Learning agroecology through the serious game SEGAE in an online lesson: unveiling its impact on knowledge articulation

Mireille De Graeuwe,
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Rémy Parent, Clément
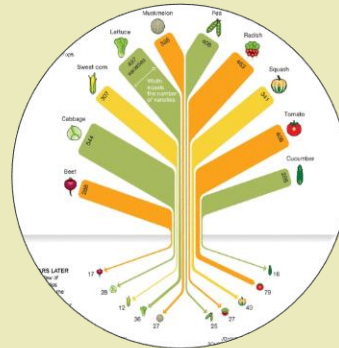Serdobbel, Yves Brostaux,
Kevin Maréchal

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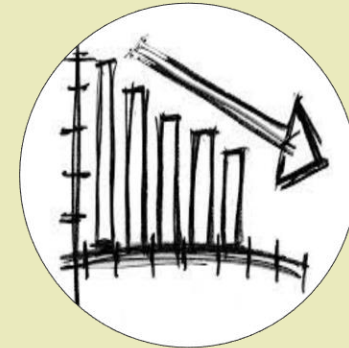
1. Introduction

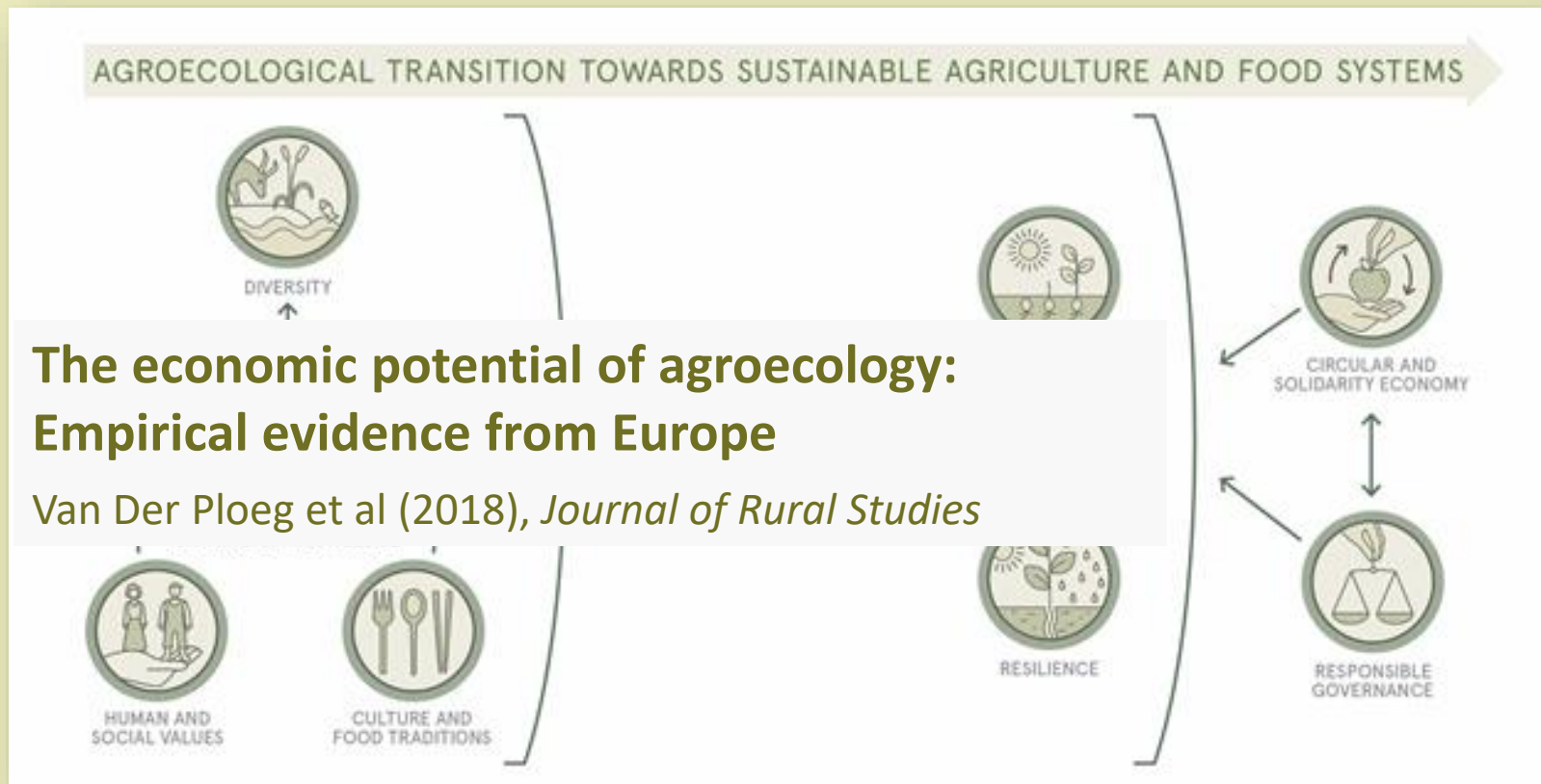# AGRICULTURAL CHALLENGES

Degradation

↓Biodiversity

↓ Income

Campbell et al. (2017)

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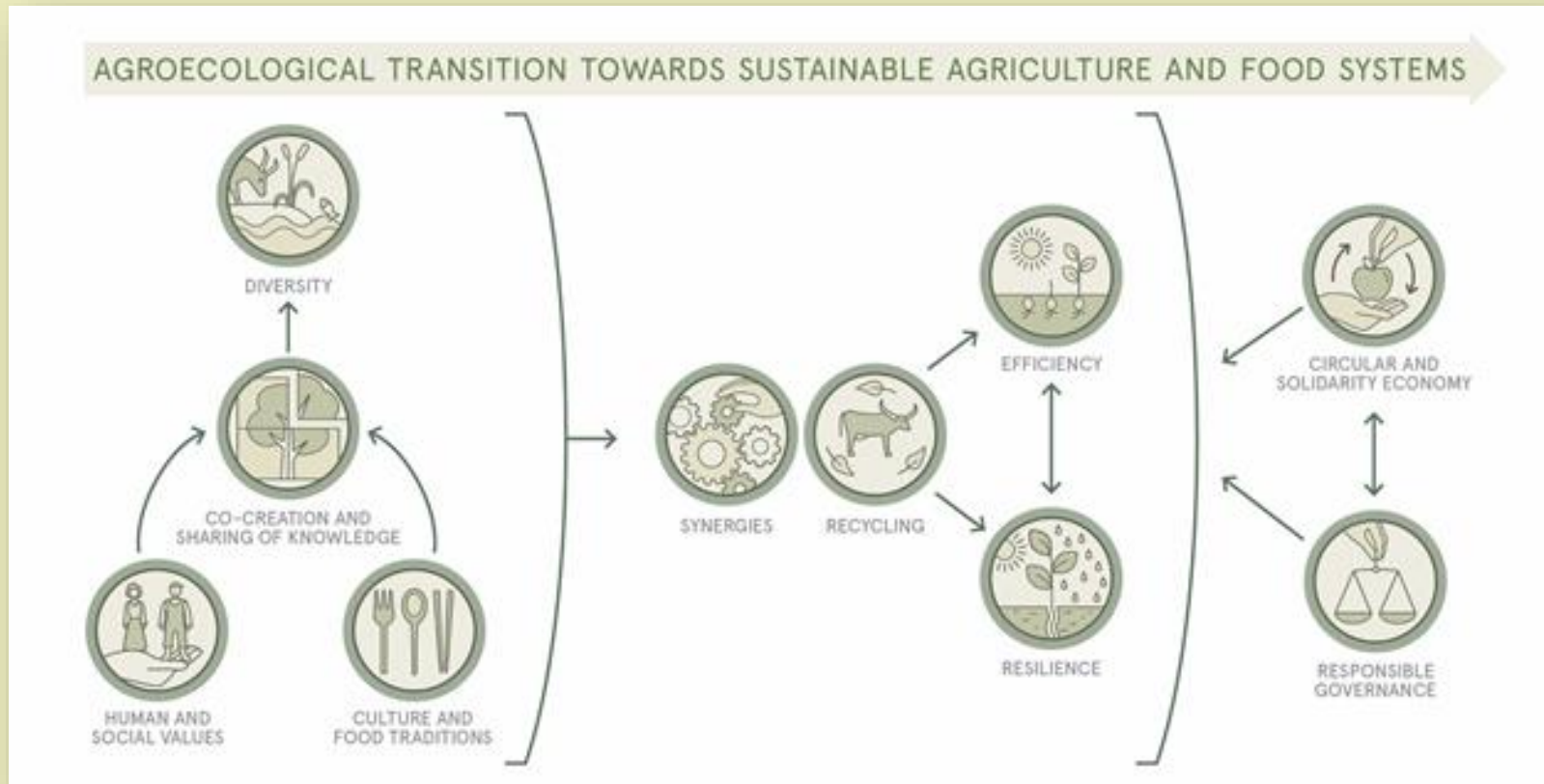
AGROECOLOGY

Source: fao.org

AGROECOLOGY

AGROECOLOGICAL TRANSITION TOWARDS SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS

DIVERSITY

The economic potential of agroecology: Empirical evidence from Europe

Van Der Ploeg et al (2018), *Journal of Rural Studies*

CIRCULAR AND SOLIDARITY ECONOMY

RESILIENCE

RESPONSIBLE GOVERNANCE

HUMAN AND SOCIAL VALUES

CULTURE AND FOOD TRADITIONS
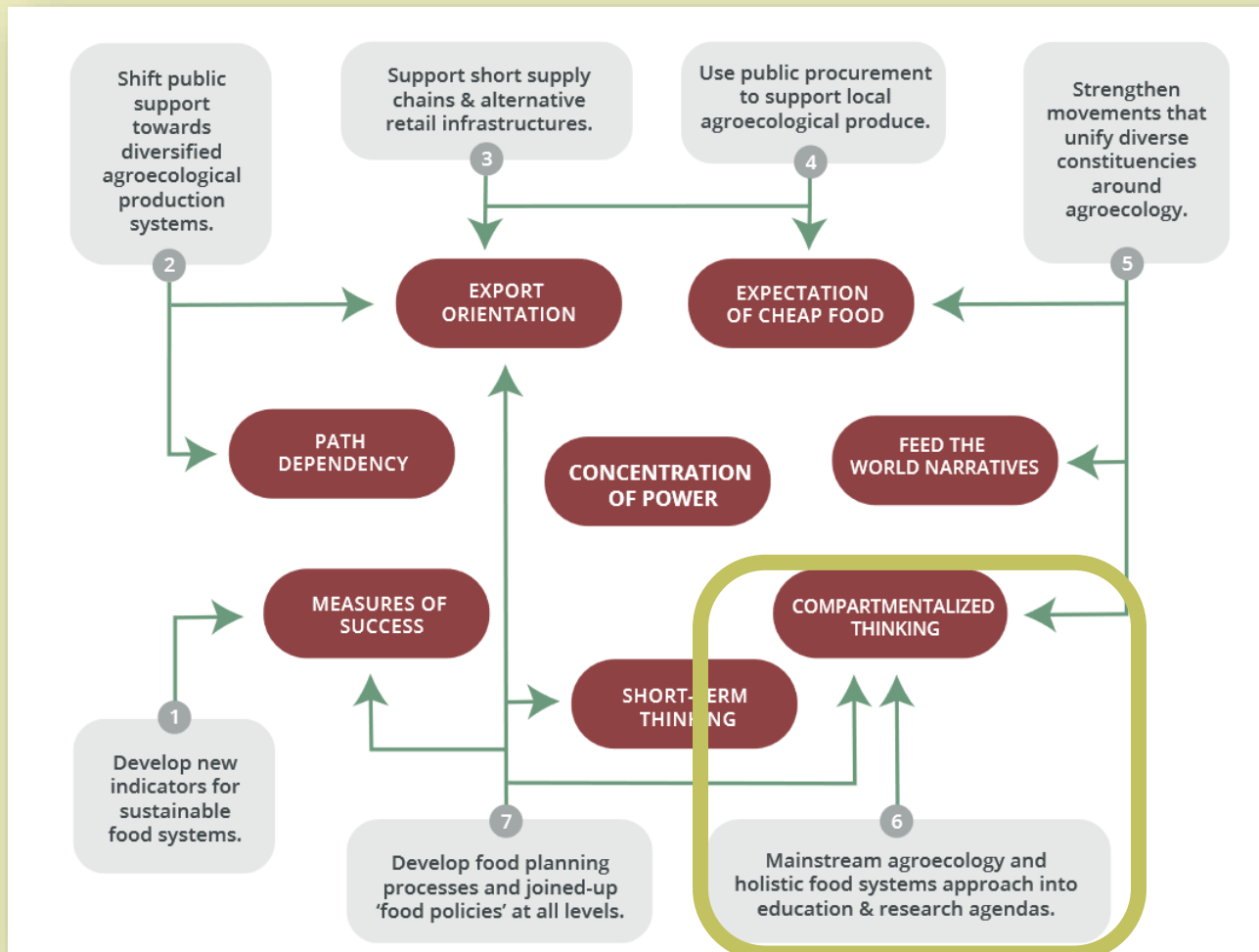
Source: fao.org

AGROECOLOGY

Commonly defined as "the ecology of sustainable food systems" (Gliessman, 2014).

Is defined here as "the study of the interactions between plants, animals, humans, and the environment within agricultural systems" (Dalgaard et al., 2003, p. 42).
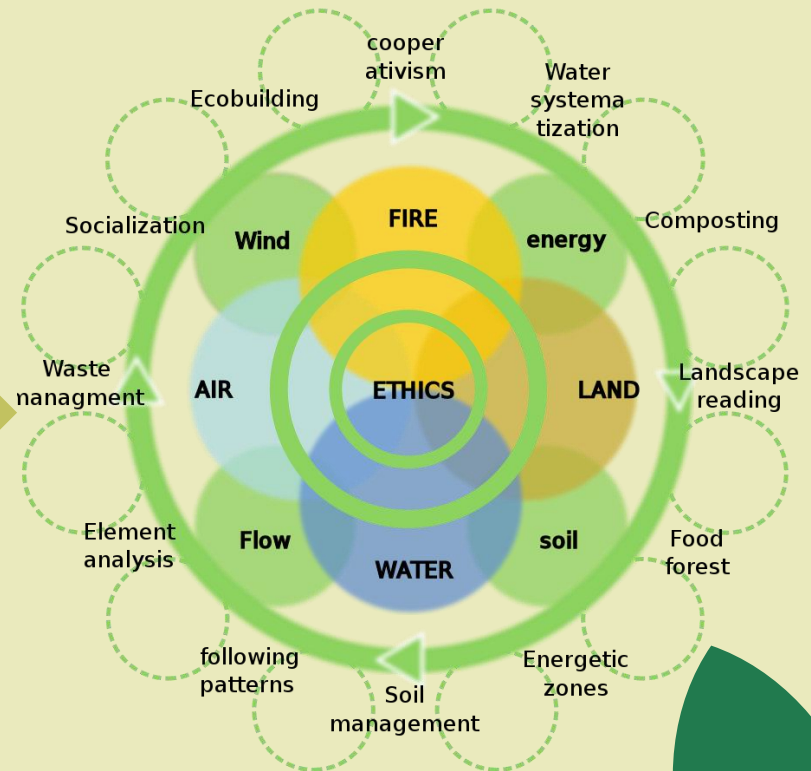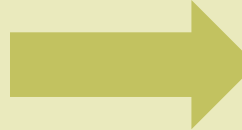
POINTS FOR CHANGE

AGROECOLOGY EDUCATION

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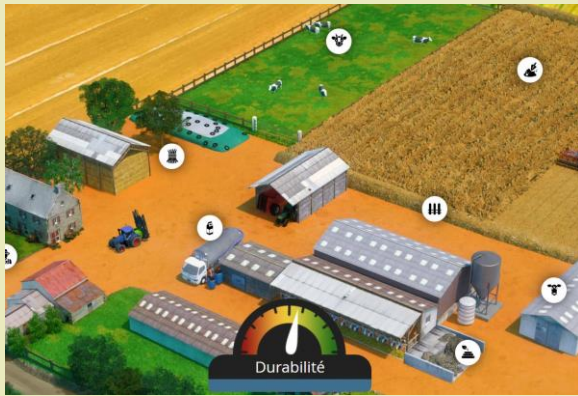**Gembloux**
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SERIOUS GAME

Entertaining tools with an education prupose

Digital tools allow the simulation of **complex** models

➢ ↑ Understanding of systems approaches (Wu & Lee, 2015).

sustainability

MDPI

Article

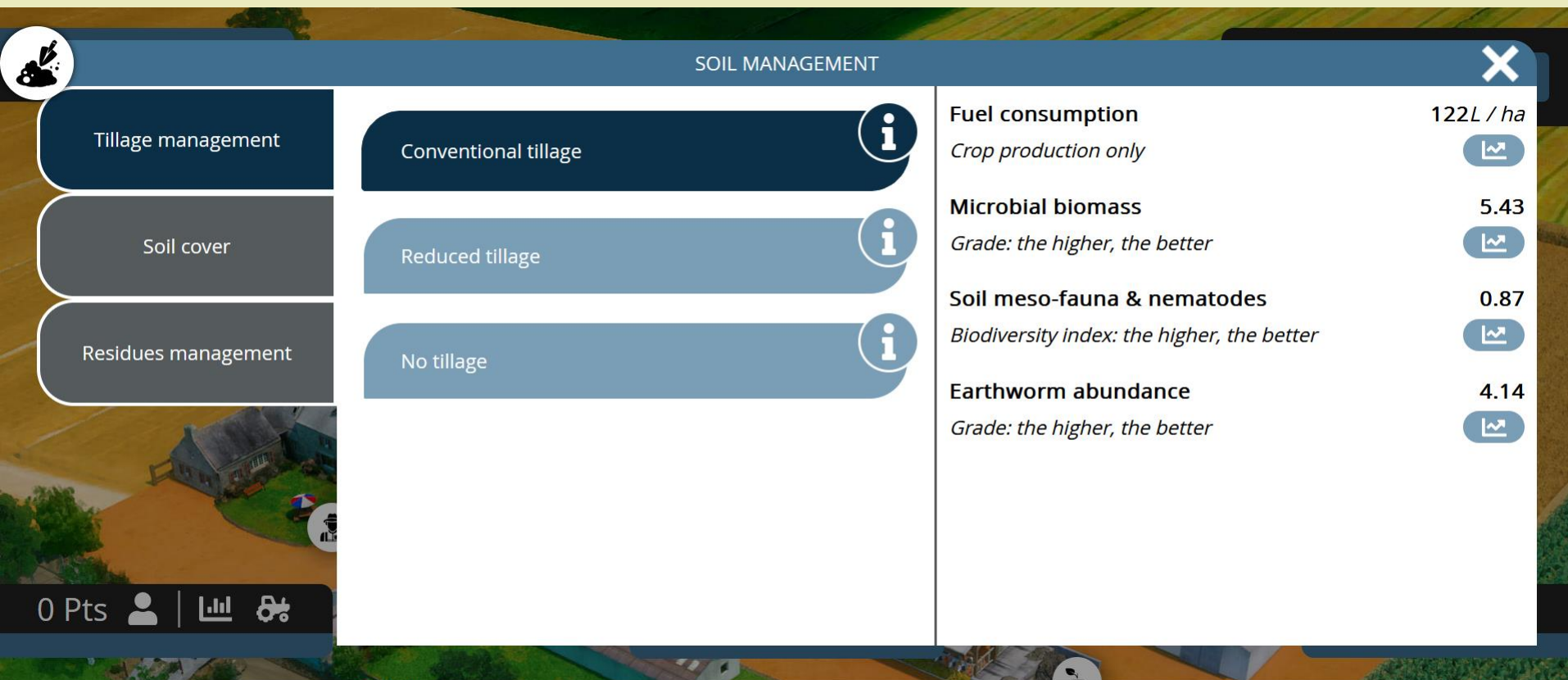**Learning Interdisciplinarity and Systems Approaches in Agroecology: Experience with the Serious Game SEGAE**

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2. Materials & Method

SERIOUS GAM
Segae
AGRO ECOLOGY

SEGAE

SEGAE

SEGAE

SEGAE

SEGAE

STUDY

- **01** Date — May 2021
- **02** Context — Covid-19 Pandemic 4-hour period online
- **03** Place — Belgium
- **04** Population — Agricultural engineering
- **05** Specialization

LESSON

Pre-survey	Theory	Game	Post-Survey

Profile
Knowledge

Soil-Plant-Ecology
Animal
Socio-economic

Sandbox
System approach
Indicator oriented

Knowledge
Feedback

SAMPLE

| Pre-survey | Theory | Game | Post-Survey |

68   50   72

SAMPLE

Specializations	Students
🌾	17
⚗️	6
🌱	10
🌳	17
Total	**50**

3. Results
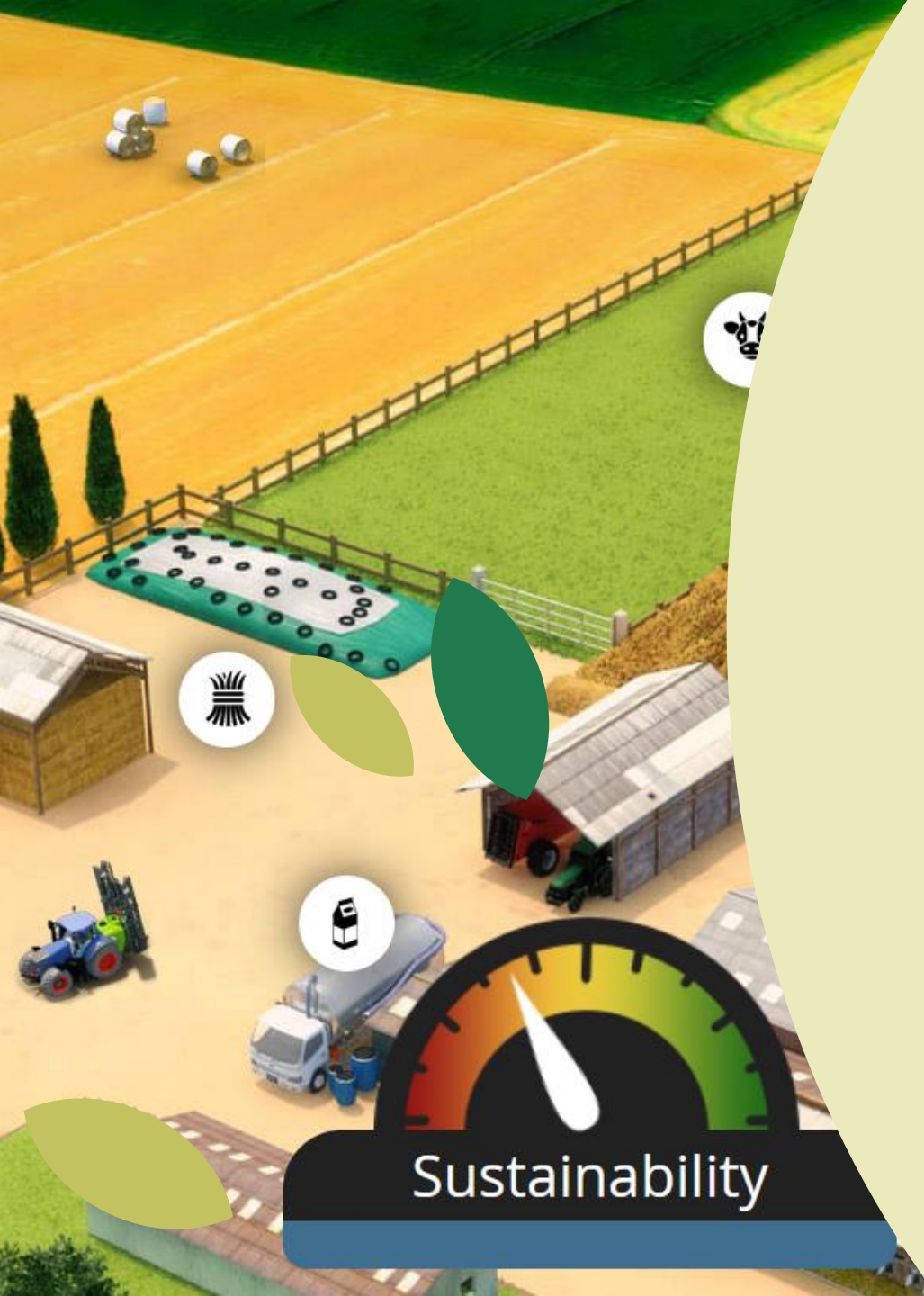
MEAN OF STUDENTS' SCORES (% OF CORRECT ANSWERS)

Grouping of Data (and number of students)	Pre-Survey	Post-Survey	Increase
All students	14.7	18.5	3.8*
By specialization			
Chemistry (6)	14.5	18.4	3.9
Forest (17)	13.4	19.1	5.7
Agronomy (17)	16.1	17.3	1.2
Environment (10)	14.6	19.2	4.6
By type of questions			
Close-ended questions	9	9.5	0.5
Open-ended questions	21.3	28.8	7.5***

COMPARISON OF STUDENTS' MEAN SCORES
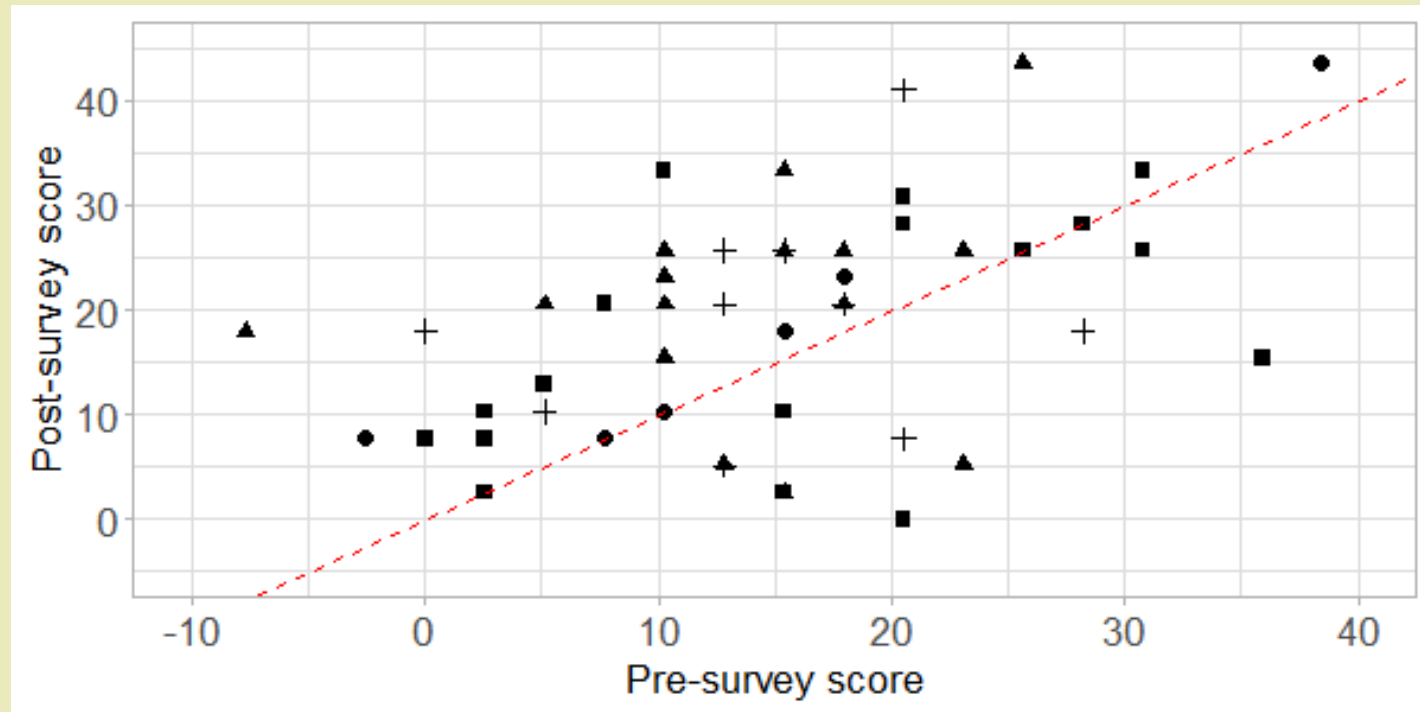
Agronomy ■, Chemistry ●, Environmental + and Forest ▲

FLOW
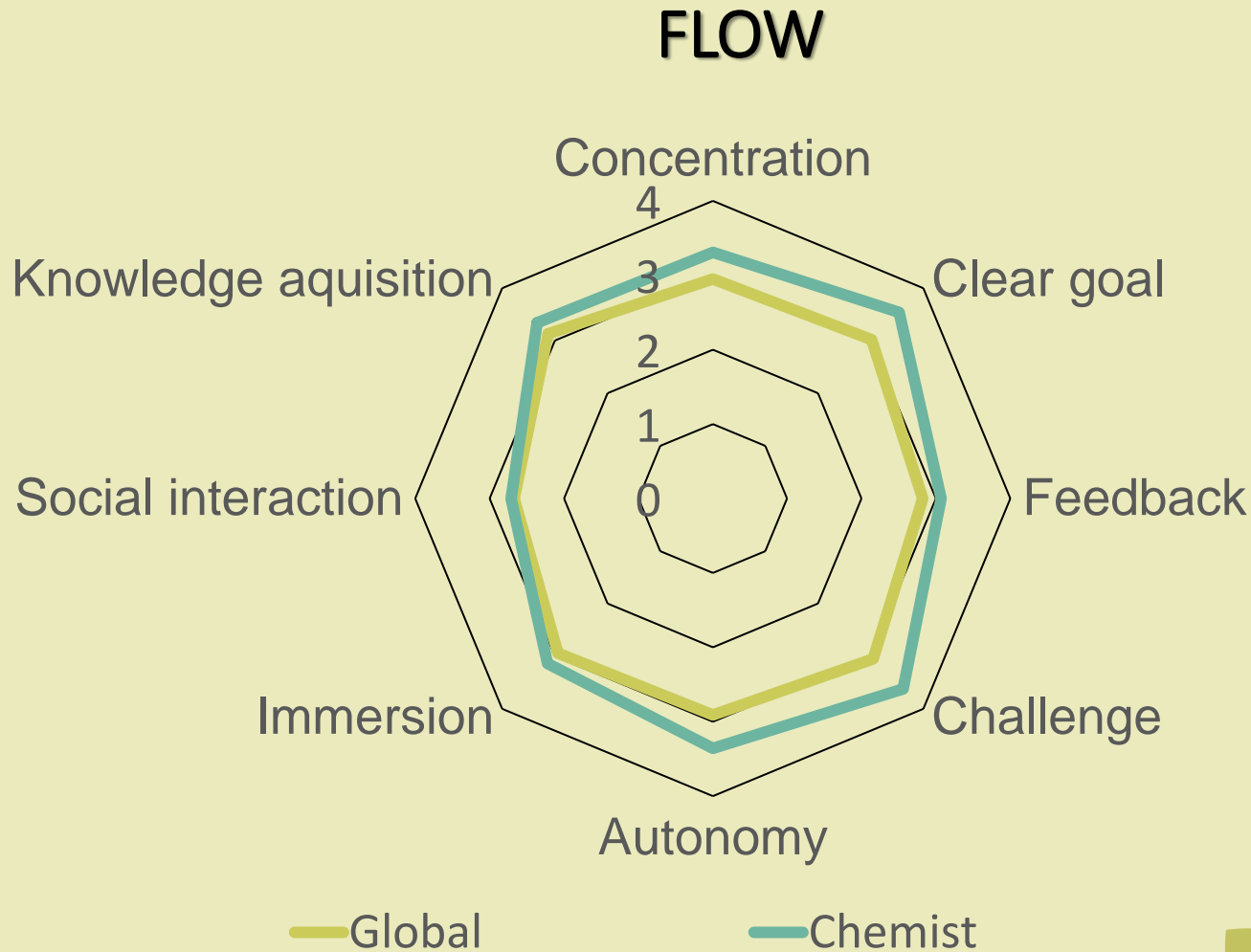
4. Discussion & Conclusion

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INCREASE

**= 60% of 5 day-workshop
De Graeuwe et al. (2020, p. 13).**

ESTABLISHING TRUST
ESTABLISHING RAPPORT
QUALIFYING
INFORMATION GATHERING

OPEN-ENDED QUESTIONS

≠
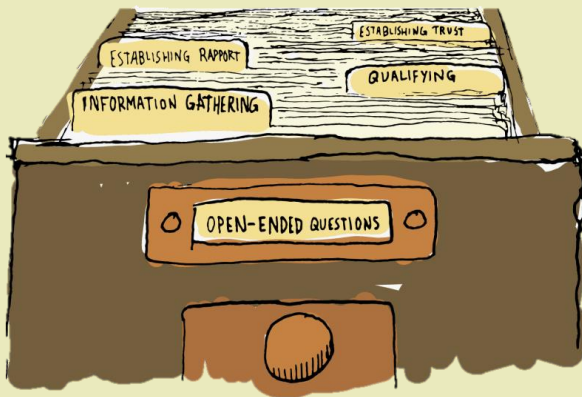
@ Stephen Bleakley

@ Studentacademy.be

SPECIALIZATIONS

CONTEXT AND RECOMMANDATIONS

Unplanned digitalization

Surveys without any supervision

Language used for the surveys *(Roopa & Rani, 2012)*

Content of the knowledge survey
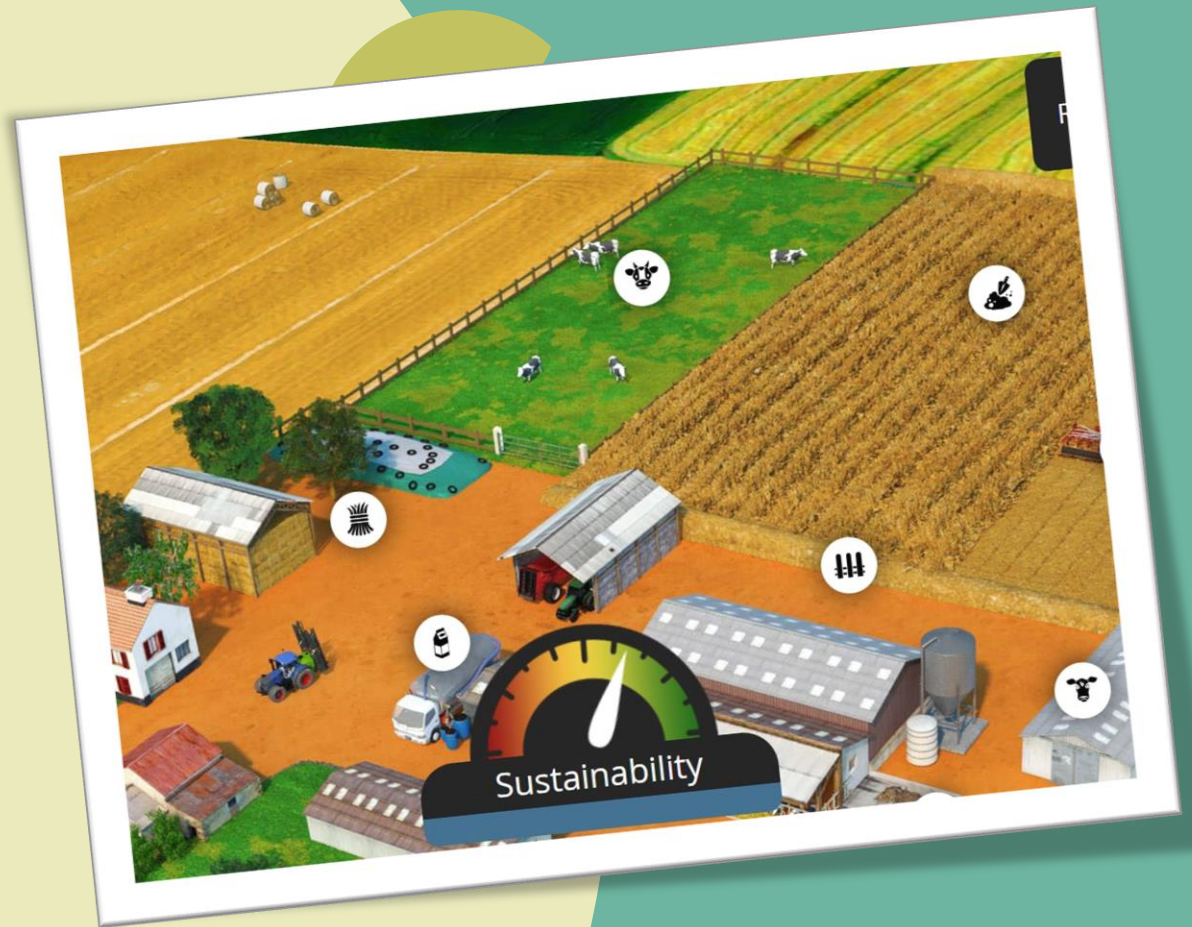
FEEDBACK

> 80%

(1) 👍

(2) ↑knowledge

Knowledge-action (*Østergaard et al., 2010*)

CONCLUSION

SEGAE in a 4-hour lesson with a single teacher is a relevant tool

Contacts

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