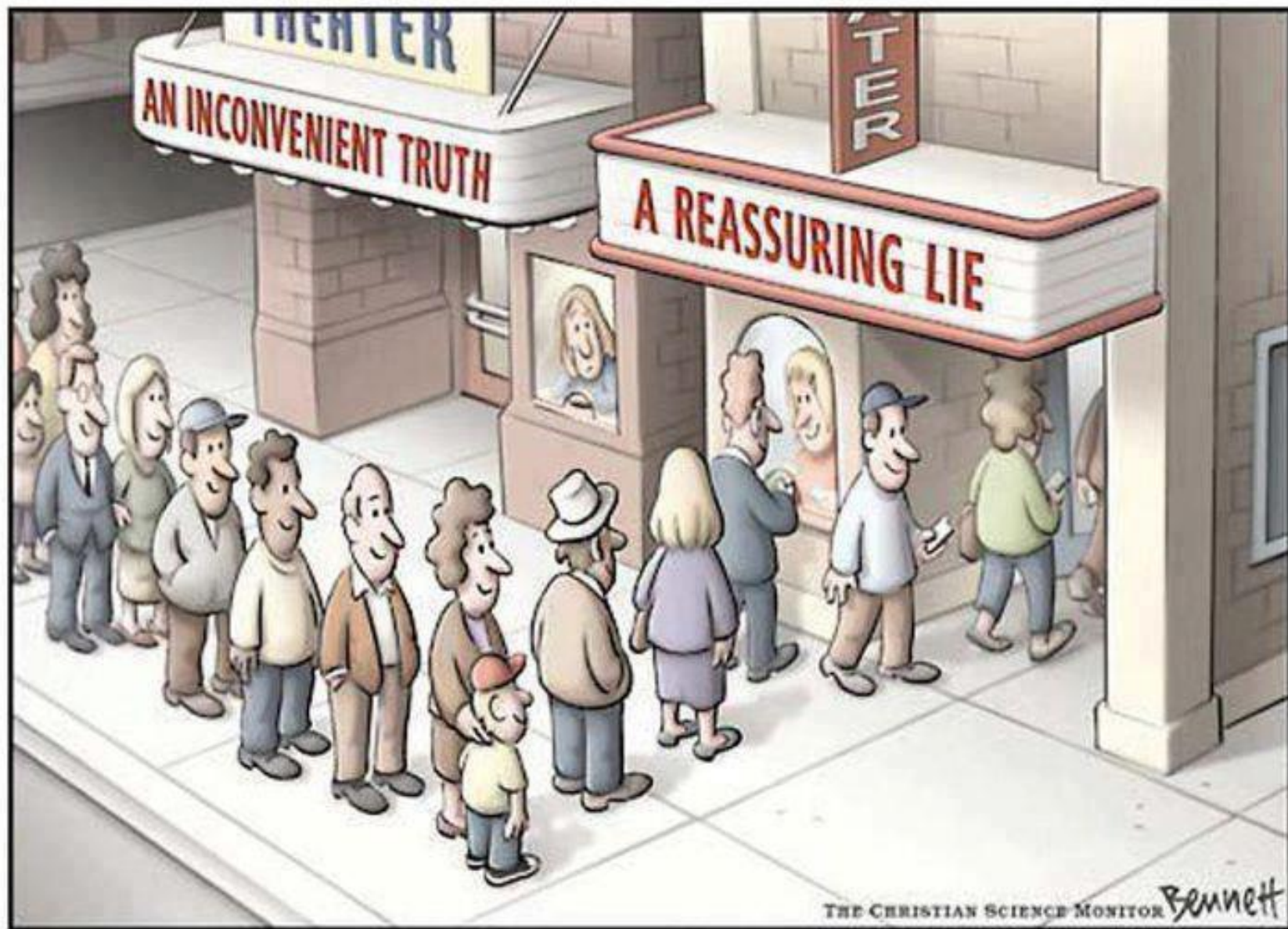

Overview

1. **Seven questions**
2. Educational Engineering
3. The ADDIE stages
4. Distributed Design
5. Task Design



Seven questions

1. Does technology have an effect on learning?
2. Are learner-centered approaches possible with the current teacher support?
3. Should pedagogical theories be applied in our teaching?
4. Should we imitate Good Practices?
5. Can educational artefacts be evaluated?
6. Is there enough knowledge available for improving education?
7. Do students/teachers know what they need and want?



Major problems/challenges

- * Pressure
 - * Key Performance Indicators (KPIs)
 - * 'Publish and Perish' syndrome (Colpaert 2012)
- * Pervasive but persuasive terminology
 - * Blended learning, flipped classroom, digital natives, big data, 21st century skills, virtual learning...
- * Perception of the role of ICT
 - * increasing workload
 - * reducing teaching staff (hours)?



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Star(t)ing point

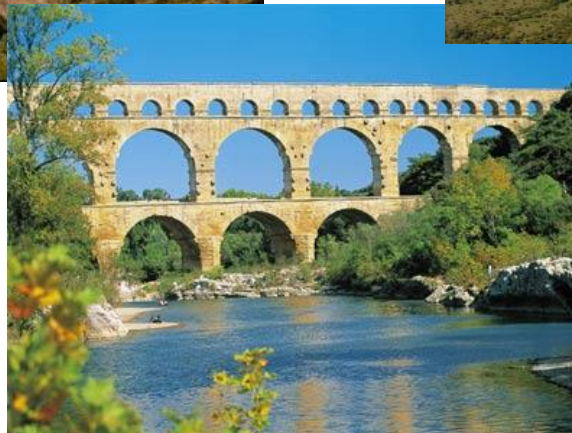
- * Education = “l’art du possible”
 - * by its very nature, education can and will never be perfect
 - * lack of time and resources often prevent us from duly implementing the required changes
 - * any change, even the most justifiable one, entails some kind of resistance, often from stakeholders we misjudge
 - * there is not enough knowledge available in terms of substantiated findings which would enable us to improve education, solve problems or design solutions in a systematic, methodological and justifiable way.



Engineering



* What is engineering exactly ?



Engineering

- * What is engineering?
- * Wikipedia: “Engineering is the discipline, skill, and profession of acquiring and applying scientific, economic, social, and practical knowledge, in order to design and build structures, machines, devices, systems, materials and processes.”

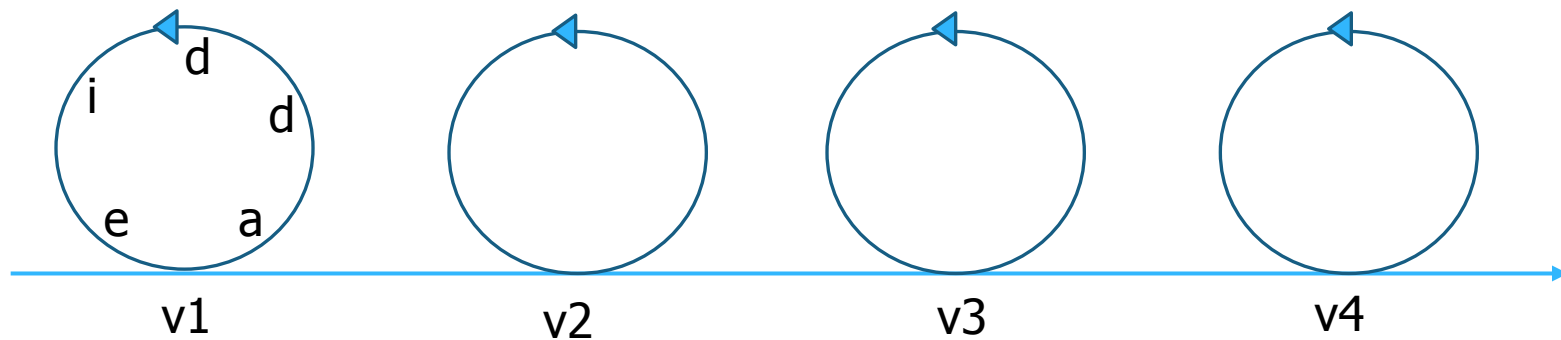
Educational Engineering

- * B.V. Koen. 1985. *Definition of the Engineering Method*.
“By the engineering method I mean the **strategy** for causing the best **change** in a poorly understood or **uncertain** situation within the available **resources**.”
(p.5)
- * → strategy to apply when not enough knowledge is available
- * → Educational Engineering = ...



Educational Engineering

- * about hypothesis building & validating
- * staged: ADDIE
- * real-world, holistic
- * cyclic, iterative
- * progressive lifecycles: intermediate loops
- * focus on the process itself



Overview

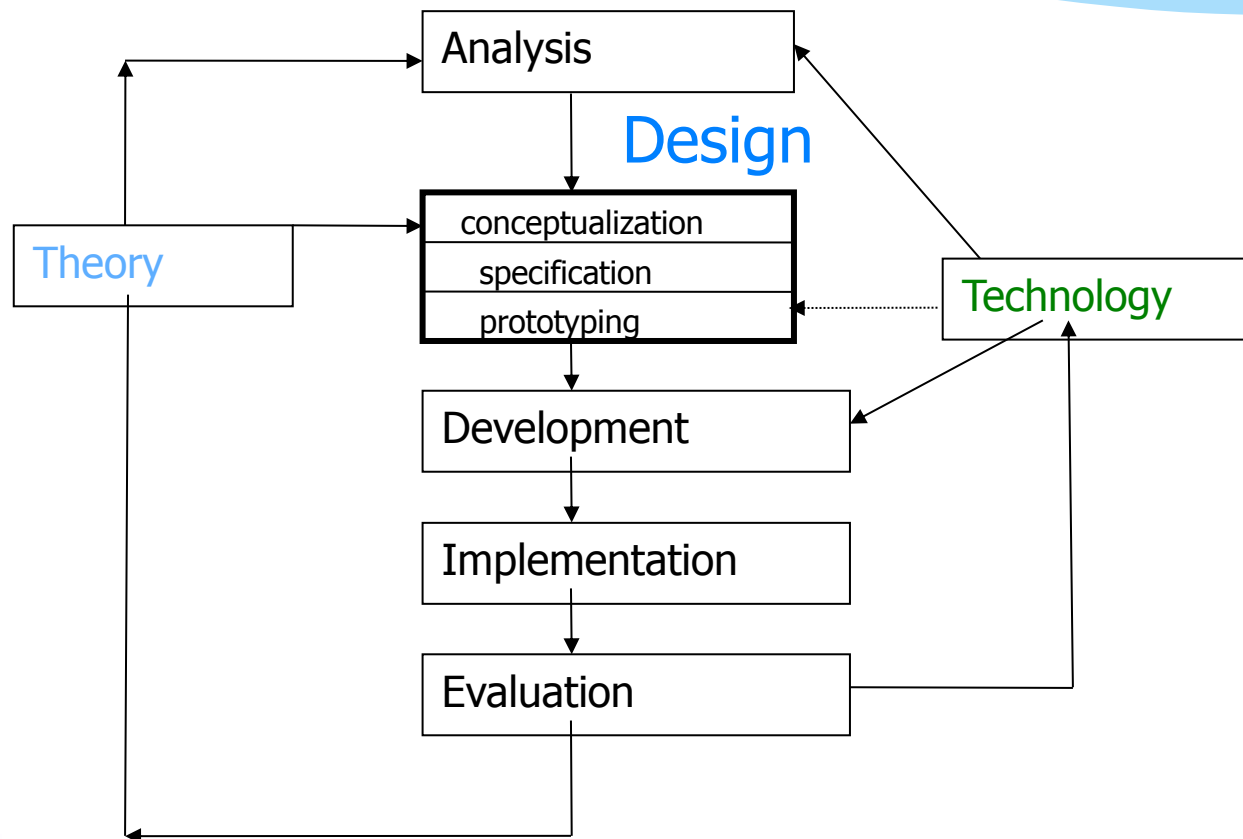
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The ADDIE stages

- * Analysis
- * Design
 - * Conceptualisation
 - * Specification
 - * Prototyping
- * Development
- * Implementation
- * Evaluation

The ADDIE cycle



Analysis

	LOCAL ASPECTS	DIFFERENTIAL ASPECTS
Learner		
Teacher		
Other actors		
Learning model		
Instruction model		
Evaluation model		
Content		
Technology		
Infrastructure		

normal= cannot change

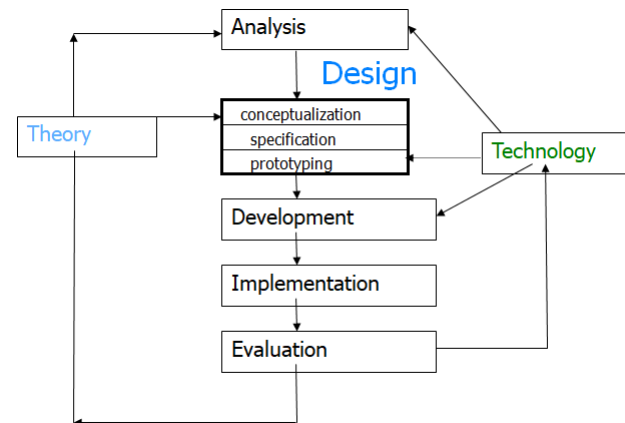
italic= can change

bold = must change

bold italic= can and must change

Design

- * Conceptualization
- * Specification
 - * Pedagogical
 - * Content-related
 - * Architectural
 - * Technological
- * Prototyping



Design - conceptualization

* FOCUS GROUP



Design - conceptualization

- * When I think about this course I think about the following problems ...
 - * When I think about these problems I feel ...
 - * I feel ... because I ...
 - * The course should ...
-
- * J. COLPAERT. (2010). Elicitation of Personal Goals as design Concepts. Innovation in Language Learning and Teaching.

A	B	C	D	D
abandoned	bad	caged in	damaged	disagreeable
abused	badgered	careless	damned	disappointed
accused	baffled	chaotic	dangerous	disappointing
addicted	banned	chased	dark	disapproved of
afraid	barren	cheated	dazed	disbelieved
aggravated	beat	cheated on	dead	discardable
aggressive	beaten down	chicken	deceived	discarded
alone	belittled	claustrophobic	deep	disconnected
angry	berated	clingy	defamed	discontent
anguish	betrayed	closed	defeated	discouraged
annoyed	bitched at	clueless	defective	discriminated
anxious	bitter	clumsy	defenseless	disdain
apprehensive	bizarre	coaxed	defensive	disdainful
argumentative	blacklisted	codependent	defiant	disempowered
artificial	blackmailed	coerced	deficient	disenchanted
ashamed	blamed	cold	deflated	disgraced
assaulted	bleak	cold-hearted	degraded	disgruntled
at a loss	blown away	combative	dehumanized	disgust
at risk	blur	commanded	dejected	disgusted
atrocious	bored	compared	delicate	disheartened
attacked	boring	competitive	deluded	dishonest
avoided	bossed-around	compulsive	demanding	dishonorable
awful	bothered	conceited	demeaned	disillusioned
awkward	bothersome	concerned	demented	dislike
	bounded	condescended to	demoralized	disliked
	boxed-in	confined	demotivated	dismal
	broken	conflicted	dependent	dismayed
	bruised	confronted	depleted	disorganized
	brushed-off	confused	depraved	disoriented
	bugged	conned	depressed	disowned
	bullied	consumed	deprived	displeased
	bumped	contemplative	deserted	disposable
	bumped out	contempt	deserving of pain/punishment	disregarded
	burdened	contentious	desolate	disrespected
	burdensome	controlled	despair	dissatisfied
	burned	convicted	despairing	distant
	burned-out	cornered	desperate	distracted
		corralled	despicable	distraught
		cowardly	despised	distressed
		crabby	destroyed	disturbed
		cramped	destructive	dizzy
		cranky	detached	dominated
		cran	detest	doomed

Examples of volitions

- * I want ...

... Support, Direction, Situation, Reward on effort, Respect, Feel competent, Feel related, Feel autonomous, Fairness, Clarity, Usefulness, Enjoyment, Results, Self-realization, Feel confident, Feel calm ...

- ❖ ... or not ...

Design - conceptualisation

- * Design starts with reconciling conflicting goals
- * Concept = hypothetical construct which needs to be validated
- * Validation = comparing expected outcome with actual outcome

Design - specification

- * **Pedagogical specification:**
 - * choose/make learning model
 - * choose/make teaching model
 - * choose/make evaluation model
- * **Content specification**
 - * Off-the-shelf
 - * MOOCs
 - * authentic materials
 - * OER
 - * co-construction
- * **Architectural specification**
 - * interactions > functionalities
- * **Technological specification:**
 - * define required functionalities first, then try to find a technology that matches these requirements

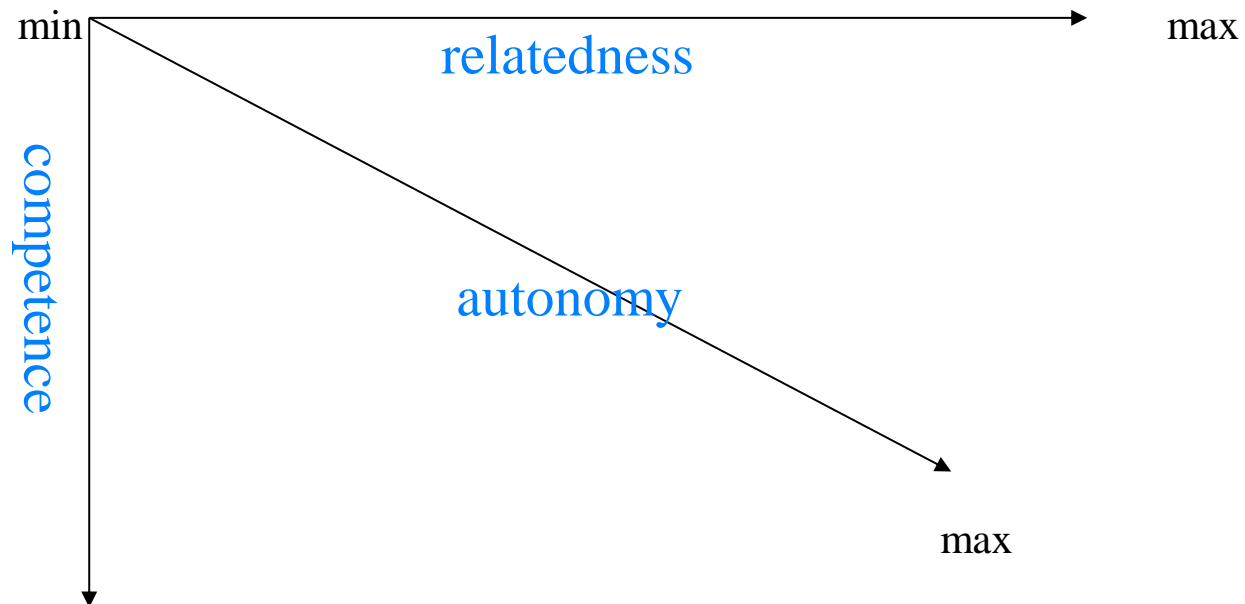
Examples

- * Arcades Interactif
- * Eurocatering
- * DISCO
- * TRUVO
- * IRIS
- * UdC
- * Management & Organisation
- * HRM
- * University of Antwerp



University of Antwerp

- * Learning environment should support



Teacher PSS

<i>I want / need to ...</i>	<i>SELF</i>	<i>PEER</i>	<i>COACHED</i>
Inform myself			
communicate			
teach			
evaluate			
reflect			
contribute			
plan / manage			
obtain			
...			

Student PSS

<i>I want / need to ...</i>	<i>SELF</i>	<i>PEER</i>	<i>COACHED</i>
inform myself			
communicatie			
learn / study			
evaluate			
reflect			
contribute			
plan / manage			
obtain			
...			

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Distributed Design

- * Five paradigm shifts:
 - * The ecological paradigm shift
 - * The process-oriented paradigm shift
 - * The pull paradigm shift
 - * The psychological paradigm shift
 - * The task design process

Ecological paradigm shift

- * No technology (in extenso educational artefact) carries an inherent, measurable and generalizable effect on learning.
 - * This effect can only come from the entire learning environment as a ecology.
 - * The learning environment = collection of interacting components
 - * The learning environment (LE)= to be created by design (virtual, optimal)<> the learning situation (LS) = what exists
 - * The learning environment = not only **what**
 - * ... but also **how-to**

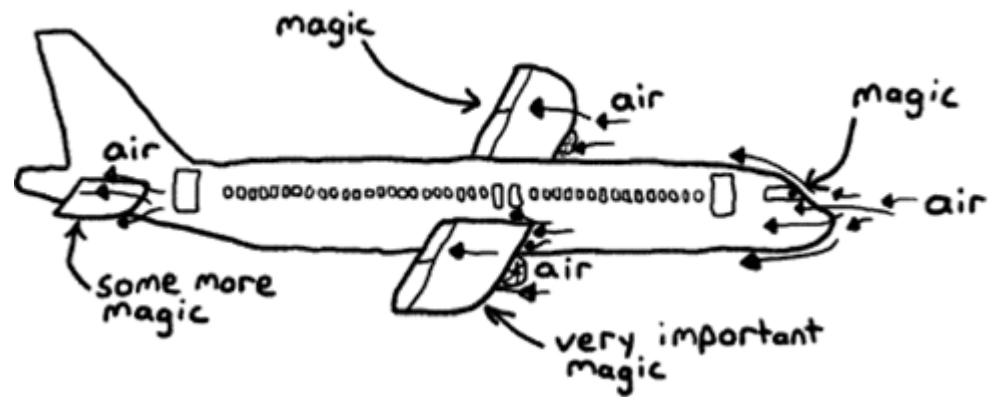
shift
happens!

Process-oriented paradigm shift

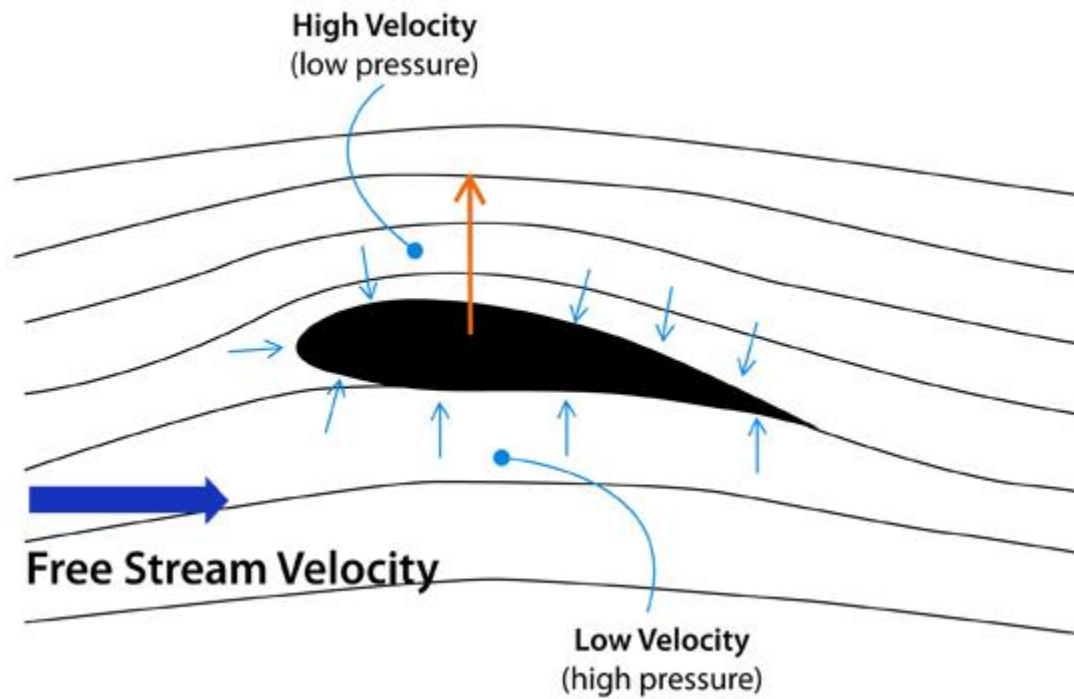
- * The eventual learning effect of the LE is proportional to the **designedness** of the LE
- * Designedness = the extent to which it has been designed in a methodological and systematic way
- * DD focuses on a common methodology but leads to polymorphous results.
- * Consequences for research and evaluation: it's not about the product, it's the process!



Why do planes fly?



Why do planes fly ?



Push to pull paradigm shift

- * Traditional approach: technology, and in extenso other educational artefacts, have an effect on learning, on the brain (push-model)
- * A methodological design process creates a demand for / entails the need for specific educational artefacts (pull-model)
- * Case of technology:
 - * consequence of the design process = specification of needed functionalities
 - * which technologies afford which functionalities?



Psychological paradigm shift

- * Focus on personal goals is a more efficient way to achieve pedagogical goals
- * COLPAERT, Jozef. “Elicitation of language learners’ personal goals as design concepts.” *Innovation in Language Learning and Teaching*. Vol. 4, No 3, November 2010, 259-274. Taylor and Francis.
- * Between Self-Determination Theory and Dörnyei’s L2 model

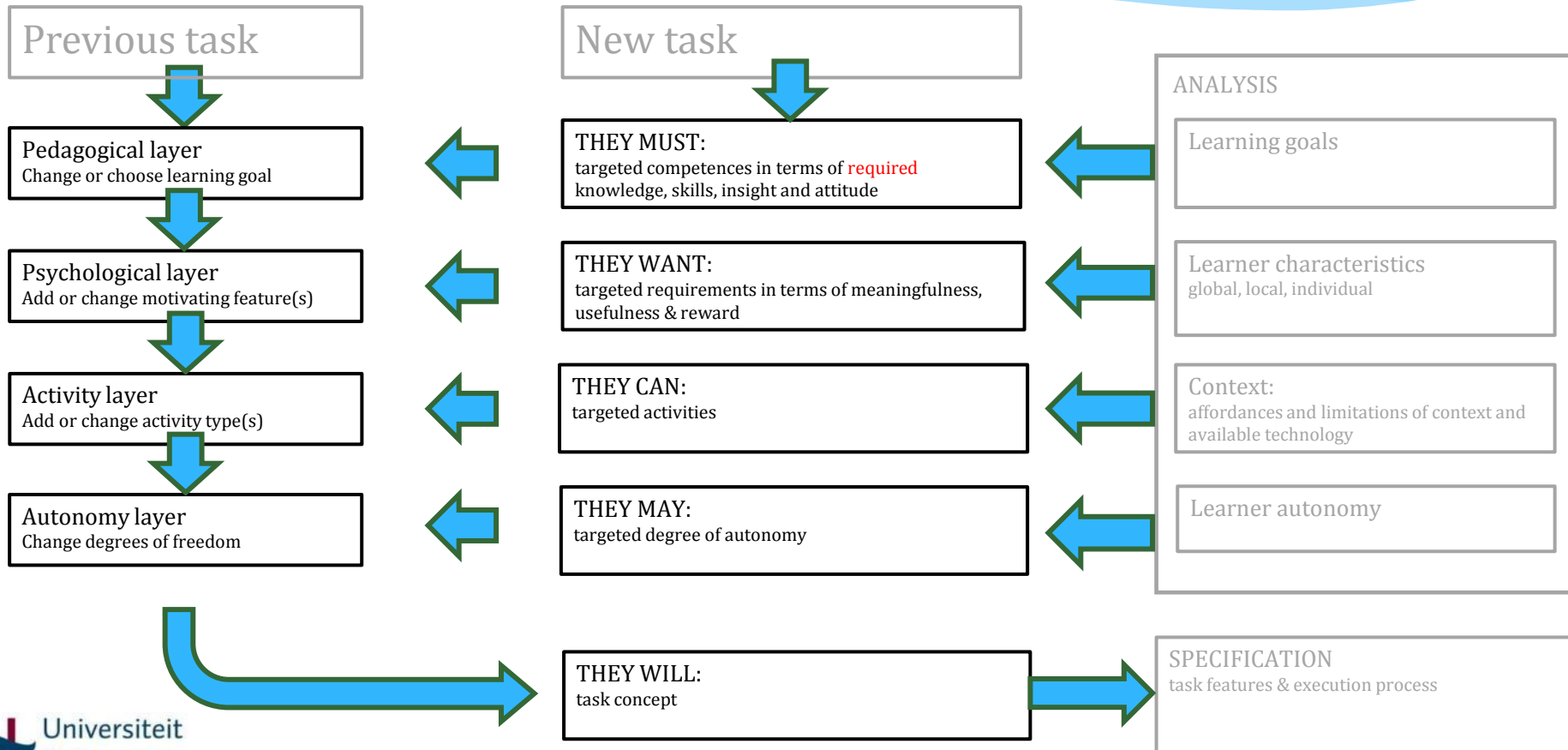


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Task conceptualization model



THEY MUST

	<i>Knowledge</i>	<i>Skills</i>	<i>Insight</i>	<i>Attitude</i>
Subject-matter	geography	drawing	historical	identification, autonomy
Linguistic	grammar rules, vocabulary	listening	language structure	interest
Communicative		convince, negotiate		
Intercultural	other cultures			adopt an interested, constructive attitude
Socio-linguistic	language varieties	adapt register and style		
Digital	communication tools and games	make knowledge clip		solve problems based on insight and knowledge
...				

THEY WANT

- * Two dimensions:
 - * three levels:
 - * global or universal: what we know learners worldwide want
 - * local or context-dependent: what we know 'our' learners want
 - * individual: what we know some learner want
 - * three qualities:
 - * acceptable: a task should be authentic, relevant and/or fit into the teacher's approach
 - * useful: a task should have a result for the learner, the learning environment or others
 - * rewarding: a task should tackle universal needs (competence, relatedness, autonomy), personal goals (respect, support, ...) or Ideal Self Images [advanced level]

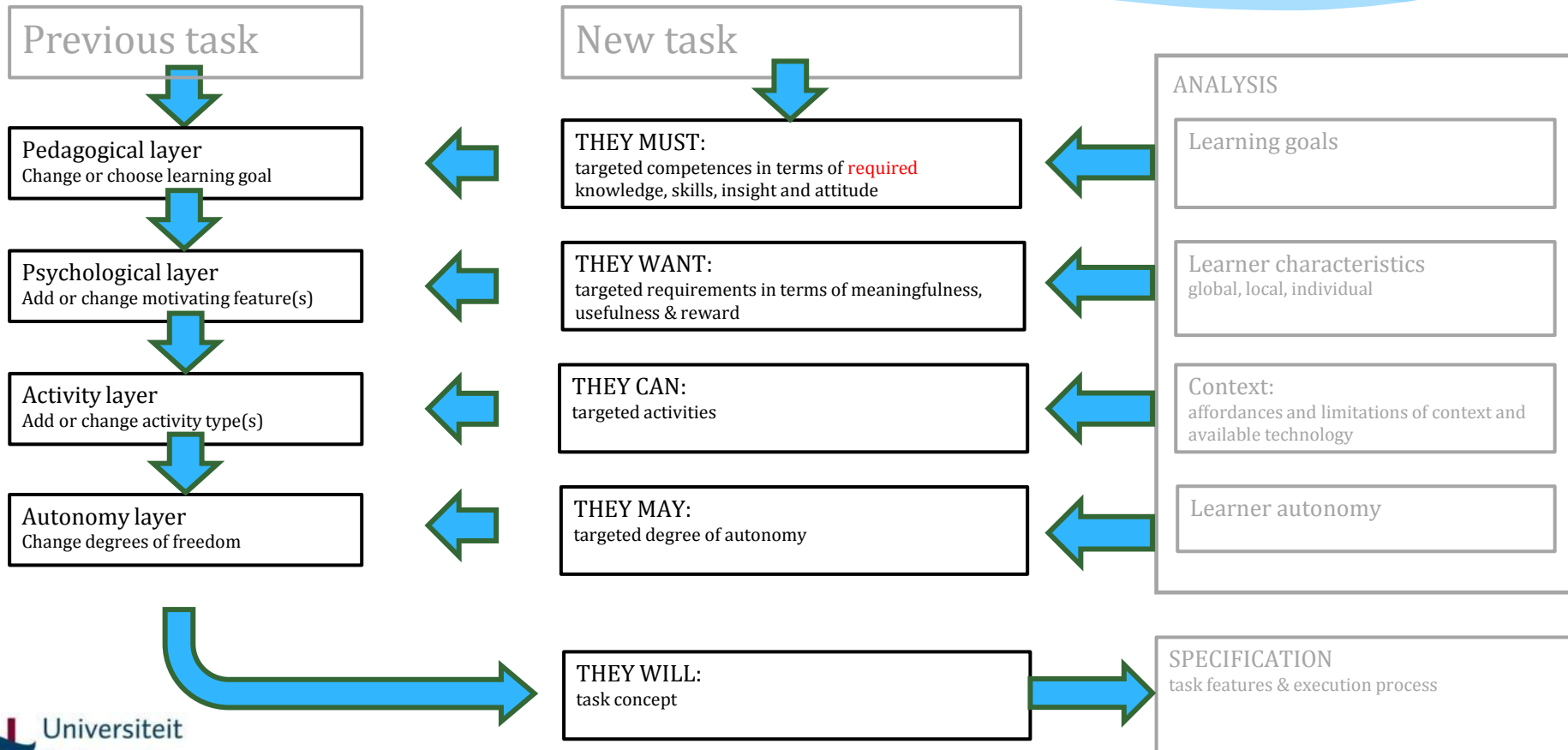
THEY WANT

<i>Quality / level</i>	<i>Universal</i>	<i>Local</i>	<i>Individual</i>
Acceptable (y/n)	Authenticity	Curriculum fit, fairness	Relevance
Useful (what?)	Result for others	Result for learning environment, co-learner teacher	Result for the learner
Rewarding (to what extent?)	Competence, autonomy relatedness	Personal Goals as common denominator	Ideal SELF

THEY WILL

- * Choose one or more activity types for matching THEY MUST and THEY WANT:
 - * TELL: present yourselves, talk about ...
 - * only information
 - * INTERACT: convince, negotiate, plead, sell, teach ...
 - * targeted effect on the other (speech acts)
 - * DO: play game, do exercise, simulate...
 - * additional collaborative activity other than communicating
 - * MAKE: build an artefact
 - * concrete artefact as result

Task conceptualization model



MAKE ARTEFACTS

- * Examples of artefacts include: abstract, advertisement, animation, app, audio, description, biography, blog, blog post, business plan, chart, checklist, comparison, course content, (fashion/architecture) design, diary, description, e-portfolio, Facebook group, film, flash cards, game, google street view, graph, illustration, interview, journal, joke, knowledge clip, label, list, media product, mind-map, mix, movie, plan, model, outline, painting, performance, poem, podcast, ppt, presentation, prezi, puzzle, reflection, remix, report, review, short story, simulation, song, speech, spreadsheet, summary, subtitles, survey, test, travel plan, video, vlog, virtual shop, vodcast, wiki, worksheet, quiz ...
- * Specification of MAKE activity: conceive, invent, devise, design, create, draw, blue-print, construct, build, (re)mix, prototype, build, record, post, cast, publish, produce, teach, sell, buy, curate...

THEY WILL

- * Describe the expected acceptability, usefulness and reward for the chosen activity types:

	acceptable	useful	rewarding
TELL			
INTERACT			
DO			
MAKE			

THEY MAY

- * **FIXED TASK**
 - * tasks should be executed as such
- * **TASK WITH DEGREES OF FREEDOM**
 - * learners can/should make some choices
- * **NEGOTIATED TASK**
 - * learners discuss the task among themselves, with the teacher or with the other class and suggest changes
- * **DESIGNED TASK**
 - * learners design a task themselves



New Course Design ID

- * 7 short group assignments
- * Intermediate feedback & final evaluation
- * Changing group composition
- * Remote path & FTF path
- * Mixed group composition 50% FTF & 50% remote
- * FTF & remote need each other
- * → demand for specific technologies

- * Correlation final score & peer-evaluation?

Seven questions

1. Does technology have an effect on learning? **NO**
2. Are learner-centered approaches possible with the current teacher support? **NO**
3. Should pedagogical theories be applied in our teaching? **NO**
4. Should we imitate Good Practices? **NO**
5. Can educational artefacts be evaluated? **NO**
6. Is there enough knowledge available for improving education? **NO**
7. Do students/teachers know what they need and want? **NO**

But:

- * Focus on the context (ecology)
- * Focus on the design process
- * Focus on subconscious volitions
- * Focus on teacher support
- * First specify needed functionalities, then choose:
 - * Animation tools, Augmented Reality, Authoring of interactive activities, Collaborative writing, Curating Tools, Games, Learning tools, Meeting tools , MOOC-platforms, (Open) Office tools, Peer-evaluation tools, Classroom management tools, Presentation tools, Project tools, Simulations, Social media, Student Response Systems, Test authoring, Video sharing tools, Virtual worlds ...

Questions ?

- * Thank you!
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