



The role of classroom teaching practices on academic success: validation of an observation protocol

Justine Jacquemart – Mikaël De Clercq – Benoît Galand



TABLE OF CONTENTS

1. INTRODUCTION
2. THIS STUDY
3. RESULTS
4. DISCUSSION



1. INTRODUCTION



Transformation of the higher education system:

- massification and heterogeneisation of student populations;
- digitalisation of practices (Lalle et Bonnafous, 2019).



Growing interest in improving higher education:

- at university level,
- and in the scientific field .



Research into the quality of teaching at university has intensified, and recent studies question teaching practices (Alsharif et Alamri, 2020; Duguet, 2018;

Katamba Muamba et al., 2024; Yin et al., 2022).





In order to evaluate and improve practices, the literature mainly uses **data reported by teachers or students** (Harrison et al., 2022).



However, although this strategy generates **useful data**, it has a number of limitations (Esterhazy et Gijbels, 2021), linked in particular to the subjective nature of declarative statements (Bressoux et al., 1999).

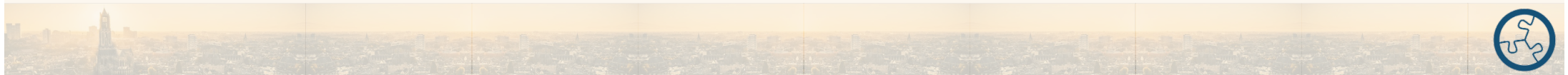


The **observational approach** is documented as being more objective and appears to be **complementary** to studies based on reported data. The few observational studies conducted in a classroom context could therefore be extended.



TABLE OF CONTENTS

1. INTRODUCTION
2. THIS STUDY
3. RESULTS
4. DISCUSSION



3. CETTE ÉTUDE

3.1. Aim

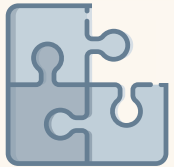
3.2. Purpose of the research

3.3. Sample

3.4. Validation process

An observation tool must be able to be grounded into a **theoretical model** and have **acceptable psychometric qualities**

(Bressoux, 2001).



To date, there is no tool that combines these two criteria in **higher education research** and in the **French-speaking context**, unlike **compulsory education** (Allen et al., 2013; Campos et al., 2021; Downer et al., 2012; Lipowsky et al.,

2009; Taut et al., 2019).



Develop and validate a **valid and reliable systematic observation protocol** for measuring teaching practices at the university.



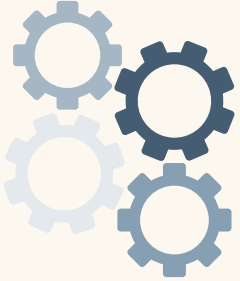
3. CETTE ÉTUDE

3.1. Aim

3.2. Purpose of the research

3.3. Sample

3.4. Validation process



The professional activity of a teacher is made of a set of elements. There is no single unambiguous definition of the notion of teaching practice, but several definitions depending on the theoretical fields of reference, the issues and the research objectives.

Our study focuses on a specific space and moment of teaching activity, **namely classroom practice in the presence of students.**



« all the observable behaviours displayed by the teacher during the lesson, in the presence of the students » (Jacquemart et al., 2023, p.4).



3. CETTE ÉTUDE

3.1. Aim

3.2. Purpose of the research

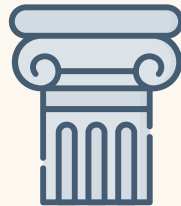
3.3. Sample

3.4. Validation process



5 universities

French-speaking part
of Belgium



Various faculties

(e.g. Faculty of Psychology
and Education; Faculty of
Philosophy, Arts and
Letters; Faculty of
Architecture; Faculty of
Law)



96 teachers

71% men
51% positive answer



Observations

from 26/09 to 5/12/2022 and
from 23/02 to 28/04/2023



- 1 session of 2 hours
- 3 sequences of 20 minutes
- Aggregate score



3. CETTE ÉTUDE

- 3.1. Aim
- 3.2. Purpose of the research
- 3.3. Sample
- 3.4. Validation process**

Eight-stages process (Artino et al., 2014 ; Smith et al., 2013)

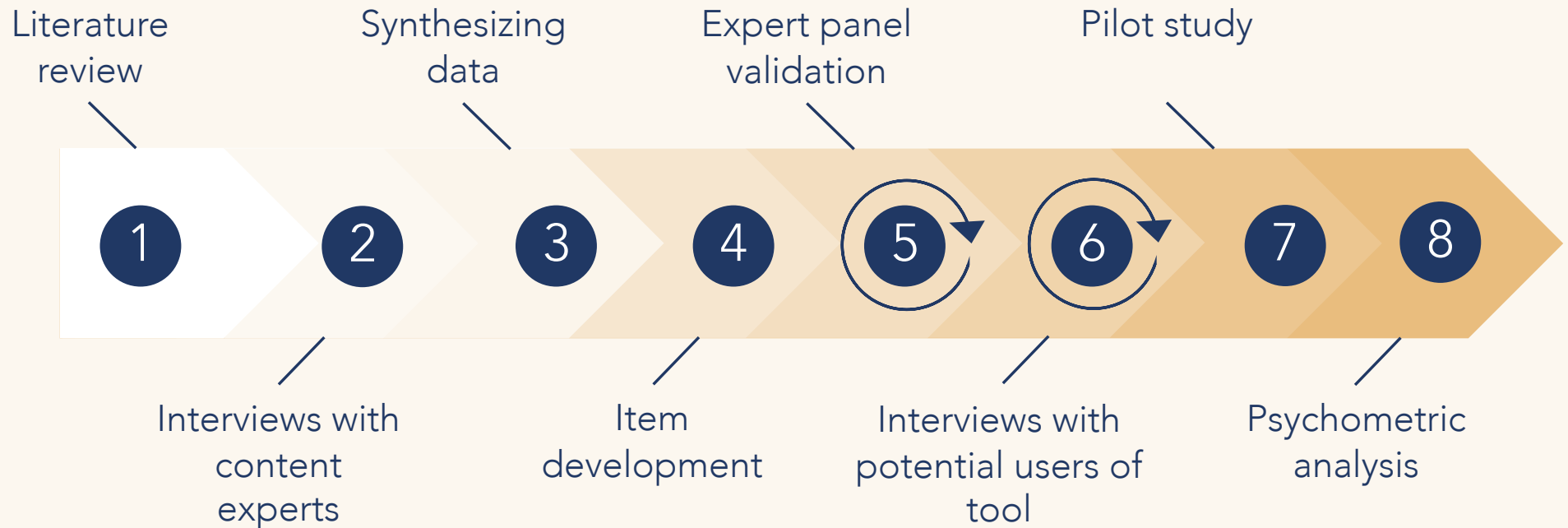


TABLE OF CONTENTS

1. INTRODUCTION
2. THIS STUDY
3. RESULTS
4. DISCUSSION



4. RESULTS

4.1. Theoretical analysis and reference framework

- 4.2. Principal component analysis
- 4.3. Reliability analysis and concordance with initial sub-categories
- 4.4. Inter-judge and test-retest reliability
- 4.5. Additional results (predictive validity)

Classroom Assessment Scoring System

(CLASS; Hamre & Pianta, 2007)

Emotional support

Classroom organization

Instructional support

Three Basic Dimensions

(TBD; Klieme et al., 2001)

Student support

Classroom management

Cognitive activation

Reference framework

(Jacquemart et al., 2023)



INITIAL VERSION OF THE OBSERVATION TOOL

4 categories

**CLASSROOM
MANAGEMENT**

**SOCIO-AFFECTIVE
SUPPORT**

**LEARNING
STRUCTURE**

**COGNITIVE
ACTIVATION**

9 sub-categories

**Interest and motivation
management**

**Time and productivity
management**

**Attention and participation
management**

**Regard for student
perspective**

Teacher proximity

General support

Differentiated support

Cognitive engagement

**Developing higher-order
skills**

34 indicators

- Discours expressif et mouvement
- *Discours neutre ou incompréhensible
- Mise en contexte
- *Tâches extra cours
- Utilisation productive du temps
- *Discours extra cours
- *Rythme inadéquat
- Gestion de la participation
- Réorientation des comportements inadéquats
- Gestion de l'attention
- *Absence de surveillance
- Opportunités de choix/de liberté
- *Non considération
- Prise en compte des opinions des étudiant-es
- *Enseignement ne soutenant pas l'autonomie (style contrôlant)
- Climat positif
- Approche constructive des erreurs
- *Climat négatif
- *Pression sur les performances
- Clarté
- *Manque d'explication, exposé confus et rythme inadapté
- Structuration
- Emphase
- Réaction constructive aux difficultés
- Soutien à la compréhension
- Soutien à la différenciation et à l'adaptation
- Rythme adapté
- Questionnement
- Explorer et activer les connaissances antérieures
- Dialogue pédagogique
- Prise de recul et mise en lien
- Tâches d'analyse/de recherche
- Travail/discussion de groupe, apprentissage discursif et co-constructif
- Soutenir la métacognition

4. RESULTS

4.1. Theoretical analysis and reference framework

4.2. Principal component analysis

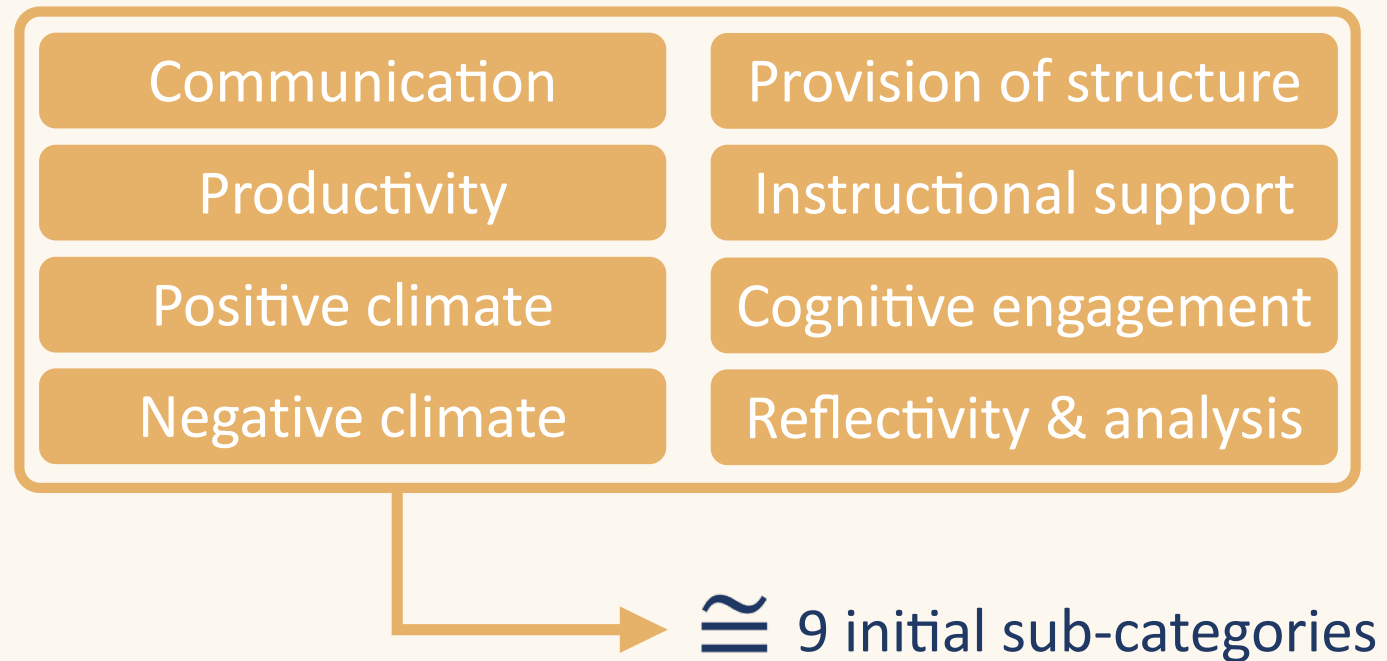
4.3. Reliability analysis and concordance with initial sub-categories

4.4. Inter-judge and test-retest reliability

4.5. Additional results (predictive validity)

Objective: summarise information from our data

- 34 initial items
- 6 items removed
- 8-factors structure



4. RESULTS

4.1. Theoretical analysis and reference framework

4.2. Principal component analysis

4.3. Reliability analysis and concordance with initial sub-categories

4.4. Inter-judge and test-retest reliability

4.5. Additional results (predictive validity)

Tableau 1. Reliability analysis results

Sub-categories	Number of indicators	Reliability coefficient
Communication	3	$\omega = .570$
Productivity	3	$\omega = .786$
Positive climate	5	$\omega = .665$
Negative climate	3	$\omega = .728$
Provision of structure	4	$\omega = .614$
Instructional support	4	$\omega = .735$
Cognitive engagement	5	$\omega = .863$
Reflectivity & analysis	2	$r = .798$



4. RESULTS

- 4.1. Theoretical analysis and reference framework
- 4.2. Principal component analysis
- 4.3. Reliability analysis and concordance with initial sub-categories
- 4.4. Inter-judge and test-retest reliability**
- 4.5. Additional results (predictive validity)

Reliability for double coding of indicators every five minutes :

- Cohen's alternative weighted Kappa (κ)
- **$\kappa = 0,77$**
- Substantial agreement

Reliability for aggregate scores of sub-categories :

- Intra-class correlation coefficient (ICC)
- **ICC = .904**, $p < .001$
- Excellent reliability

13% of all data was assessed independently by two observers.

(Cohen, 1968; Cicchetti, 1994; Landis & Koch, 1977)



Protocol **Just Teach** :

Classroom management	Communication	Stimulate student interest and motivation by using expressive discourse. Deliver lessons in such a way that students can't stop listening, don't lose track, etc.
	Productivity	Make the most productive use of time. Don't waste time without going at an inadequate pace.
Socio-affective support	Positive climate	Promote the quality of interpersonal relationships by adopting a teaching style geared towards interpersonal investment and fostering a sense of belonging.
	Negative climate	Being rather cold and distant or adopting a hostile teaching style characterised by rejection or neglect. Establishes a negative, competitive and/or stressful climate.
Learning structure	Provision of structure	Clearly states what is expected of students and emphasises the importance of the subject.
	Instructional support	Make a real effort to understand the difficulties that students may have and effectively support the understanding of all students, taking into account their differences.
Cognitive activation	Cognitive engagement	Develop ways of engaging all students cognitively in the learning process throughout the sequence.
	Reflectivity & analysis	Involve students in reflectivity processes throughout the sequence.

Jacquemart, J., De Clercq, M., & Galand, B. (submitted). Développement et validation du protocole Just Teach : Un outil d'observation systématique des pratiques enseignantes en classe dans le supérieur. *Évaluer - Journal international de recherche en éducation et formation*, 10, 3.



4. RESULTS

4.1. Theoretical analysis and reference framework

4.2. Principal component analysis

4.3. Reliability analysis and concordance with initial sub-categories

4.4. Inter-judge and test-retest reliability

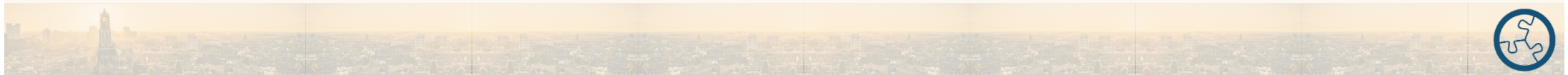
4.5. Additional results (predictive validity)

	ATTENDANCE	PARTICIPATION	PERFORMANCE	ACADEMIC SUCCESS	POSITIVE EMOTIONS	ANXIETY	SURFACE LEARNING	DEEP LEARNING
COMMUNICATION	+							
PRODUCTIVITY	+							
POSITIVE CLIMATE						-		
NEGATIVE CLIMATE			-	-			+	
PROVISION OF STRUCTURE					+	-		+
INSTRUCTIONAL SUPPORT					+			
COGNITIVE ENGAGEMENT		+	+	+				
REFLECTIVITY & ANALYSIS		-			-	+		



TABLE OF CONTENTS

1. INTRODUCTION
2. THIS STUDY
3. RESULTS
4. DISCUSSION



5. DISCUSSION | 5.1. Validity and reliability of the Just Teach observation protocol

5.2. Future perspectives on analysing teaching practices

- The eight-stages process (Artino Jr et al., 2014; Bostic et al., 2019; Smith et al., 2013) was used to verify **content** and **construct validity**.
- **Inter-judge reliability**, higher than the rate recommended by studies using similar scales (Downer et al., 2012; Hafen et al., 2015; Hamre et Pianta, 2007).
- Reliability of scores demonstrates a **shared understanding of the concepts used** (Gitomer et al., 2014).
- The added value of combining an **empirical** (step 7) and **theoretical methodological approach** (step 1), as well as **consulting experts** on the subject under study (steps 2 et 5) to develop a precise, valid and reliable tool (Guikas et al. (2016)).



3 main limitations :

- (1) Two sub-categories with low reliability indices
- (2) Voluntary teacher participation
- (3) Focus on lectures

Conclusion :

- Precise, valid and reliable measurement tool
- Short three-hour training course (less than other international tools)
- Provides a common language for informing teaching practice in HE



REFERENCES

- Alsharif, K. M., & Alamri, N. M. (2020). Using Teaching Practices Inventory to Evaluate Mathematics Faculty Teaching Practices in Higher Education. *International Journal of Instruction*, 13(1), 139-150.
- Allen, J., Gregory, A., Mikami, A., Lun, J., Hamre, B., & Pianta, R. (2013). Observations of Effective Teacher-Student Interactions in Secondary School Classrooms: Predicting Student Achievement With the Classroom Assessment Scoring System-Secondary. *School Psych Rev*, 42(1), 76-98.
- Artino Jr, A. R., La Rochelle, J. S., Dezee, K. J., & Gehlbach, H. (2014). Developing questionnaires for educational research: AMEE Guide No. 87. *Medical Teacher*, 36(6), 463-474.
- Bostic, J. D., Matney, G. T., & Sondergeld, T. A. (2019). A validation process for observation protocols: Using the Revised SMPs Look-for Protocol as a lens on teachers' promotion of the standards. *Investigations in Mathematics Learning*, 11(1), 69-82.
- Bressoux, P., Bru, M., Altet, M., & Leconte-Lambert, C. (1999). Diversité des pratiques d'enseignement à l'école élémentaire. *Revue française de pédagogie*, 97-110.
- Bressoux, P. (2001). Réflexions sur l'effet-maître et l'étude des pratiques enseignantes. *Les dossiers des sciences de l'éducation*, 5(1), 35-52.
- Campos, A., Carneiro, P., Cruz-Aguayo, Y., & Norbert, S. (2021). Interactions: Do teacher behaviors predict achievement, executive function, and non-cognitive outcomes in elementary school. London, UK: University College London.
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6(4), 284.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and psychological measurement*, 20(1), 37-46.
- Downer, J. T., López, M. L., Grimm, K. J., Hamagami, A., Pianta, R. C., & Howes, C. (2012). Observations of teacher-child interactions in classrooms serving Latinos and dual language learners: Applicability of the Classroom Assessment Scoring System in diverse settings. *Early Childhood Research Quarterly*, 27(1), 21-32.
- Duguet, A. (2018). Le cours magistral en première année universitaire: des pratiques pédagogiques renouvelées? *Carrefours de l'éducation*(1), 93-113.
- Esterhazy, R., & Gijbels, D. (2021). Widening the Methodological Lens on the Investigation of Diversity in the Transition to Higher Education: A Discussion. *Frontline Learning Research*, 9(2), 179-185.
- Gitomer, D., Bell, C., Qi, Y., McCaffrey, D., Hamre, B. K., & Pianta, R. C. (2014). The instructional challenge in improving teaching quality: Lessons from a classroom observation protocol. *Teachers College Record*, 116(6), 1-32.
- Guikas, I., Morin, D., & Bigras, M. (2016). Développement d'une grille d'observation: considérations théoriques et méthodologiques. *Revue francophone de la déficience intellectuelle*, 27, 163-178.
- Harrison, R., Meyer, L., Rawstorne, P., Razee, H., Chitkara, U., Mears, S., & Balasooriya, C. (2022). Evaluating and enhancing quality in higher education teaching practice: A meta-review. *Studies in higher education*, 47(1), 80-96.
- Hafen, C. A., Hamre, B. K., Allen, J. P., Bell, C. A., Gitomer, D. H., & Pianta, R. C. (2015). Teaching through interactions in secondary school classrooms: Revisiting the factor structure and practical application of the classroom assessment scoring system-secondary. *The Journal of early adolescence*, 35(5-6), 651-680.
- Hamre, B. K., & Pianta, R. C. (2007). Learning opportunities in preschool and early elementary classrooms. *Developmental Psychology*, 43(2), 266-276.
- Jacquemart, J., De Clercq, M., & Galand, B. (submitted). Développement et validation du protocole Just Teach : Un outil d'observation systématique des pratiques enseignantes en classe dans le supérieur. *Évaluer - Journal international de recherche en éducation et formation*, 10, 3.
- Jacquemart, J., De Clercq, M., & Galand, B. (2023). Mieux comprendre les pratiques enseignantes en classe dans l'enseignement supérieur : proposition d'un cadre de référence. *Formation et Profession*. Vol. 31 (3). p.1-19.
- Katamba Muamba, M., Frenay, M., & Mukendi Wa Mpoyi, P. (2024). Observer les pratiques d'enseignement au supérieur: adaptation et validation d'une grille d'observation des dimensions de l'enseignement en contexte congolais. *Évaluer-Journal international de recherche en éducation et formation*, 9, 123.
- Klieme, E., Schümer, G., & Knoll, S. (2001). Mathematikunterricht in der Sekundarstufe I: "Aufgabenkultur" und Unterrichtsgestaltung. In *TIMSS-Impulse für Schule und Unterricht* (pp. 43-57). Bundesministerium für Bildung und Forschung.
- Lalle, P., & Bonnafous, S. (2019). La révolution pédagogique de l'enseignement supérieur, une universalité géographique et paradigmatique. *Introduction. Revue internationale d'éducation de Sèvres*(80), 49-60.
- Lipowsky, F., Rakoczy, K., Pauli, C., Drollinger-Vetter, B., Klieme, E., & Reusser, K. (2009). Quality of geometry instruction and its short-term impact on students' understanding of the Pythagorean Theorem. *Learning and instruction*, 19(6), 527-537.
- Smith, M. K., Jones, F. H., Gilbert, S. L., & Wieman, C. E. (2013). The Classroom Observation Protocol for Undergraduate STEM (COPUS): A new instrument to characterize university STEM classroom practices. *CBE—Life Sciences Education*, 12(4), 618-627.
- Taut, S., Jiménez, D., Puente-Duran, S., Palacios, D., Godoy, M. I., & Manzi, J. (2019). Evaluating the quality of teaching: can there be valid differentiation in the middle of the performance distribution? *School effectiveness and school improvement*, 30(3), 328-348.
- Yin, H., Lu, G., & Meng, X. (2022). Online course experiences matter: adapting and applying the CEQ to the online teaching context during COVID-19 in China. *Assessment & Evaluation in Higher Education*, 47(8), 1374-1387.





The role of classroom teaching practices on academic success: validation of an observation protocol

Justine Jacquemart – justine.jacquemart@uclouvain.be

Mikaël De Clercq – mikael.declercq@uclouvain.be

