There is no such thing as context free evidence

DONATELLA PERSICO
ISTITUTO TECNOLOGIE DIDATTICHE, CNR, GENOVA, ITALY

EMAIL: PERSICO@ITD.CNR.IT

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The point of view of a researcher in Educational Technology

Four contexts/research objectives

1. The Research & Development context: formative evaluation of a technological artifact;

2. Understanding online learners behaviour in online/blended communities: the SRL in TELEs project;

3. Evaluating innovation in a online university: the STEEL project

4. Responsible Research and Innovation: the Gaming Horizons approach

Context 1: Research & Development

The aim is to optimize the development process, maximize results (i.e. meeting users needs and improving the technological artifact) while avoiding waste of resources in the wrong directions
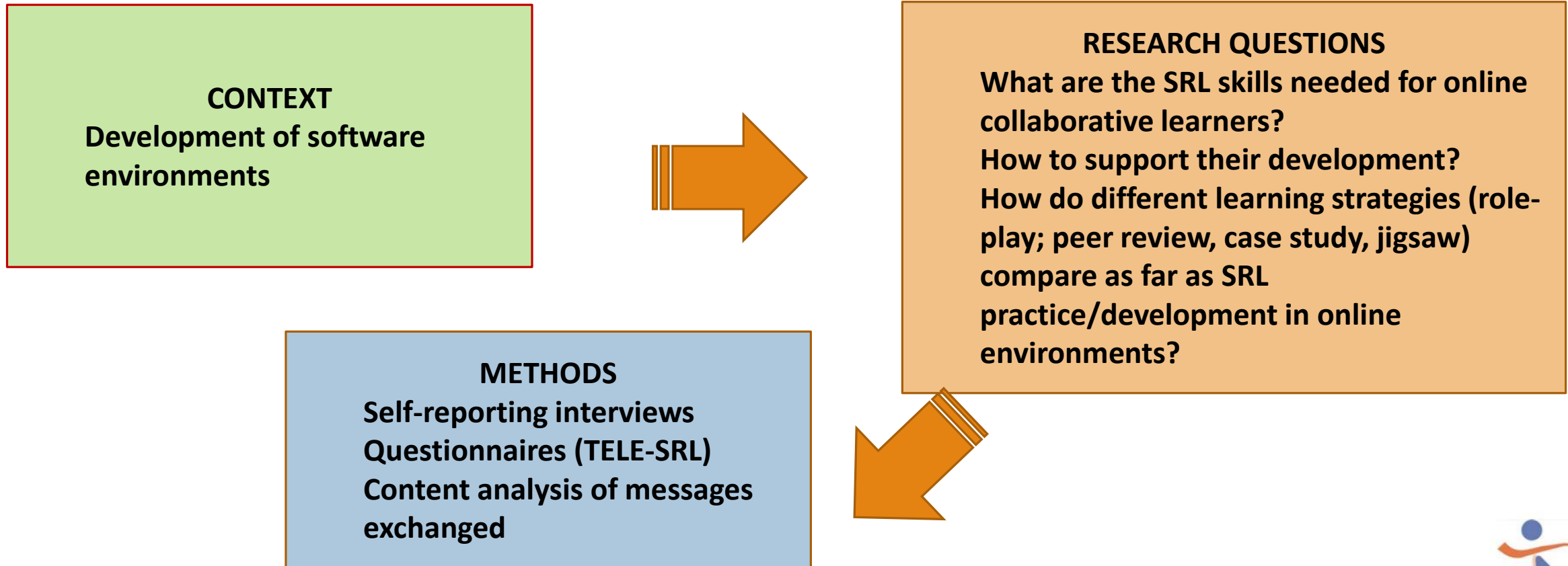
From the waterfall model

… to the Rapid Prototyping approach

… to User Centered Design

Persico, D. (1997). Methodological constants in courseware design. *British Journal of Educational Technology, 28*(2), 111-123.
Persico, D. (1996). Courseware validation: a case study. *Journal of Computer Assisted Learning, 12*(4), 232-244.
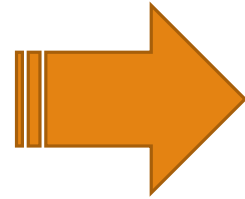
Context 1: Research and development

CONTEXT
Development of software environments

RESEARCH QUESTIONS
What are the SRL skills needed for online collaborative learners?
How to support their development?
How do different learning strategies (role-play; peer review, case study, jigsaw) compare as far as SRL practice/development in online environments?

METHODS
Self-reporting interviews
Questionnaires (TELE-SRL)
Content analysis of messages exchanged

Context 2: Understanding learners' behaviour in online communities

CONTEXT
Online course of Educational Technology (from 2001 to 2006)
About 150 trainee teachers per academic year

RESEARCH QUESTIONS
What are the SRL skills needed for online collaborative learners?
How to support their development?
How do different learning strategies (role-play; peer review, case study, jigsaw) compare as far as SRL practice/development in online environments?

METHODS
Self-reporting interviews
Questionnaires (TELE-SRL)
Content analysis of messages exchanged

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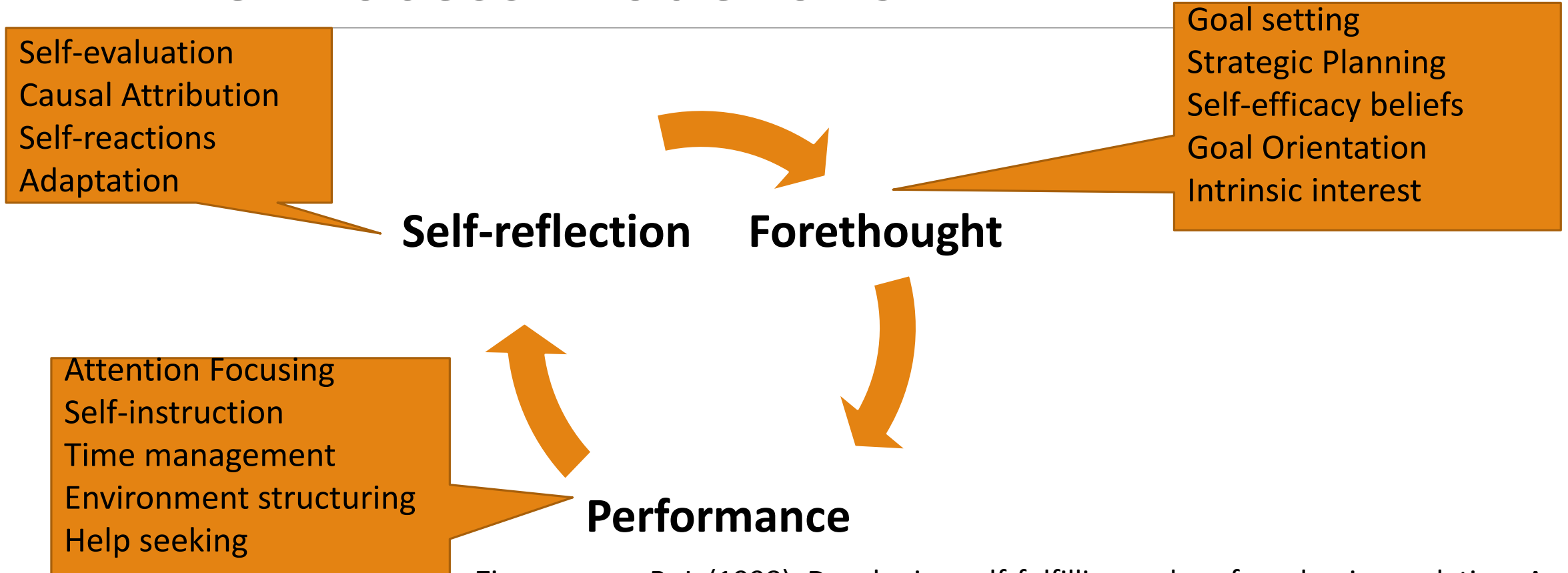Istituto per le Tecnologie Didattiche
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Context 2: understanding behaviour
The case of Self-Regulated Learning

SRL is a contious and active process where learners monitor, regulate, and control their cognition, motivation, emotions and behaviour, guided by their goals and supported by contextual features in the environment (Pintrich, 2000)

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational psychology review*, *16*(4), 385-407.

The Process model of SRL

Self-reflection

Self-evaluation
Causal Attribution
Self-reactions
Adaptation

Forethought

Goal setting
Strategic Planning
Self-efficacy beliefs
Goal Orientation
Intrinsic interest

Performance

Attention Focusing
Self-instruction
Time management
Environment structuring
Help seeking

Zimmerman, B. J. (1998). Developing self-fulfilling cycles of academic regulation: An analysis of exemplary instructional models. In D.H. Shunk, B.J. Zimmerman (eds) Self-Regulated Learning. From Teaching to Self-Reflective Practice (pp.1-19). Guilford Press.

Indicators' structure for SRL
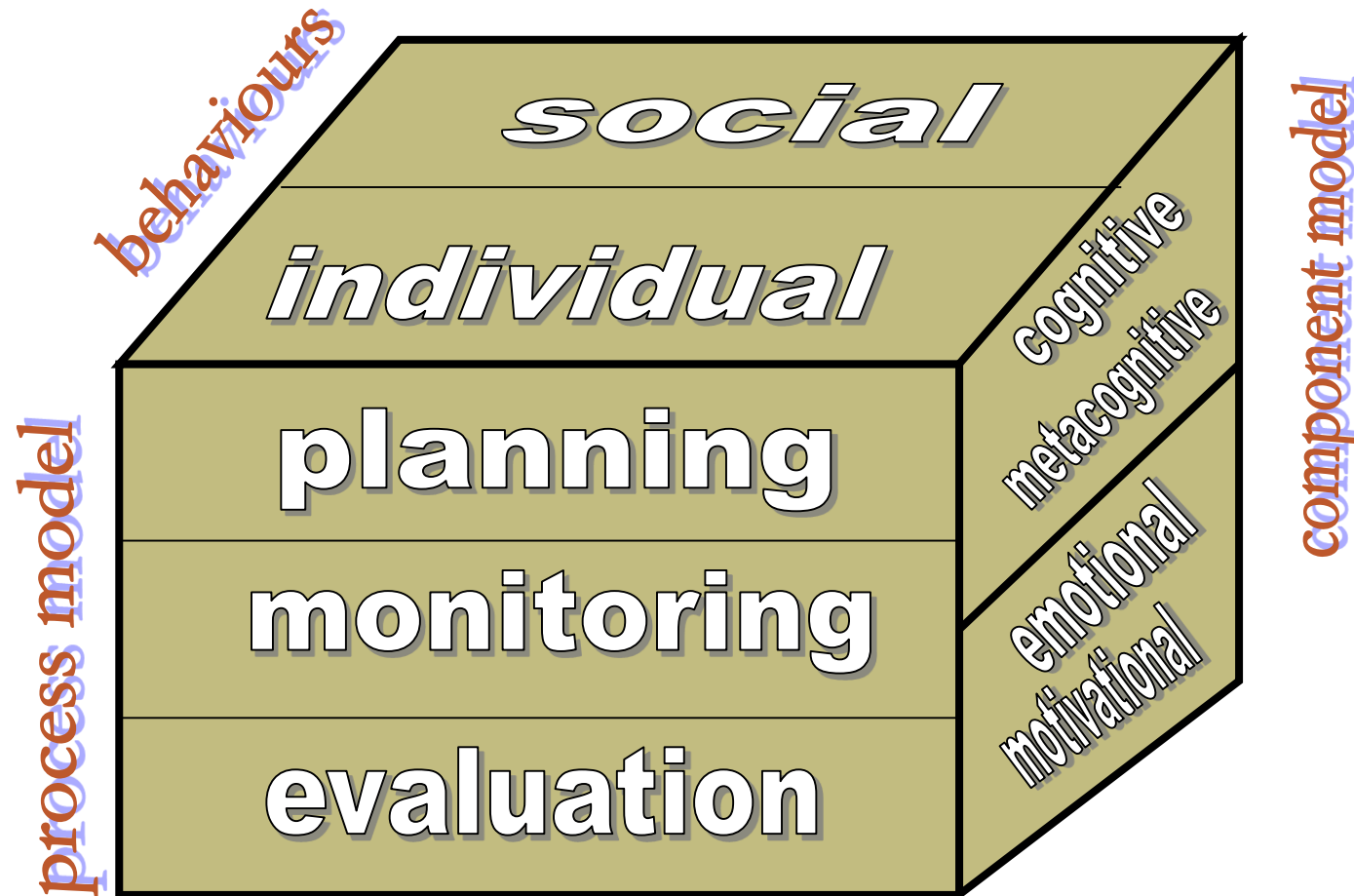
Dettori, G., & Persico, D. (2008). Detecting self-regulated learning in online communities by means of interaction analysis. *IEEE Transactions on Learning Technologies*, *1*(1), 11-19.

Indicators for the analysis of SRL in CSCL

		FORETHOUGHT	PERFORMANCE	SELF-REFLECTION
Cognitive and meta-cognitive	Individual	▪Making plans on how to proceed: breaking up tasks in subtasks, establishing deadlines and priorities ▪Detecting plan changes necessary to overcome failures	▪Enact plans ▪Work consistently on assigned task ▪Monitoring plan fulfilment ▪Making syntheses of work done and objectives reached	▪Assessing own learning ▪Analysing results, spotting difficulties and causes of failures ▪Reflecting on individual learning achieved ▪Comparing ones own work with that of peers
	Social	▪Making proposals on how to proceed ▪Negotiating planning aspects ▪Working out together plan changes	▪Quoting peers contributions, asking questions, reacting to and mediating among peers ▪Checking understanding ▪Summarising the ideas emerged from group discussion ▪Encouraging peers to act	▪Assessing group learning ▪Commenting group achievements ▪Reflecting on group learning ▪Encouraging peers to express opinions
Motivational and emotional	Individual	▪Exploring ones expectstions about CLA ▪Anticipating possible emotional aspects	▪Expressing ones emotions and motivations ▪Looking for appropriate support when needed	▪Comparing ones current motivation and emotions with the original ones ▪Understanding the reasons of possible changes to plans ▪Commenting on emotional aspects developed during the learning process
	Social	▪Discussing expectstions and motivations about CLA ▪Sharing motivations for own committment	▪Encouraging peers to express their emotions and motivations ▪Disclosing oneself to peers ▪Encouraging peers and providing them emotional support	▪Expressing appreciation for peers efforts, contributions and results ▪Spotting group malfunctioning and analysing its causes

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Context 3:
Evaluating innovation in an online HE programme

CONTEXT
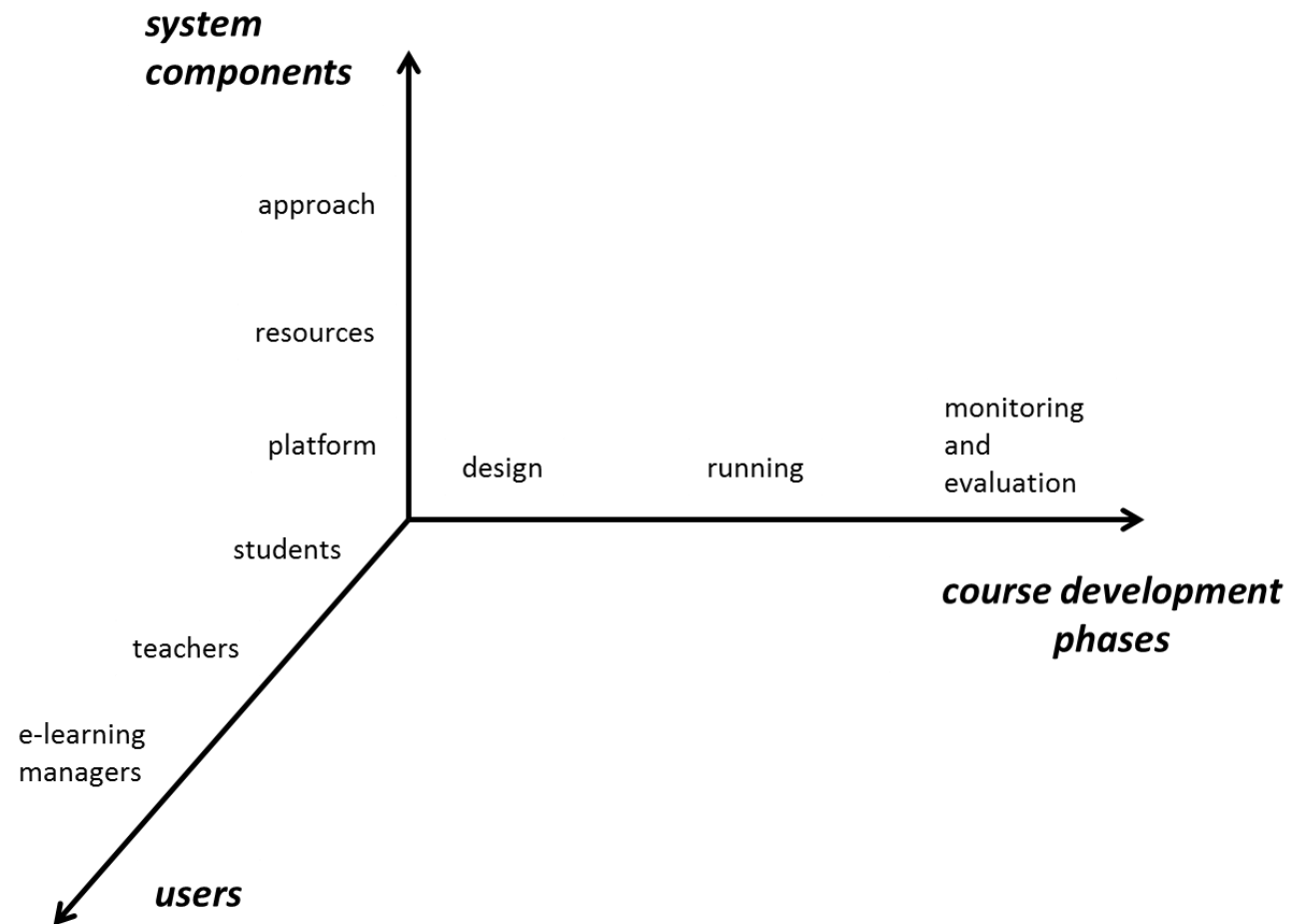**Newly established online HE program**
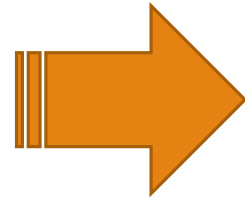
RESEARCH QUESTIONS
Facilitate and assess the injection of a new system and innovative methods

METHODS
Automatic tracking of user's interactions
Data about learning outcomes
Questionnaires (quant.) & Interviews (qualit.) to collect users' opinions (concerning perceived ease of use and usefulness)
Qualitative comparison of changes in courses

✓ Persico D., Manca S., Pozzi F. (2014), Adapting the Technology Acceptance Model to evaluate the innovative potential of e-learning systems, Computers in Human Behavior, 30, 614-622
✓ Pozzi F., Delfino M., Manca S., Persico D., Scancarello I. (2013), Boosting innovation in an Italian online university, International Journal of Online Pedagogy and Course Design (IJOPCD),3 (4), pp. 29-43. .

system components

approach

resources

platform

design   running   monitoring
and
evaluation

students

**course development
phases**

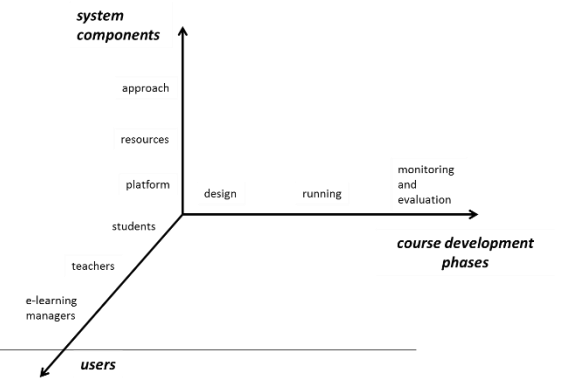teachers

e-learning
managers

users

Table 2

Data concerning use by the students (percentage of students who carried out an action within each course).

Table 3. Data concerning use by the teachers (number of actions carried out by the teacher within their course)

	BIO	CHB	FSM	EIN	STA	FSL	TMU	TPR
Course accesses	447	177	152	842	412	151	39	950
Editing the Course								
Adding new activity	0	0	8	4	26	4	0	23
Edit activity	10	0	9	59	20	9	1	43
Monitoring the Course								
View logs	96	0	1	82	152	20	0	249
View activity report	2	1	0	5	8	0	0	16
View report of online time	118	114	15	95	53	4	0	73
View student profile	93	56	26	142	57	8	3	121
Forum Use								
Forum accesses	171	143	16	186	112	62	30	136
Discussion accesses	160	95	29	226	169	47	25	126
Add a discussion	9	5	8	15	13	1	9	18
Add a message	32	21	20	36	48	13	13	12
Assignment Use								
Access assignment				155	35			31
Edit marks				167	45			0
View marks				524	107			130

	BIO	CHB	FSM	EIN	STA	FSL	TMU	TPR
Number of students who accessed the course	159	121	135	135	142	78	117	59
LESSON USE								
View one audio-video lesson	72%	48%	72%	0%	0%	35%	26%	47%
View one audio lesson	65%	70%	0%	0%	73%	41%	31%	0%
FORUM USE								
Enter a forum	74%	67%	44%	59%	49%	37%	53%	34%
Enter a discussion	68%	60%	51%	61%	68%	31%	66%	34%
Add a discussion	15%	15%	8%	19%	17%	10%	13%	7%
Add a message	9%	7%	2%	7%	6%	4%	9%	5%
ASSIGNMENT USE								
Enter assignment				59%	65%			31%
Complete assignment				36%	4%			7%
QUIZ USE								
Enter a quiz	60%	45%	50%	25%	58%	35%	0%	25%
Begin a quiz	52%	33%	42%	23%	49%	27%	0%	20%
Resume a quiz	45%	21%	35%	22%	41%	14%	0%	17%
Submit a quiz	36%	15%	16%	21%	32%	10%	0%	12%
VIDEOCONFERENCE USE								
Enter Elluminate session	0%	1%	2%	0%	1%		3%	7%
Replay Elluminate session	0%	0%	0%	0%	0%		0%	14%
CHAT USE								
Enter a chat	0%	0%	0%	0%	0%	24%	0%	25%
Write chat message	0%	0%	0%	0%	0%	1%	0%	3%
Read recorded chat	0%	0%	0%	0%	0%	3%	0%	5%
WIKI USE								
Enter a wiki	0%							12%
DATABASE USE								
Enter database								27%
Add a record								2%
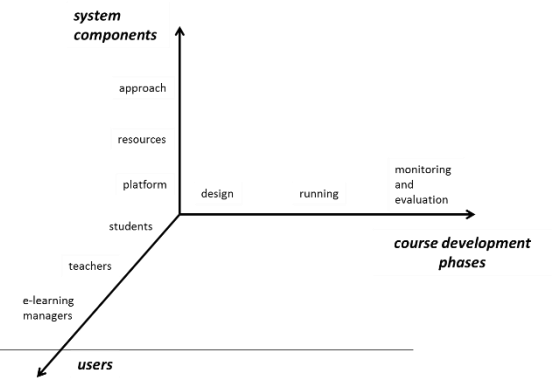
+	-
Users give different perspectives	It requires effort
It allows completeness and internal coherence	The respect for privacy on students data did not allow to cross-check some of the results
Users' opinions help to identify the causes of problems, while ratings help to measure their importance	Qualitative data are not easy to be synthesized and represented

Context 4: Respondible Research & Innovation: the Gaming Horizons Project

Gaming

- Education
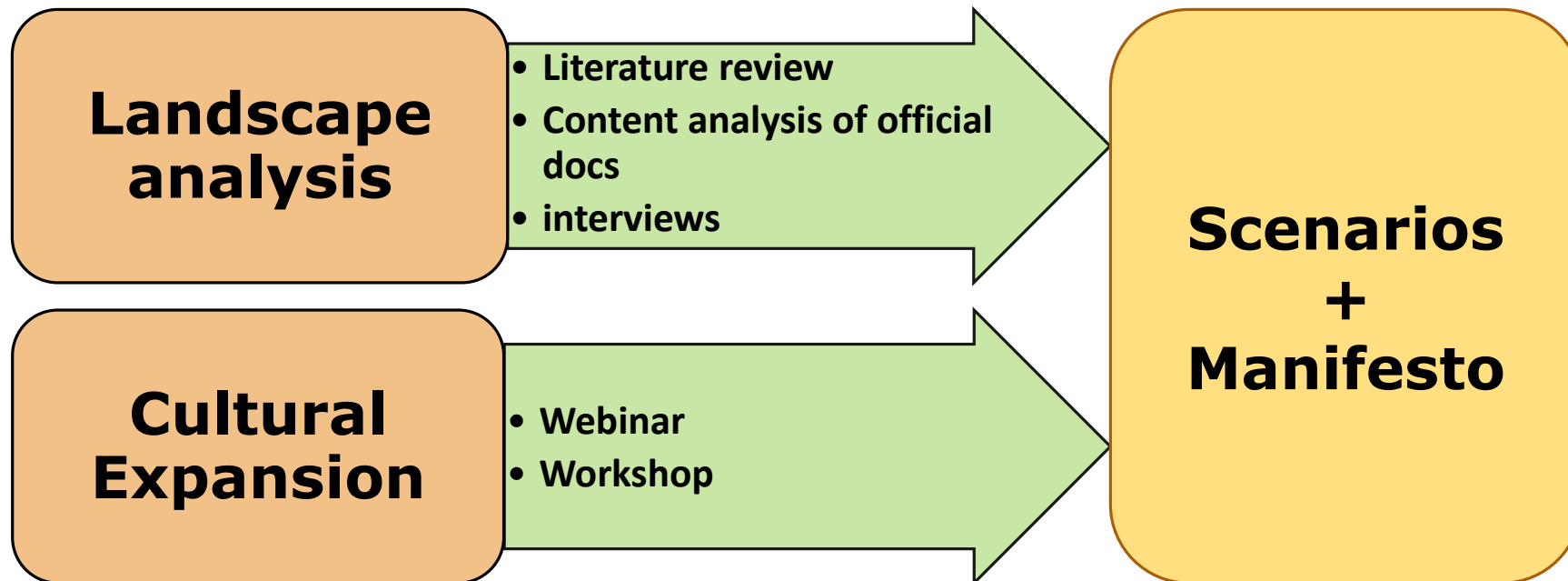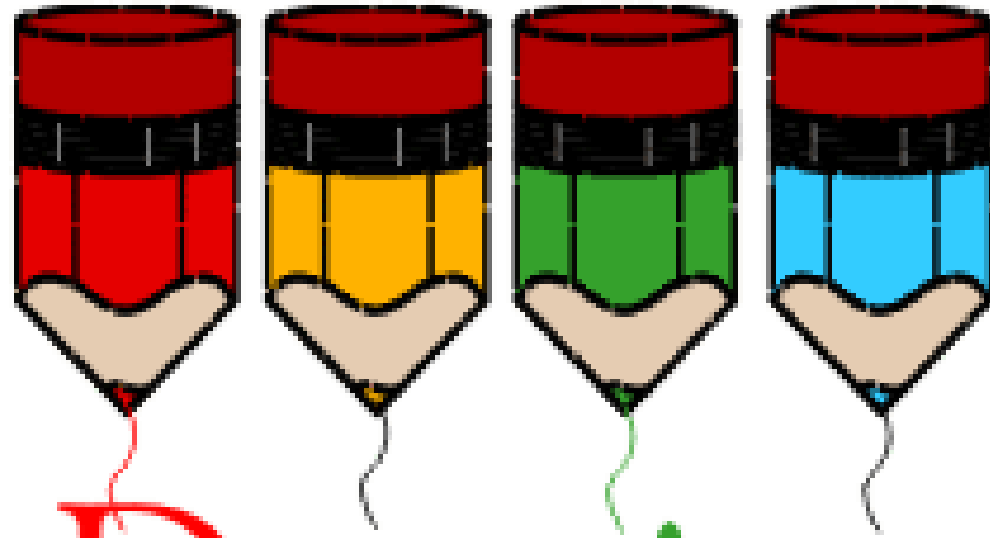- Open Access
- Gender
- Public Engagement
- Ethics

Gaming Horizons: aims

Informing policy makers and other stakeholders about the role of gaming in society

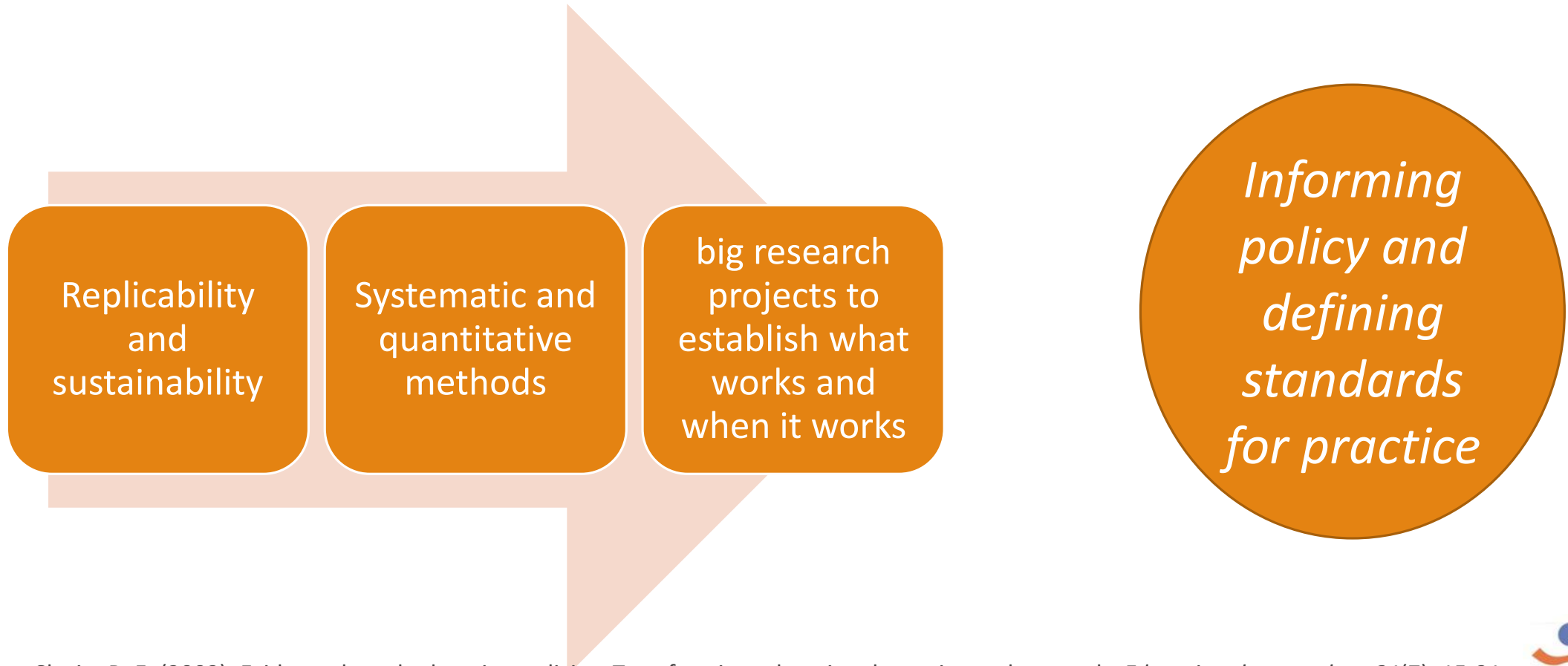(re)aligning research & development to societal needs

Gaming Horizons: methodology

Landscape analysis

- **Literature review**
- **Content analysis of official docs**
- **interviews**

Cultural Expansion

- **Webinar**
- **Workshop**

Scenarios + Manifesto

Drawing conclusions

Evidence Based Education

Replicability and sustainability

Systematic and quantitative methods

big research projects to establish what works and when it works

Informing policy and defining standards for practice

Slavin, R. E. (2002). Evidence-based education policies: Transforming educational practice and research. *Educational researcher*, *31*(7), 15-21

Evidence based education

EBE means «integrating individual teaching and learning expertise with the best available external evidence from systematic research».

EBE is a **two ways process**:

Broadening individual experience and judgement

Generating evidence which explores and tests all the actors of a learning community

Davies, P. (1999). What is evidence-based education?. *British journal of educational studies*, *47*(2), 108-121.
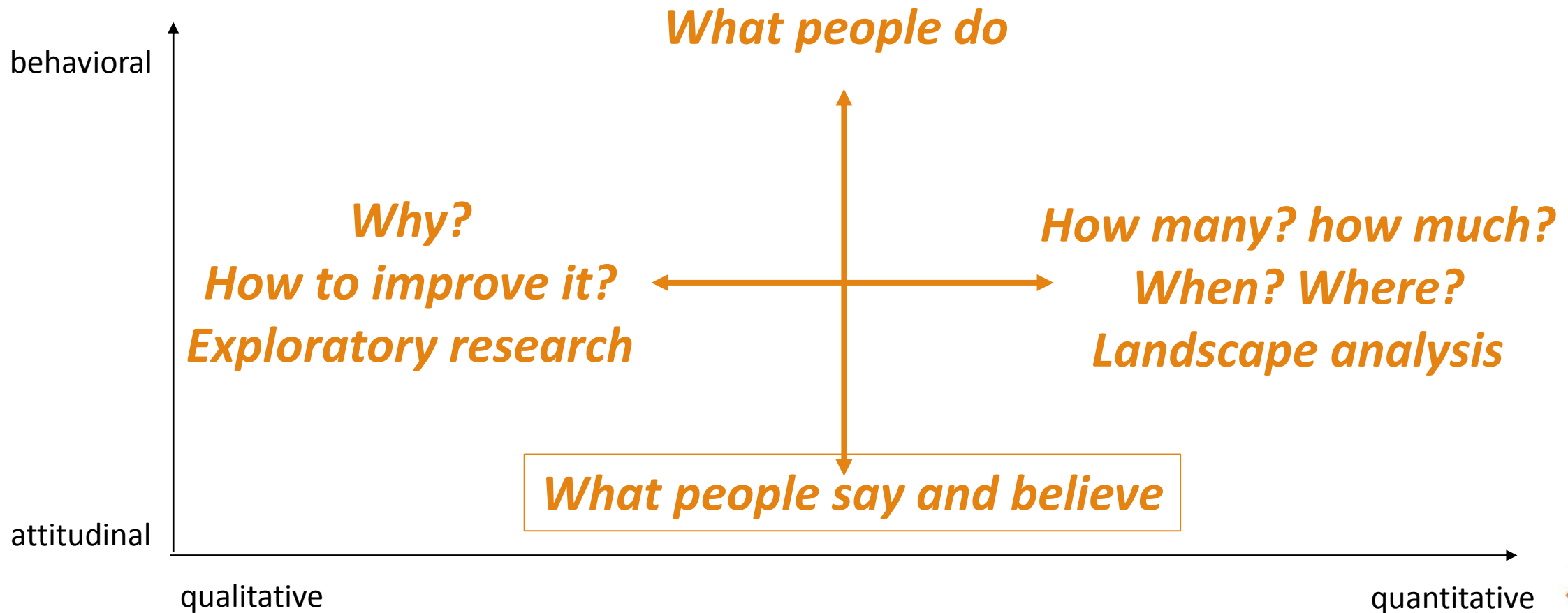
Research questions vs research methods
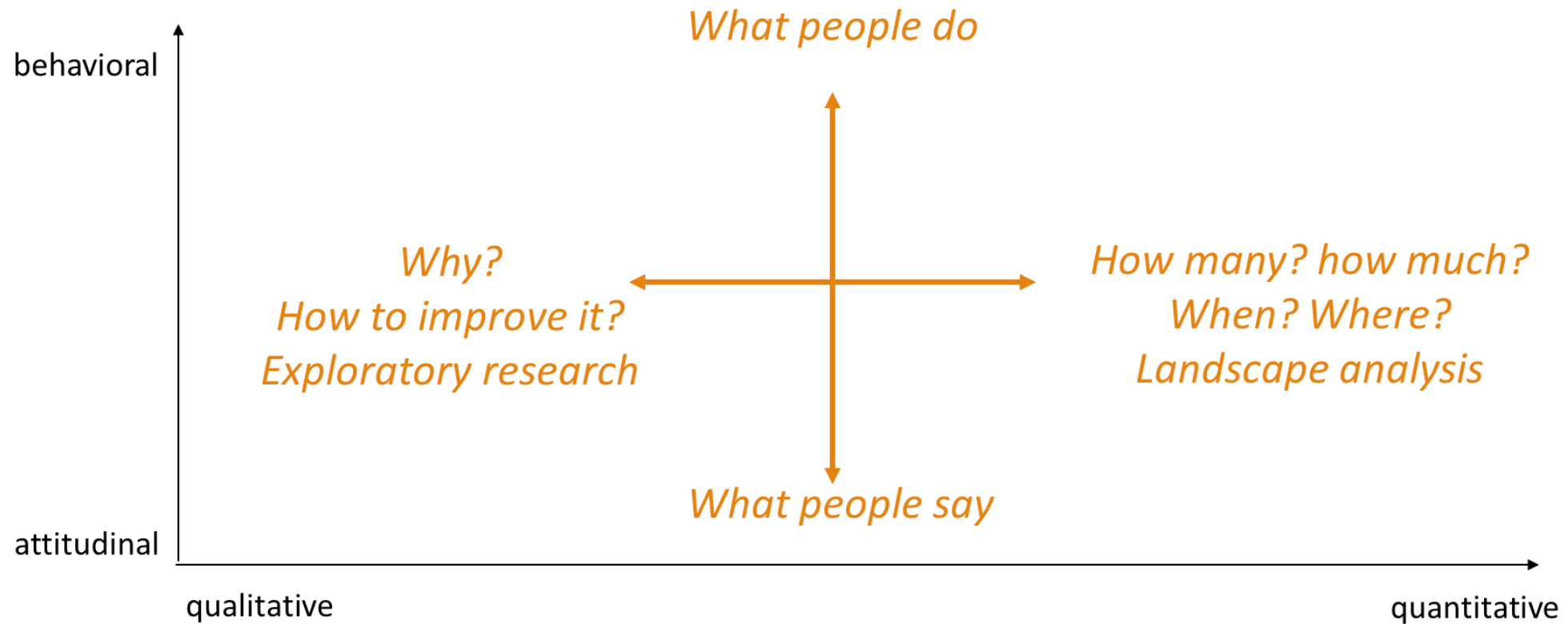
What is an observatory?

An observatory is an institution designed and equipped for making observations of natural or cultural phenomena

What is an observatory?

In support of mixed-methods

Collect data from all actors involved with the most suitable method, and triangulate them

Questionnaires and interviews can be biased, but they allow to gather data about respondents beliefs and to understand reasons for behaviours

Content analysis of interactions draws a (possibly quantitative) «picture» of a qualitative phenomenon, based on what happened, but it disregards «latent» information

Learning analytics can help: it all comes down to how good the picture is

Randomized Controlled Trials and Meta-analytic studies do not always yeld a definite answer

The «treatment» in education is not like the «treatment» in medicine!

One last thought

If a more sistematic, scientifically sound, evidence-based approach is what we strive for…

Are we really going in the right direction?

Think about policies for the evaluation of research institutions, academic staff careers and scientific journal policies!

THANKS!

Donatella Persico

Istituto Tecnologie Didattiche – CNR, Italy

Email: persico@itd.cnr.it