

IEA 2024 22nd Triennial Congress of the International Ergonomics Association (IEA)
August 25-29, 2024 | 1255 | Jeju, South Korea

Visual strategies and user experience in two video formats generated by Viso (Noldus) for pre-service teachers in french-speaking belgium

Valérie Duvivier, Arnaud Sedek,
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1

**CONTEXT AND
PROBLEM
STATEMENT**

2

**QUESTION
AND
HYPOTHESIS**

3

METHODOLOGY

4

**RESULT
AND
CONCLUSION**

Content

1. Context

Context of pre-service teacher training:

- Pre-service teachers practice practical skills during micro-teaching sessions (1).
- Sessions involve **giving a lesson and debriefing** of their performance with a trainer.

1. Context

Context of pre-service teacher training:

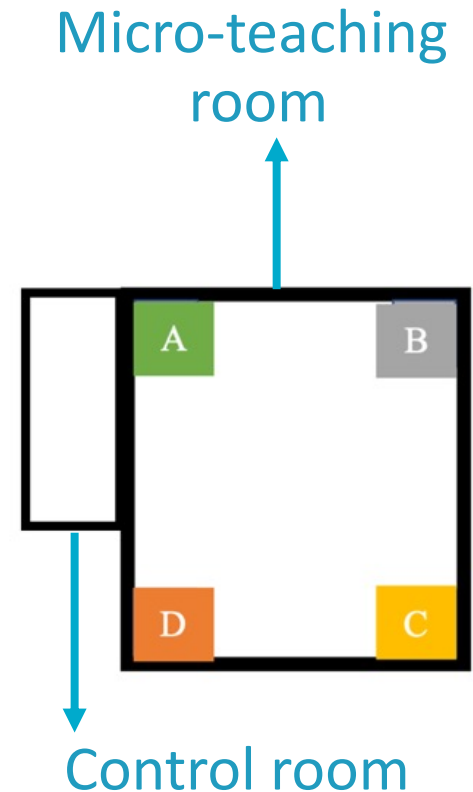
- Pre-service teachers practice practical skills during micro-teaching sessions (1).
- Sessions involve giving a lesson and debriefing of their performance with a trainer.

Micro-teaching setup:

- The micro-teaching room is equipped with four cameras (A, B, C, D)

Recording system modernisation:

- As part of the ARC Sim'Pro research programme, the recording system was upgraded.
- Introduction of **Viso software** (Noldus) to improve video recording and playback.

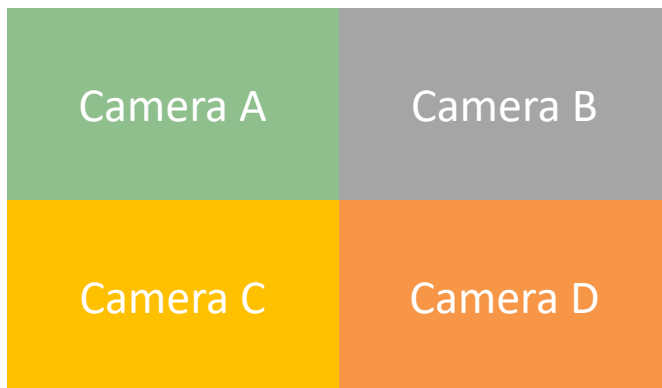


1. Context

Viso offers two video generation methods.

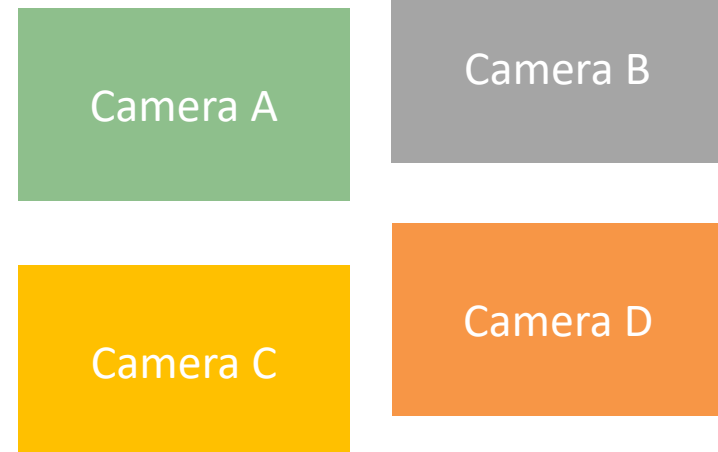
01. MOSAIC VIEW

Create a **single stream** in four equally sized image, each from a different camera (A, B, C, D)



02. FULL VIEW

Generate **four full-screen** video streams



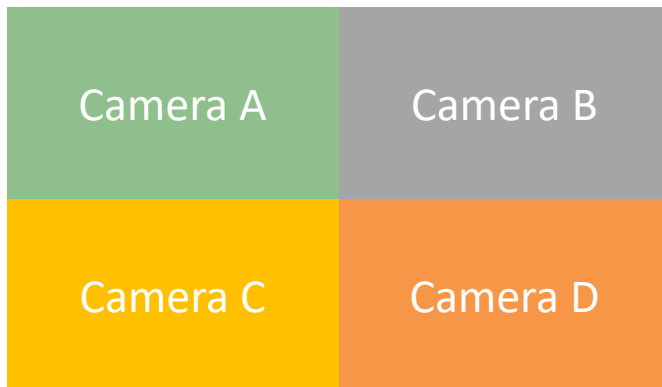
1. Context

Viso offers two video generation methods.

To prepare their debriefing

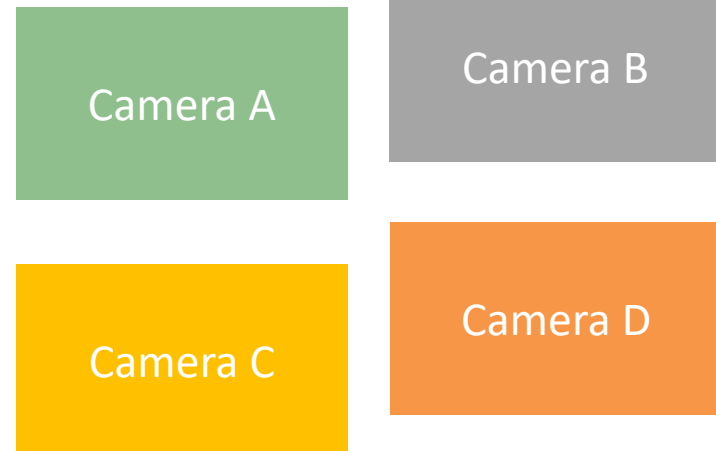
01. MOSAIC VIEW

Create a **single stream** in four equally sized image, each from a different camera (A, B, C, D)



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1. Context

M_view= mosaic view

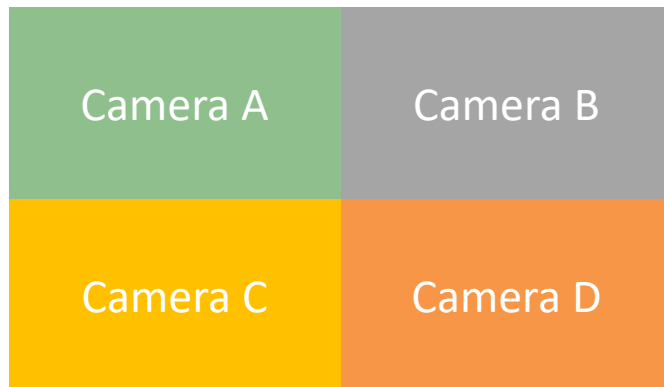
F_View = full view

Viso offers two video generation methods.

To prepare their debriefing

01. MOSAIC VIEW

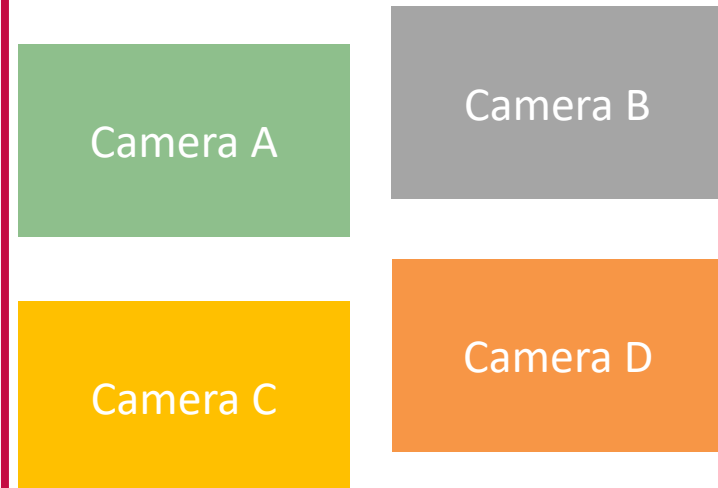
Create a **single stream** in four equally sized image, each from a different camera (A, B, C, D)



During their debriefing

02. FULL VIEW

Generate **four full-screen** video streams



1. Problem statement

Challenges for pre-service teachers:

The M_view presents a denser and more complex visual field, with multiple moving elements in smaller sizes.



Litterature suggest

- At this stage of training, pre-service teachers may struggle to perceive and interpret classroom situations effectively.
- Visual strategies that get more effective with experience (*e.g. Lachner et al. 2016; Vifquain & Frenay, 2018; Duvivier et al. 2024*).
- Difficulty in making connections between observed elements to form a coherent understanding (*e.g. Keskin et al. 2024*).

2. Question and hypothesis

Research question and hypothesis

Objects viewed by pre-service teachers on M_view and F_View

1

- **Research question:** compared to a F_view, how does the M_view influence the objects observed by pre-service teachers?
- **Hypothesis:** the elements observed will be less relevant when pre-service teachers use the M_view compared to the F_view.



Pre-service teacher are able to visual identify the significant components within the video extract ?

2. Question and hypothesis

Research question and hypothesis

User experience by Pre-Service Teachers on M_view and on F_view

2

•**Research Question:** How does the user experience of pre-service teachers compare between F_view and M_view?

•**Hypothesis:** The user experience will be better for F_view than for M_view.



Identify a set of aspects that the pre-service teachers experienced during their interaction with the M_view and F_view formats.

3. Methodology

BEFORE

- Recording of a lesson in the micro-teaching room
- Selection of an "appropriate" extract for research

- 1 student using a mobile phone (but he can't)
- 1 student experiencing difficulties
- 7 students working
- 1 teacher




“The teacher requests that the students read a text and, if necessary, scan a QR code to obtain the text in context. The teacher then proceeds to supervise the students' work. She responds to a question from a pupil who is experiencing difficulty, and she identifies a student who is engaged with Facebook rather than the task at hand”.

3. Methodology

- Recording of a lesson in the micro-teaching room
- Selection of an "appropriate" extract for research

BEFORE

Relevant information

- 1 student using a mobile phone (but he can't)
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3. Methodology

- Recording of a lesson in the micro-teaching room
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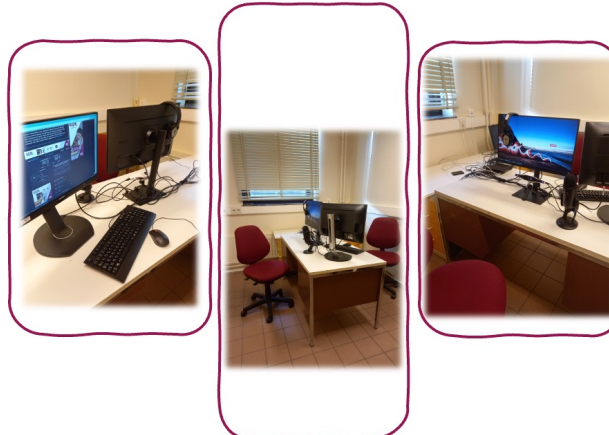
BEFORE

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Fixed eyetracking



3. Methodology

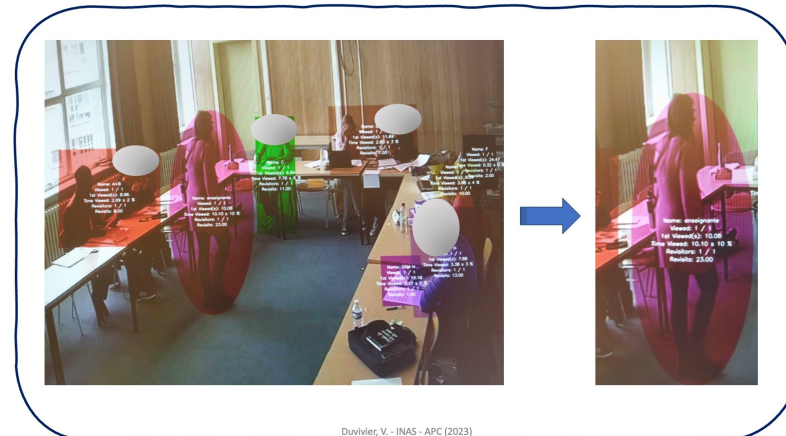
- Recording of a lesson in the micro-teaching room
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BEFORE

Relevant information

- 1 student using a mobile phone (but he can't)
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- 1 teacher

- **Aera of interest (AOI)** on these elements



Duvivier, V. - INAS - APC (2023)

3. Methodology

1

Objects

On AOI, on M-view and F_view compared:

- Duration of fixation
- Number of visite

2

User Experience


Each Pres-service teacher completed a validated “*short user experience*” scale (Schrepp et al., 2017) after viewing the extracts.

- **Fixation** : A fixation is when a participant 's gaze remains stable on a particular point AOI for a certain period, indicating focused attention on that spot.
- **Visit** : A revisit refers to when a participant's gaze returns to a previously viewed AOI or point after looking elsewhere, indicating recurring interest or attention to that specific area.

3. Methodology

BEFORE

- Recording of a lesson in the micro-teaching room
- Selection of an "appropriate" extract for research

- 1 student using a mobile phone (but he can't)
 - 1 student experiencing difficulties
 - 7 students working
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- 

- Area of interest (AOI) on these elements

D-DAY

- An extract (89') viewed by 16 pre-service teachers on a fixed **eye tracking** device (Gazepoint ; GP3HD).
- The extract is presented in 2 formats: View_M and View F.
- The presentation was made in random order, with a 5 second interval between each viewing.
- Administration of the "Short User Experience" scale.

3. Methodology

Sample

- A total of **17 pre-service teachers** participated in the study (impossible to calibrate 1 pre-service teacher)

Gaze calibration in eyetracking involves adjusting the system so that it corresponds precisely to the user's eye movements, ensuring reliable and accurate measurements.

	All sample (n=16)	Only Man (n=4)	Only Women (n=12)
Mean	31,61	36	30,78
ET	8,09	2,36	3,35
var	0,25	0,06	3,35

Objects

4. Results

On AOI, compared:

- duration of fixation (average in %)
- visite (average in %)

AOI	M_view		F_view	
	Fixation (%)	Visiste (%)	Fixation (%)	Visiste (%)
Teacher	19,64	24,23	20,24	28,29
Group of students*	7,08	16,92	8,59	12,82
Student in difficulty	4,08	11,58	8,94	19,35
Off-task student	2,83	13,33	9,35	18,94
Off-task student's a mobile phone	0,25	3	4,59	10,62
White board	1,08	1,92	0	0,06
Control room	4,25	9,17	2,76	9,18
Clasroom door	1,08	3,75	1,71	1,53

The teacher on the screen remained the main focus for all pre-service teacher.

*portion of the results

Objects

4. Results

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Student in difficulty and off-task (+ mobile phone) are more frequently observed and visited in F_view compared to M_view.

-> pre-service teachers dedicate greater visual attention to them in F_view.

*portion of the results

Results



	1	2	3	4	5	6	7	
Rigide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Facilitant
Compliqué	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Simple
Inefficace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Efficace
Déroutant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Clair
Ennuyeux	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Captivant
Inintéressant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Intéressant
Conventionnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Original
Habituel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Avant-gardiste



Rigid-facilitating	Complicated-simple	Ineffective-effective	Confusing-engaging
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Pragmatic Quality

Uninteresting-interesting	Conventional-original	Traditional-avant-garde
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Hedonic Quality

2

User Experience

Each Pres service teacher completed a validated '*short user experience*' scale (Schrepp et al., 2017) after viewing the extracts.



Pragmatic Quality

Hedonic Quality

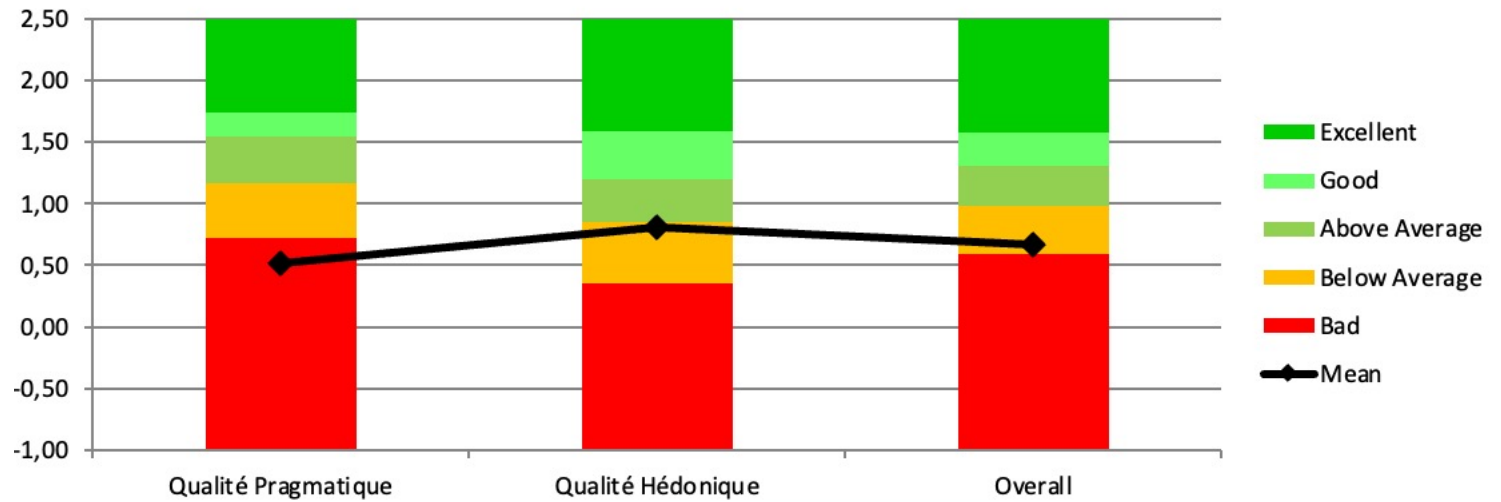
4. Results

	1	2	3	4	5	6	7	
Rigide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Facilitant
Compliqué	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Simple
Inefficace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Efficace
Déroutant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Clair
Ennuyeux	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Captivant
Inintéressant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Intéressant
Conventionnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Original
Habituel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Avant-gardiste

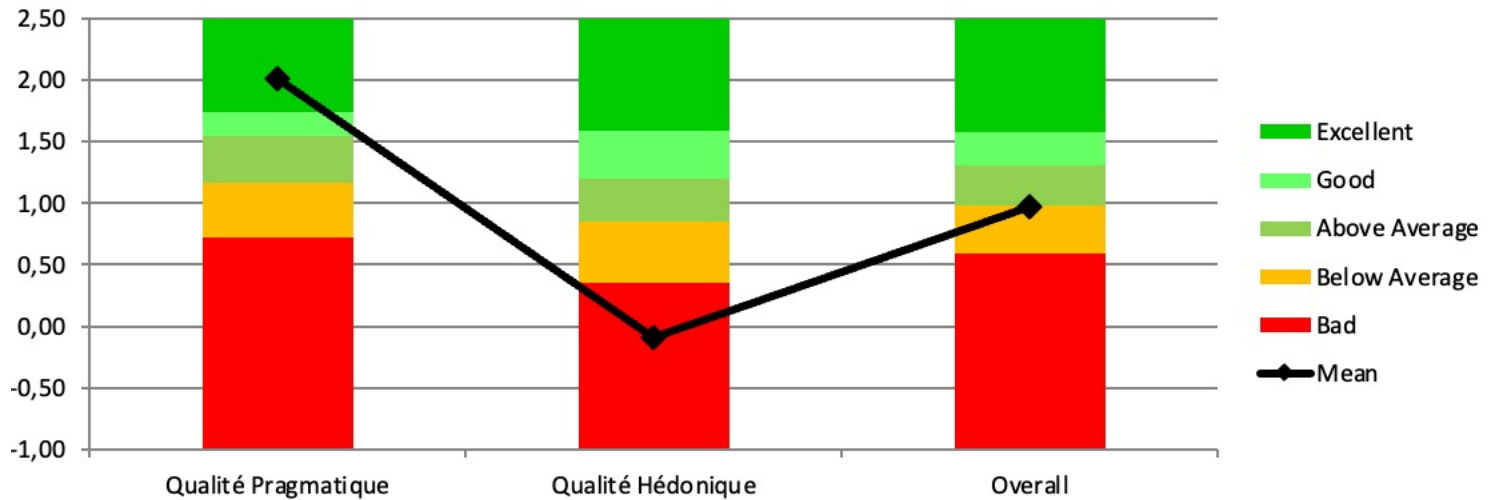


4. Results

M_View

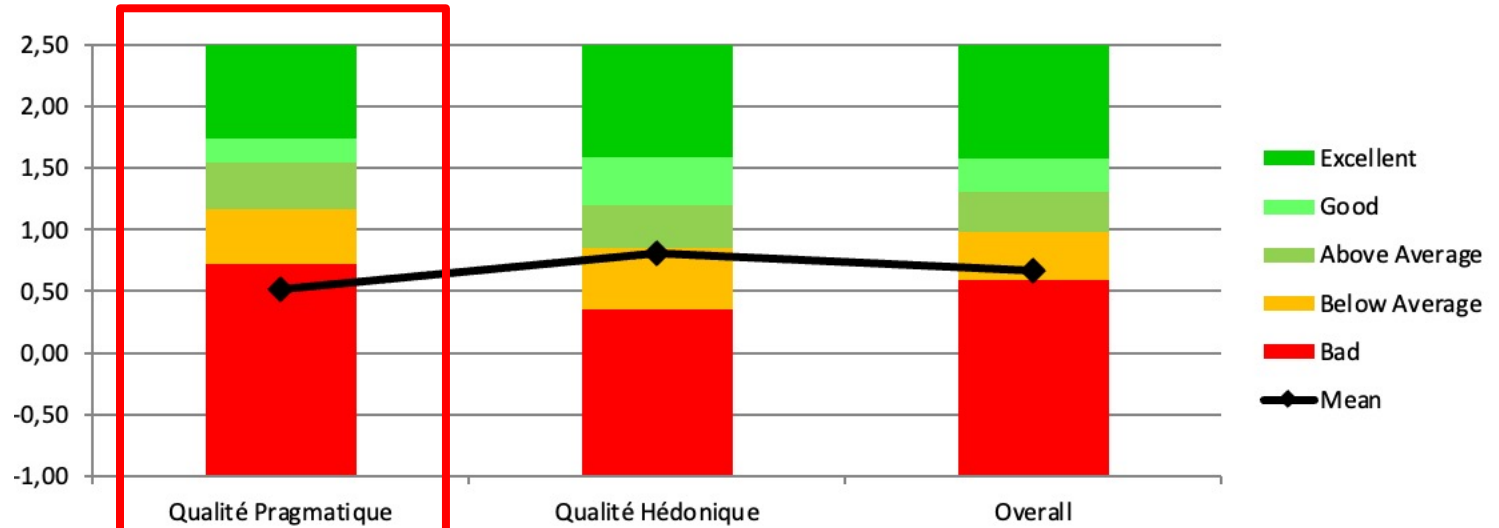


F_View

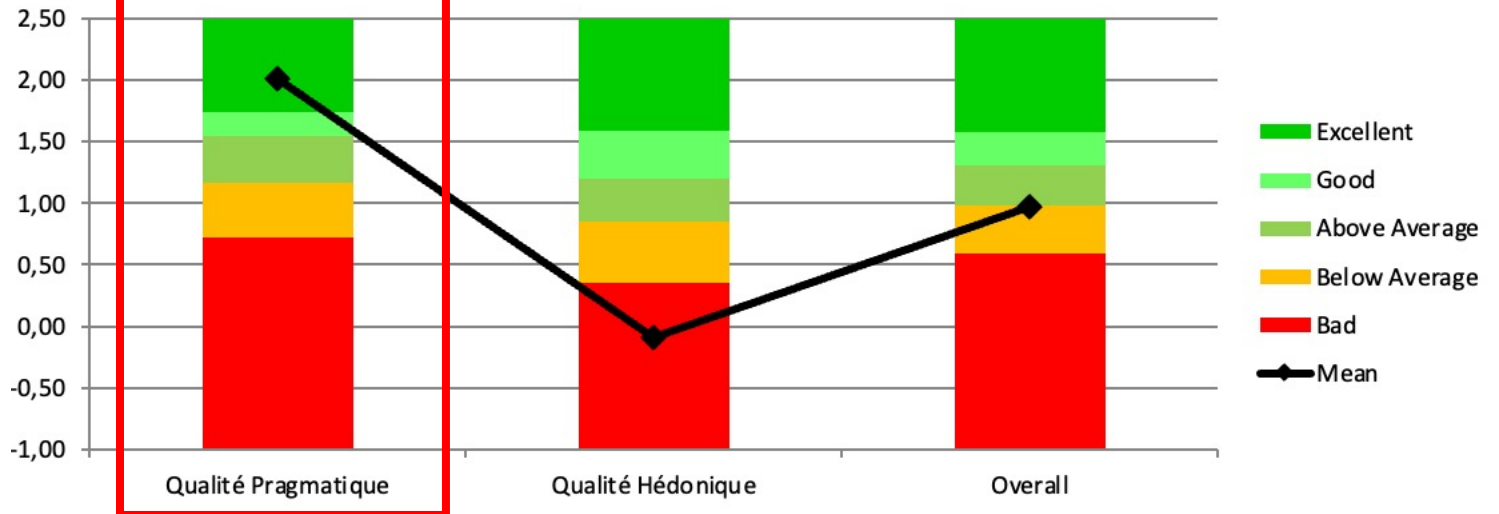


4. Results

M_View

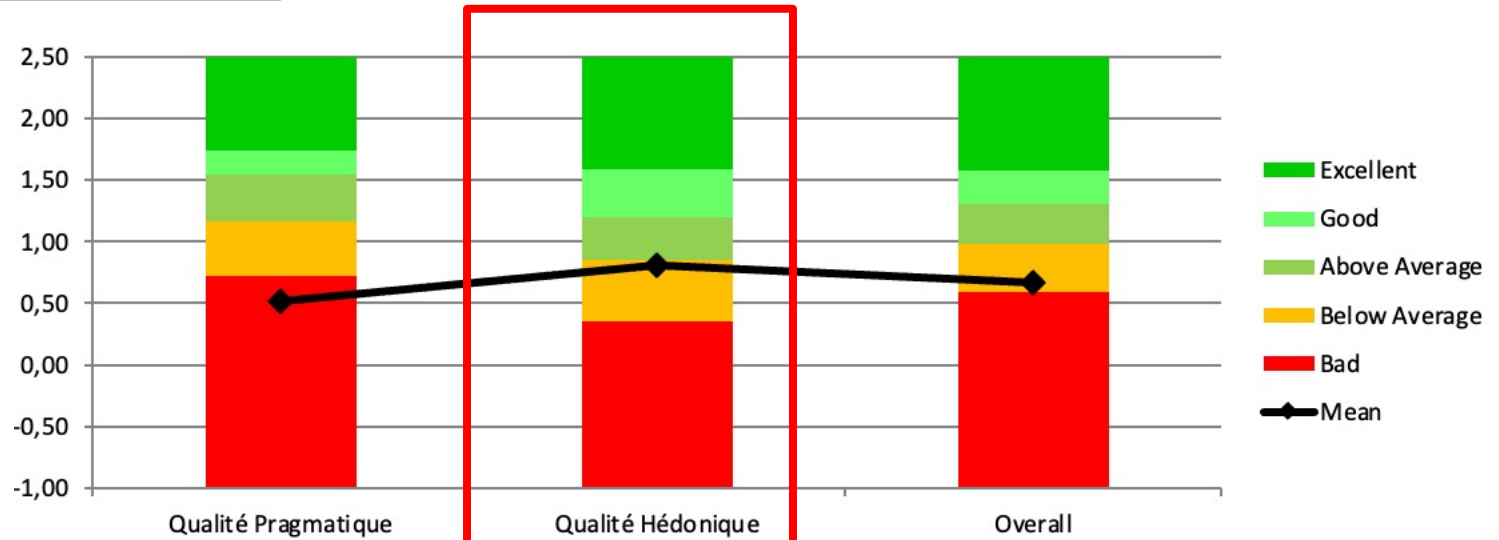


F_View

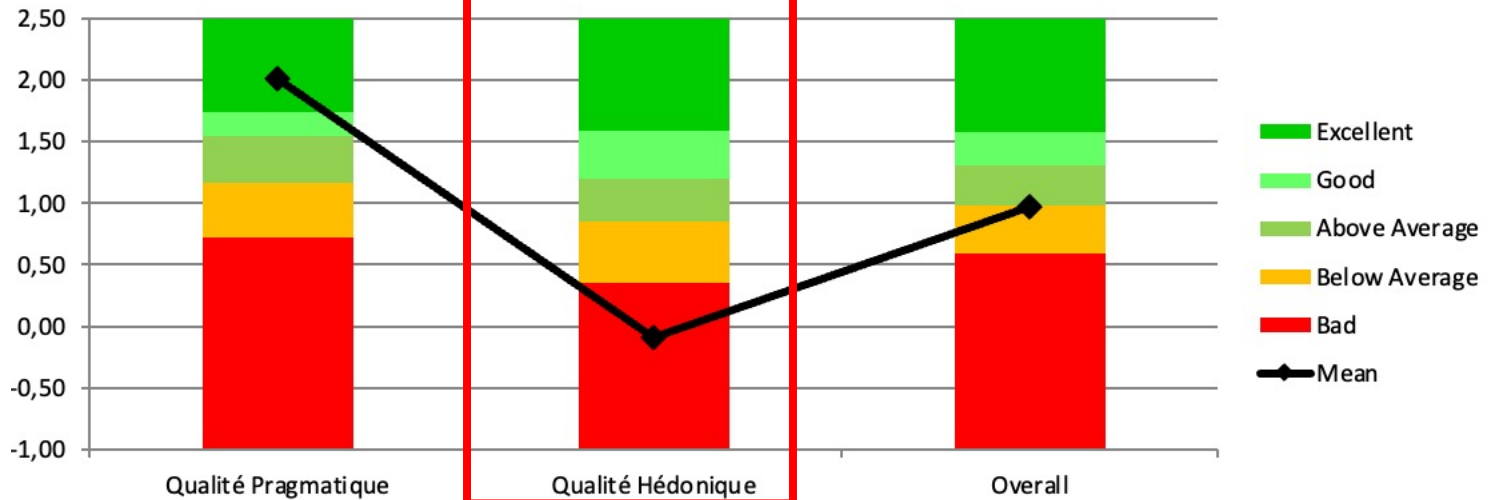


4. Results

M_View

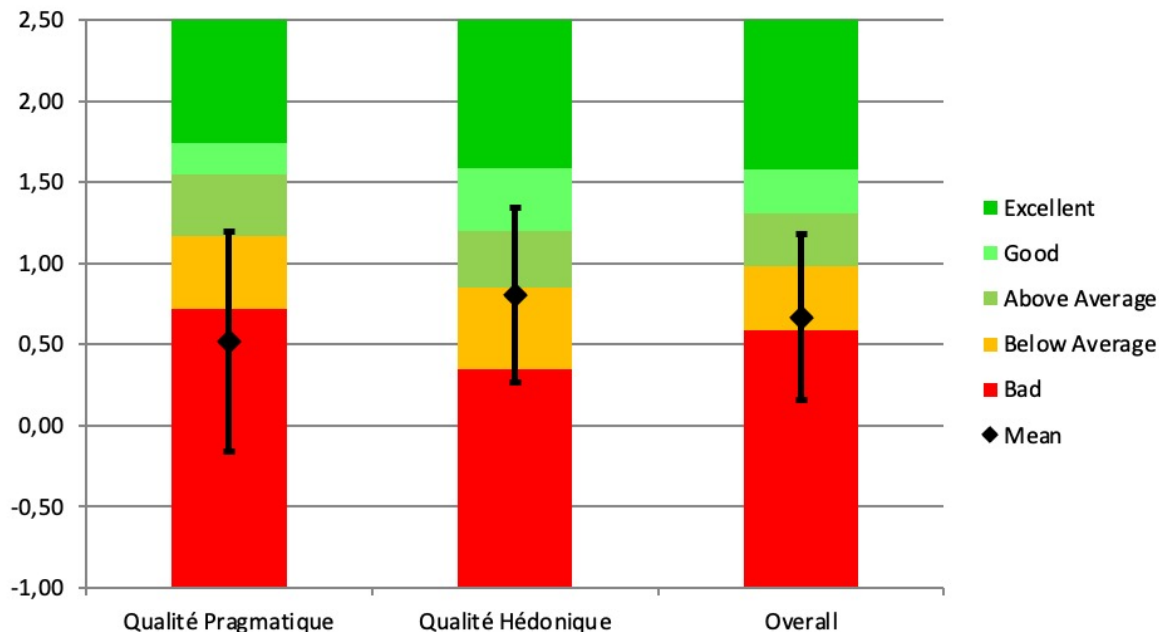


F_View

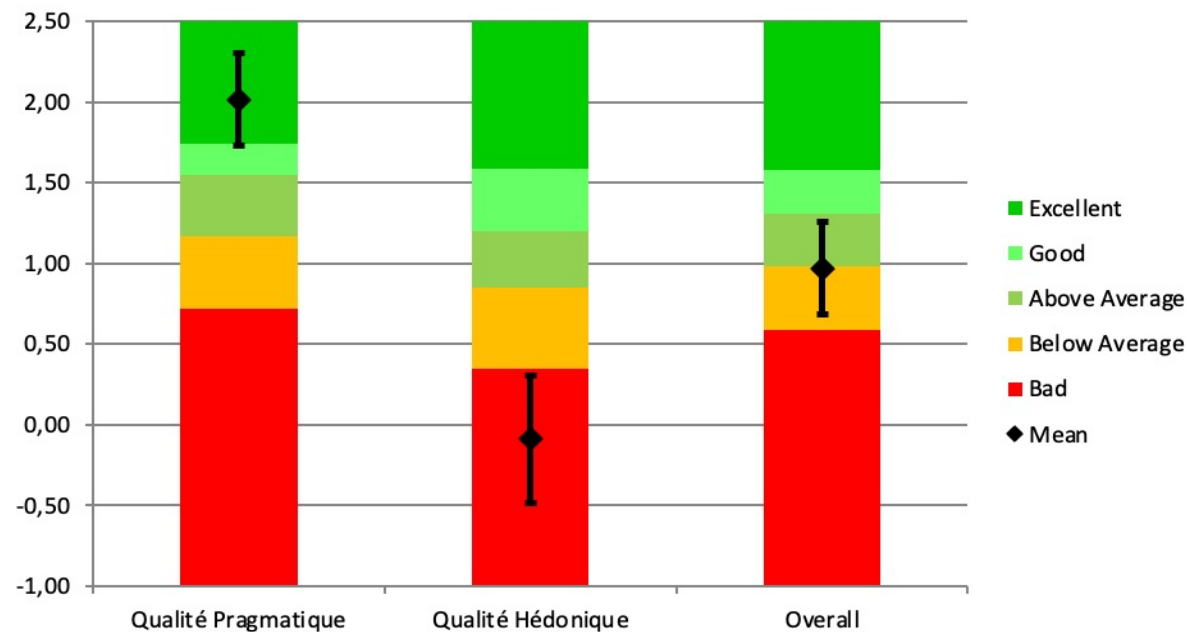


User Experience

M_View



F_View



4. Conclusion...

In our sample,

- the **teacher on screen** is the most frequently observed information in both types of view (= scientific literature)
- compared with the mosaic view, **the full-view** enables pre-service teacher to
 - more effectively identify the relevant information of the lesson
 - avoid focusing on unnecessary elements.
- The full-view is the **most prevalent**, and the majority of pre-service teachers have expressed **similar feedback**.
 - > *This could mean that it's more stable or predictable and that it's possible that a maximum of pre-service teachers invest positively in the full-view*

4. Conclusion...

For the next training year

- To prepare the debriefing, the results suggest that the transmission of video in "full view" to pre-service teacher could facilitate observation of their teaching performances.

And more ?

- Should all 4 vidéo (A, B, C, D) be provided? How do pre-service teacher use these 4 vidéo? Do they look at one video and not the others? Do they look for additional information in another video?
- To study visual strategy of pre-service teachers when they observe these four video in order to determine what prompts them to select the extract they wish to analyse during debriefing -> *eyetracking glasses* ?
- **To analyse the visual strategies of the pre-service teacher in a longer extract filmed in a real classroom.**
- The greater dispersion for M-view could be more investigate.
- *This is part of the results presented today*
- *Use more indicators for each AOI*

Thank you for your attention !

감사합니다.

01.

**WEB SITE
"INAS"**



02.

**PRE-SERVICE
TEACHER
TRAINING**



03.

SUMMARY



(1) Bocquillon (2020)
's thesis