Interact2Impact:

The role of faculty-student interactions in university students' learning and their relation to academic emotions and engagement - Manuel Iglesias Soilán

Contents

1. INTRODUCTION.

The study of teaching and learning processes in higher education has gained increasing prominence in the 21st century, driven by factors such as growing student diversity, the rapid integration of technology into educational environments following the COVID-19 crisis, the emergence of generative artificial intelligence in education, and the evolution of pedagogical methodologies, among others. However, despite advancements in this field, a significant gap remains in our understanding of teacher-student interactions, an essential aspect that directly impacts both learning quality and the overall educational experience.

Previous research has often examined either faculty or students in isolation, as reflected in the two dominant paradigms in the literature on teaching and learning processes: the teacher-centered model and the student-centered model. Nevertheless, the relationship between these two elements and the ways in which their mutual interactions within the classroom shape the educational process remain insufficiently explored and fragmented in scholarly discourse. Recent frameworks, such as the fourfold teacher-student typology (Iglesias-Soilán, 2024), are trying to adopt a more holistic perspective on this phenomenon, yet further integration is needed to fully grasp the complexities of these interactions.

In this same direction, the predominant focus on the individual aspects of educational actors has led to a detailed examination of key variables in university students, such as academic emotions and academic engagement. However, research has largely overlooked the role of teacher-student interactions in shaping these critical variables.

Academic emotions, defined as emotional processes specifically related to educational contexts such as studying, the classroom, or exams, encompass both pleasant emotions (e.g., satisfaction, enjoyment) and unpleasant emotions (e.g., anxiety, boredom, frustration). These emotions have been shown to directly influence academic performance by modulating both students' motivation and their emotional connection to content (Camacho-Morles et al., 2021; Cobo-Rendón et al., 2023; Tan et al., 2021). Despite this recognition, there remains a significant gap in understanding how classroom interactions influence the occurrence, intensity, and regulation of these emotions.

Similarly, **academic engagement**, understood as students' active commitment to the learning process from emotional, cognitive, and behavioral perspectives (Bresó et al., 2011; García Cano, 2021; Smith & Tinto, 2022), has been consistently linked to academic success and greater satisfaction with the educational experience (Carmona-Halty et al., 2019; Pekrun & Stephens, 2010; Tinto, 2021) and with academic emotions (Pekrun and Linnenbrink-Garcia, 2012). However, most existing studies have focused on either contextual or individual factors, largely

overlooking the crucial role that faculty-student interactions may play in fostering this engagement.

It is important to note that the relationship between academic emotions and academic engagement has direct implications for the **learning perceived by students.** Previous research, but not too recently, has demonstrated that an educational experience characterized by a high level of engagement and positive academic emotions leads to greater perceived learning and higher satisfaction with the course (Terenzini et al., 1996; Astin, 1993). Together, these factors not only influence academic performance but also shape the overall evaluation students have of their educational experience. Therefore, understanding how classroom interactions impact these emotional and motivational dimensions is essential for improving educational outcomes and, ultimately, the quality of teaching in higher education.

In this context, the present study aims to address this knowledge gap by employing **a mixed-methods approach** that combines **qualitative observation** of faculty-student interactions with **quantitative measures** of **academic emotions, engagement, and perceived learning.** The structured observation of classroom interactions will capture the nuances and details of both faculty and student behaviors, while quantitative questionnaires will provide systematic data on academic emotions, engagement, and students' perceptions of their learning, thus enabling a direct link to the characteristics of the observed interactions. The combination of these approaches will allow for a deeper and more enriched understanding of teaching and learning processes by integrating both qualitative and quantitative perspectives within a unified analytical framework (Creswell & Plano Clark, 2023). While mixed methods have been employed in various fields, their application in educational psychology, particularly in university teaching and learning, remains a novel approach.

This combination of theoretical and methodological aspects also represents a convergence point I have been seeking for years, for which I have invested in thorough training. I have focused on teacher-student interactions, which lie at the core of my doctoral thesis, which adopted a quantitative approach. At the same time, I have deepened my knowledge of qualitative methodologies, such as observational classroom recording (see Iglesias-Soilán et al., 2024), and the study of constructs such as academic emotions (see Enguídanos et al., 2023; and Project CRECE) and engagement (see Linares & Iglesias-Soilán, 2024; and Iglesias-Soilán & Linares, in press).

Lastly, this project would like to be distinguished by its international component, facilitated by the ARTS research program, which will enable data collection in diverse educational contexts. This comparative approach is crucial for exploring how cultural and contextual differences may influence the dynamics of faculty-student interactions. There is evidence that factors such as the educational system and academic culture profoundly impact interactions between students and teachers, which justifies the importance of an analysis that considers these variations within a unified system of measurement. In this sense, while it is generally accepted that, regardless of cultural context, faculty-student interactions foster psychological processes related to learning, the characteristics and impact of such interactions are likely to vary according to the cultural and educational context.

In conclusion, this study aims to comprehensively explore how faculty-student interactions influence learning, as well as their relationship with academic emotions and engagement. Using a mixed-methods approach within a comparative framework, the study seeks to expand our understanding of the processes that shape teaching and learning in higher education. The findings are expected to provide valuable insights for the design of more effective educational practices that are better aligned with faculty and students' needs in a globalized context.

2. OBJECTIVES.

Main objective.

To explore the relationship between faculty-student interactions and levels of academic emotions, engagement, and perceived learning in the university context, with a comparative focus on different cultural and educational contexts internationally.

Specific Objectives.

1. **To deepen the understanding of teacher-student interactions** in the university classroom, evaluating various criteria such as nature (e.g., proactive or reactive interaction), frequency, and quality of these interactions.
2. **To analyze the levels of academic emotions** associated with different university sessions, identifying their manifestations and their impact.
3. **To examine the levels of academic engagement** in the analyzed groups, assessing their relationship with motivation and participation in classes.
4. **To explore the relationship between interaction, emotion, and engagement,** analyzing how these variables interconnect and influence each other in the university classroom context.
5. **To investigate the contextual and cultural variations in teacher-student interactions**, and how these differences may influence students' emotional and engagement processes.
6. **To evaluate the mediating role of academic emotions and engagement,** determining whether these factors have a significant impact on teacher-student interactions.

3. HYPOTHESES.

1. **Hypothesis 1.** The quantity of faculty-student interactions will be positively correlated with higher levels of positive academic emotions (high pleasant emotions, low unpleasant emotions) and greater academic engagement.

2. **Hypothesis 2.** Proactive teacher-student interactions will be more strongly associated with higher levels of positive academic emotions and academic engagement, compared to reactive interactions.

3. **Hypothesis 3.** Positive academic emotions (high levels of pleasant emotions and low levels of unpleasant emotions) will be correlated with academic engagement.

4. **Hypothesis 4.** The relationship between faculty-student interactions and emotional and engagement factors will not show significant differences across different cultural contexts.

4. RESEARCH DESIGN.

This study is structured under a quasi-experimental design with a mixed-methods approach. Initially, **a structured observation process of faculty-student interactions** within the classroom will be conducted, using a standardized protocol to enable the systematic recording of these interactions. Following each observed session, **a quantitative assessment tool** will be administered to the students to evaluate academic emotions, academic engagement, and perceived learning.

a) Participants. Classes will be preferentially selected from psychology and educational faculties or related academic programs, aiming to narrow the study population. Each research team member will be responsible for an equitable number of observations within their respective context.

b) **Instruments.** The observational recording will rely on a system that classifies different types of faculty-student interaction (e.g., proactive, reactive, among others), referencing the protocol piloted by Iglesias-Soilán et al. (2024). The quantitative instrument will be based on those used in prior research (validated tools), following the frameworks proposed by Pekrun for academic emotions and Fredricks for academic engagement. These instruments, as well as some potentially relevant items (although pilot testing tailored to the participants' context is contemplated), will be derived from studies in which the author have participated and that have already been published (e.g., Enguídanos et al., 2024; Linares and Iglesias-Soilán, 2024; Iglesias-Soilán and Linares, in press).

c) **Data Analysis.** Basic analyses will be performed using statistical tools such as SPSS. In the long term (even after ARTS program), more in-depth analyses will be conducted through advanced techniques based on data science, utilizing Python 3.0 software.

5. WORK PLAN AND TIMELINE.

Phase 1: Preparation (October 2025 - December 2025).

- Initial meetings with the team and training sessions.
- Initial literature review (state of the art) and familiarization with the instruments in the field of study.
- Development and adaptation of observation and quantitative instruments, considering contextual and cultural adjustments (e.g., linguistic adaptation).
- Training the research team on the use of instruments and methodologies.

Phase 2: Pilot testing (January 2026 - February 2026).

- Pilot data collection (one session per researcher) to assess the functionality of the tools.
- Review of the effectiveness and efficiency of the instruments, adjusting if necessary.

Phase 3: Data collection (March 2026 - May 2026).

- Data collection, assigning each group the same number of sessions for observation recording and quantitative measurements.

Phase 4: Initial data analysis and preparation for the in-person meeting (June 2026)

- Conduct preliminary analyses (e.g., frequencies, descriptive statistics, correlations…).
- Prepare for the in-person meeting scheduled for July.

Phase 5: In-person meeting and ICAP2026 (July 2026)

- Hold the in-person meeting with the research team.
- Present the progress made to date, preparing ICAP2026 and next steps.

Phase 6: Final steps (August - October 2026)

- Complete the data analysis.
- Prepare the results for dissemination at scientific conferences and for publication in indexed journals (JCR), among other venues.

7. RESOURCES AND FEASIBILITY.

The viability of this project is ensured by the efficient use of resources, particularly in terms of material requirements, which are relatively low compared to other research projects. The primary investment lies in human resources (a component secured by ARTS), which are essential for expanding data collection, particularly in observations, a key aspect of the study. The fact that the core elements of the project, including the development of tools and methodologies, are already in place further reinforces its feasibility.

Moreover, the availability of platforms and software for data collection and analysis through my university guarantees the efficient and effective implementation of the project. With the research team composed of volunteer collaborators, data collection is assured.

Thus, the project is fully feasible, not only because the necessary resources are in place, but also due to prior experience in the key areas of the study, which will facilitate its successful execution.

8. IMPACT AND DISSEMINATION.

The impact of this project extends beyond data collection and the generation of academic knowledge. Its relevance and practical application are evident in various key aspects, both for the academic community and for educational practice in university settings.

Academic and educational impact. This study has the potential to provide a deep understanding of the dynamics of faculty-student interaction, the role of academic emotions, and engagement in the learning process. The findings could serve as a foundation for future research in the field of educational psychology, particularly in how emotional factors and classroom interactions affect student performance and well-being. By identifying key patterns of interaction and their relationship with engagement and emotions, the project's results may contribute to the design of better pedagogical strategies and interventions.

Academic dissemination. The project will be presented and disseminated through various academic platforms and high-profile international events, such as scientific conferences and academic seminars, which will allow for the discussion and visibility of the results in a global context. The in-person meeting with the research team and participation in events like ICAP2026 will facilitate the exposure of preliminary results, contributing to the strengthening and enrichment of the work. Additionally, scientific articles will be prepared and submitted to indexed journals (JCR), advancing knowledge in the field.

Moreover, if permitted by the ARTS Committee and the Scientific and Organizational Committee, this project could be considered for inclusion as an activity associated with the Study Group (SG) I co-chair, titled ***University Teaching and Learning in the 21st Century* (UTL21), based at the Real Colegio Complutense at Harvard University (RCCHU).** This group is co-chaired by myself and Josh Bookin from the **Harvard Graduate School of Education.** The established relationship with institutions like Harvard, alongside my affiliation as a visiting fellow in the *Instructional Moves* project at the same university, will provide valuable support throughout the research, **both in terms of advisory and resources.** Furthermore, if the ARTS Committee and the Scientific and Organizational Committee agrees, an international online seminar will be organized from the SG at the RCC at Harvard University, where the findings of the project will be shared with the academic community at Harvard, and the research team will have the opportunity to present their respective contributions. This dissemination experience will contribute not only to the distribution of results but also to the enrichment of the research team by exposing them to an international academic audience.

Practical dissemination. Practically, the results of this project will be highly useful for educational institutions, administrators, and teachers, providing evidence-based guidelines on

how these processes may (or may not) be linked, influencing the selection of teaching methodologies.

Therefore, the knowledge generated can be applied in the development of teacher training programs that include strategies for emotional management and fostering engagement. Additionally, the findings will allow for the design of interventions tailored to the emotional needs of students, promoting a more inclusive and productive academic environment.

In summary, this project has strong potential for impact both academically and practically. Its dissemination through academic channels and its direct application in educational settings ensure its relevance at both local and international levels.