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Assessing the impact of agile learning process through sprints in higher education: students' perceptions

Evaluación del impacto de un proceso de aprendizaje ágil mediante sprints en la educación superior: percepciones del estudiantado

Cristina Aragonés-Jericó*
https://orcid.org/0000-0002-3524-1184
Universitat de València (Spain)

Pedro Canales-Ronda
https://orcid.org/0000-0002-2219-5967
Universitat de València (Spain)

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*Corresponding author: cristina.aragones@uv.es
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ABSTRACT

This study introduces an agile teaching and learning process in higher education marketing courses and evaluates its effects based on students' perceptions. To assess the impact of the agile

methodology, a quantitative study was conducted over three consecutive academic years with a sample of 848 students. The descriptive analysis examined intrinsic motivation, interactivity, active learning, engagement, satisfaction, and skills development using validated Likert-type scales. Reliability indicators demonstrated high internal consistency. The results reveal consistently positive student evaluations across all constructs, particularly in perceived interactivity, engagement, and overall involvement. At the end of the courses, students most frequently described the classes as interesting, entertaining, and useful. The findings indicate that the agile teaching and learning process strengthens students' active role, enhances perceived learning outcomes, and supports the development of transferable competencies, suggesting that agile methodologies represent an effective framework for meaningful learning in higher education.

Keywords. Intrinsic motivation, interactivity, active learning, engagement, skills development, satisfaction.

RESUMEN

Este estudio introduce un proceso ágil de enseñanza-aprendizaje en asignaturas de marketing en educación superior y evalúa sus efectos a partir de las percepciones del estudiantado. Para analizar el impacto de la metodología ágil, se llevó a cabo un estudio cuantitativo durante tres cursos académicos consecutivos con una muestra de 848 estudiantes. El análisis descriptivo examinó la motivación intrínseca, la interactividad, el aprendizaje activo, el compromiso, la satisfacción y el desarrollo de habilidades mediante escalas tipo Likert validadas. Los indicadores de fiabilidad mostraron una alta consistencia interna. Los resultados revelan evaluaciones consistentemente positivas por parte del alumnado en todos los constructos, especialmente en la interactividad percibida, el compromiso y la implicación general. Al finalizar los cursos, los estudiantes describieron con mayor frecuencia las clases como interesantes, entretenidas y útiles. Los hallazgos indican que el proceso ágil de enseñanza-aprendizaje refuerza el papel activo del estudiantado, mejora los resultados de aprendizaje percibidos y favorece el desarrollo de competencias transferibles, lo que sugiere que las metodologías ágiles constituyen un marco eficaz para promover un aprendizaje significativo en la educación superior.

Palabras clave. *Motivación intrínseca, interactividad, aprendizaje activo, compromiso, desarrollo de habilidades, satisfacción.*

INTRODUCTION

Traditional teaching methods, often centred on passive knowledge transmission, have been limited capacity to foster deep learning, collaboration, and the development of transversal competencies required in organizations. Rapid technological change, increasing organizational complexity, and the growing importance of agile and flexible work environments have further intensified the need for pedagogical approaches that better reflect real-world professional dynamics. As a result, educational institutions are increasingly exploring innovative methodologies that promote active learning, student-centered instruction, and experiential engagement.

Parallelly, higher education faces increasing challenges derived from volatile, uncertain, complex, and ambiguous (VUCA) environments. Sudden disruptions such as the COVID-19 pandemic have forced universities to rapidly redesign their teaching models, highlighting the limitations of traditional, rigid instructional approaches. In this context, active and flexible methodologies have gained prominence as effective strategies to enhance student engagement, adaptability, and deep learning (Whiteman, 1998; Bennett and Lemoine, 2014; Doheny, Nagalim, and Weig, 2012).

Within this framework, agile methodologies, originally developed in organizational and software development contexts, offer valuable principles for educational innovation. Their emphasis on iteration, collaboration, continuous feedback, and adaptability aligns closely with contemporary pedagogical approaches that place students at the center of the learning process.

In addition, despite the growing interest in integrating digital tools and emerging technologies, including artificial intelligence, into agile learning environments, empirical research examining how these elements contribute to students' learning experiences in management and business education remains limited (Das, Panda, & Swain, 2026). This highlights the need for studies that not only explore the adoption of agile methodologies but also assess their perceived impact on motivation, interactivity, engagement, satisfaction, and skills development from the students' perspective.

Considering this, this paper presents an agile teaching-learning process applied to marketing courses in higher education and evaluates its impact from the students' perspective.

The objective of this study is to examine students' perceptions of an agile-based teaching-learning methodology implemented in a business education context, focusing on its influence on motivation, engagement, satisfaction, and perceived development of professional competences. Rather than establishing causal comparisons with traditional teaching methods, the study aims to explore how students evaluate the usefulness and effectiveness of this active methodology within their learning experience.

To reach this objective, this paper has been developed using agile learning principles (Paulk, 2002), project-based learning (Thomas, 2000), and experiential learning theory (Kolb, 1984) to design the subjects and analyze students' learning experiences.

LITERATURE REVIEW

Agile learning is a new methodology that adapts the principles from agile software development (iteration, flexibility, collaboration, and continuous feedback) to educational contexts (Dhir, Kumari, & Gupta, 2024). In higher education, agile learning emphasizes responsiveness to change, student autonomy, and learning-by-doing, making it particularly suitable for volatile, uncertain, complex, and ambiguous (VUCA) environments (Whiteman, 1998). Instead of following rigid, linear instructional designs, agile learning frameworks promote incremental progress through short learning cycles, allowing both students and teachers to adapt goals, processes, and outcomes as learning develops.

From a pedagogical perspective, agile learning aligns with student-centered and constructivist approaches, as learners actively construct knowledge through interaction, reflection, and problem-solving. Continuous feedback loops between students and teachers play a central role, fostering formative assessment and supporting self-regulated learning (Aragonés-Jericó, & Canales-Ronda, 2022). In this sense, agile learning not only enhances academic outcomes but also prepares students for professional contexts characterized by uncertainty and rapid change (Paulk, 2002).

More specifically, the core agile principles of iteration, feedback, and collaboration provide the explanatory mechanism linking the pedagogical design to the six constructs examined in this study (motivation, engagement, satisfaction, perceived skills development, collaborative competence, and communication competence). Iterative cycles foster sustained engagement by breaking down complex tasks into manageable sprints, thus maintaining students' task involvement over time. Continuous feedback enhances both intrinsic motivation and satisfaction by reducing uncertainty and reinforcing perceived progress. Collaboration structures promote social interaction and shared accountability, which are directly associated with the development of transversal skills and professional competences. Therefore, the integration of agile principles is not merely procedural but theoretically connected to students' affective (motivation, satisfaction), behavioral (engagement), and competence-based outcomes (skills development).

At the same time, Project-Based Learning (PBL) constitutes a core pedagogical foundation of the proposed agile teaching-learning process. PBL is characterized by the organization of learning around complex, authentic projects that require sustained student engagement, collaboration, and the application of knowledge to real-world problems (Das, Panda, & Swain, 2026). Extensive research has shown that PBL enhances motivation, deep learning, and the development of transversal skills such as teamwork, communication, and critical thinking (Canales-Ronda & Aragonés-Jericó, 2022; Chen et al. 2024).

The selection of the six constructs derives directly from the expected pedagogical effects of combining agile learning and PBL. Motivation and engagement capture students' active involvement in iterative project cycles. Satisfaction reflects their overall evaluation of the learning experience, which is especially relevant in studies examining innovative methodologies (Diez-Busto et al., 2023). Skills development (operationalized through collaborative and communication competences) captures the professional orientation of the intervention, which is central in management and business education contexts. While constructs such as self-efficacy, perceived learning, or academic performance are also relevant in active learning research, they were not prioritized in this study because the primary objective was to assess students' perceptions of the learning process and its contribution to transferable professional competences rather than cognitive achievement outcomes. This decision is consistent with recent validation studies of student perception scales in management education (Diez-Busto et al., 2023).

Within an agile framework, PBL provides the structural pillar that gives meaning and coherence to iterative learning cycles. The division of the overall project into successive sprints facilitates students to progressively refine their work while receiving continuous feedback (Aragonés-Jericó, & Canales-Ronda, 2022; Schwaber, 2004). This combination allows students to experience learning as an evolving process rather than as a one-off task, reinforcing responsibility, planning skills, and collective accountability.

Finally, the agile teaching-learning process is also grounded in experiential learning theory (Kolb,1984), which conceptualizes learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. By engaging students in real-company projects, the proposed methodology ensures that learning begins with authentic experiences that are meaningful and relevant to students' future professional practice.

Through reflection and feedback embedded in each sprint, students are encouraged to connect theory with practice (de Figueiredo, 2021), transforming experience into knowledge. This experiential dimension is further reinforced through collaborative work, peer interaction, and presentation formats (i.e. Pecha Kucha) that promote synthesis and communication of learning outcomes. Hence, Pecha Kucha contributes to ensuring that presentations are visual oriented, contain coherent and well-defined content, and adopt an appropriate presentation style (Aragonés-Jericó, & Canales-Ronda, 2023). As a result, students do not only acquire conceptual knowledge but develop the ability to apply, adapt, and transfer what they have learned to new contexts.

Recent empirical research has increasingly focused on measuring students' perceptions of active and innovative methodologies in higher education. For example, Diez-Busto et al. (2023) validated a self-administered questionnaire linking experiential learning activities with professional competencies and student satisfaction in accounting education. Similarly, Fernandez-Antolin et al. (2021) analyzed students' perceptions of gamified learning materials in technical education, highlighting the relevance of motivation and engagement as mediating variables in innovative instructional designs. These studies reinforce the importance of assessing affective and competence-related outcomes when evaluating active learning approaches and provide empirical support for the constructs operationalized in this research.

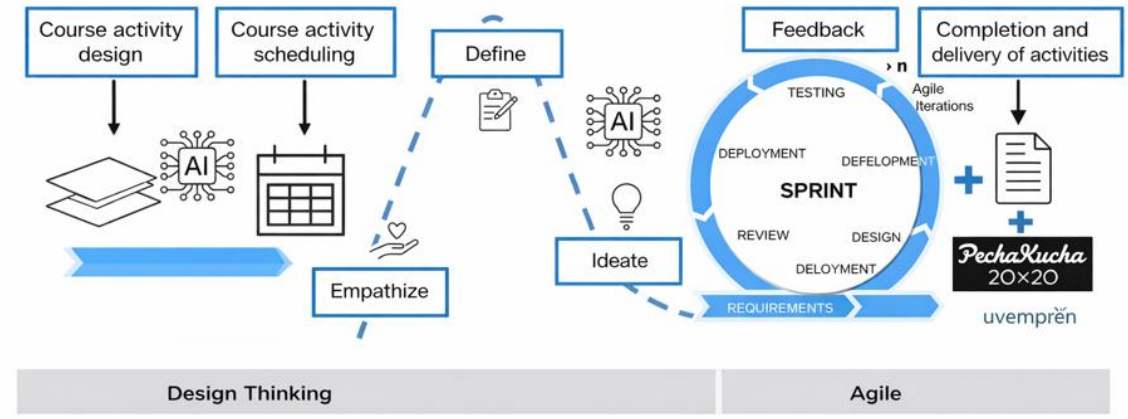
The strength of the proposed teaching-learning model lies in the integration of agile learning principles (Paulk, 2002), project-based learning (Thomas, 2000), and experiential learning theory (Kolb, 1984) into a coherent pedagogical framework. Agile learning provides the overarching

philosophy of flexibility and iteration; PBL structures learning around meaningful, goal-oriented projects; and experiential learning explains how students transform experience into lasting knowledge.

Figure 1 summarizes this conceptual integration: agile principles (iteration, feedback, collaboration) operate as process variables that influence motivational and engagement dynamics; these, in turn, shape students' satisfaction and perceived development of professional competences. Thus, the six constructs are not independent variables but interrelated dimensions of a coherent active learning experience grounded in iterative, project-based, and experiential cycles.

Together, these approaches support a complete learning process in which students assume a protagonist role, teachers act as facilitators, and learning outcomes extend beyond academic performance to include professional and transversal competencies (Vesikivi, Bauters, & Holvikivi, 2021). As Figure 1 shows, the proposed approach organizes coursework into iterative Sprints in which student teams develop real-company projects through phases of conception, design, planning, development, and evaluation. The process integrates collaborative work practices and contemporary tools such as design thinking, artificial intelligence, Scrumban, and Pecha Kucha.

Figure 1. Proposed agile teaching-learning process



Source: Own elaboration form Cubric (2013); Salza, Musmarra, & Ferrucci (2019); Yu, Yu, & Lin, (2024).

METHODOLOGY

The intervention lasted twelve weeks and was structured into six iterative sprints, each with the same grading weight, plus an initial formative launch phase (not graded). Each sprint concluded with a tangible deliverable and a structured feedback process, including written feedback provided through the LMS platform (Moodle) and oral feedback delivered in class. The use of AI tools was permitted under a declared-use policy, requiring students to explicitly indicate how AI contributed to their work.

Table 1. Structure of the agile teaching-learning intervention

Sprint (weeks duration)	Main objective	Student activities	Digital and IA tools used
Sprint 0: Project launch (1 week)	Introduction to agile methodology and project briefing.	Formation of teams (4-5 students). Introduction to real-company challenge. Definition of roles (Scrum Master, Content Lead, Analyst, etc.). Initial problem framing.	LMS platform (e.g., Moodle/Blackboard). Miro (project canvas). ChatGPT or similar AI for initial idea exploration.
Sprint 1: Research and concept development (2 weeks)	Problem analysis and conceptual proposal.	Market/sector analysis. SWOT matrix. Target definition. Value proposition design.	Google Scholar / databases. Canva. AI tools for summarizing literature and generating drafts (supervised use).
Sprint 2: Product / service design and planning (2 weeks)	Development of the product/service prototype and operational planning.	Prototype creation. Content production. Testing and refinement	Canva Miro AI tools for idea refinement and visual mock-up generation (declared use).
Sprint 3: Placement (2 weeks)	Design of distribution strategy and channel selection.	Distribution channels. Distribution strategy	AI tools for market/channel analysis support (declared use).
Sprint 4: Price (2 weeks)	Definition of pricing strategy aligned with value proposition and market positioning.	Price definition Pricing strategy	Trello (Scrumban board). Excel/Sheets. AI for data analysis support
Sprint 5: Promotion (2 weeks)	Development of integrated marketing communication strategy.	Communication mix. Campaign design and planning. Integrated marketing communication	Canva. Social media simulators. Generative AI for visual/text content (declared use policy)
Sprint 6: Presentation and reflection (1 week)	Communication and reflective learning	Pecha Kucha presentation. Peer evaluation. Individual reflection	PowerPoint. Google Slides. AI for slide refinement (declared)

To evaluate the effects of agile methodologies, this study was conducted over three consecutive academic years (between 2021 and 2024) based on different cohorts each year. The final sample consisted of 848 undergraduate students enrolled in marketing-related subjects.

Data was collected using an anonymous structured questionnaire administered at the end of each academic year. Participation was voluntary, and students were informed about the purpose of the study before completing the survey and responses were recorded anonymously to ensure confidentiality. The same instrument was used across all three years to ensure comparability. All items were adapted to the educational context and measured using seven-point Likert scales (1 = strongly disagree; 7 = strongly agree).

The questionnaire assessed six key constructs: intrinsic motivation, interactivity, active learning, engagement, satisfaction, and skills development. Measurement scales were adapted from validated instruments used in previous studies (see Table 2). Reliability analysis showed high internal consistency for all constructs, with Cronbach's alpha values close to 0.90.

Table 2. Constructs analyzed in the student

Construct (scale items)	Cronbach's α	Source
Intrinsic motivation (3 items)	0.872	Vallet-Bellmunt, Riveras-Torres & Vallet-Bellmunt (2017); Canales & Hernández (2019); Konak, Clark & Nassreddine (2014)
Interactivity (4 items)	0.908	Vallet-Bellmunt, Riveras-Torres & Vallet-Bellmunt (2017); Bitrián, Buil & Catalán (2020)
Active learning (4 items)	0.895	Vallet-Bellmunt, Riveras-Torres & Vallet-Bellmunt (2017); Canales & Hernández (2019)
Engagement (3 items)	0.864	Konak, Clark & Nassreddine (2014); Buil, Catalán & Martínez (2019)
Skills development (8 items)	0.905	Buil, Catalán & Martínez (2019); Bitrián, Buil & Catalán (2020)
Satisfaction (5 items)	0.902	Vallet-Bellmunt, Riveras-Torres & Vallet-Bellmunt (2017); Canales & Hernández (2019)

Note: Scale from 1 "Strongly disagree" to 7 "Strongly agree".

For data analysis, descriptive statistics (means and standard deviations) were calculated for all items. Additionally, qualitative insights were obtained through an open-ended question in which students were asked to describe the classes using a single adjective.

RESULTS

Table 3 shows the sample description of the participants. The sample was composed of a balanced gender distribution. Most participants studying an undergraduate degree (89,2%) the majority in business administration. Regarding prior experience related to the active methodologies, 66.7% of the respondents reported having previous experience, whereas 33.3% indicated no prior experience. The average age of the participants was 21.43 years (SD = 3.85).

Table 3. Sample description

Gender	%	Academic background	%	
Men	49	Undergraduate degree	89.2	
Women	50.1	Postgraduate degree	10.8	
Previous experience	**%**		**Mean**	**Standard deviation**
Yes	66.7	Age	21.43	3.853
No	33.3			

Table 4 presents the main descriptive results for the constructs analyzed in the study, including intrinsic motivation, interactivity, active learning, engagement, satisfaction, and skills development. Overall, the results reveal high mean scores across all constructs, indicating positive student perceptions of the agile teaching-learning process.

Regarding **intrinsic motivation**, students reported positive perceptions of the practical sessions, with mean values above 5 on all items. Practical classes were perceived as pleasant, entertaining, and interesting, suggesting that the learning activities fostered an intrinsically motivating learning environment.

High scores were also observed for **interactivity**, which emerged as one of the most strongly valued dimensions. The highest mean within this construct corresponded to the item referring to the exchange of information among classmates (M = 5.85, SD = 1.14). Similarly, students perceived

that the activities facilitated interaction among classmates (M = 5.78, SD = 1.25), encouraged the exchange of opinions (M = 5.78, SD = 1.22), and promoted dialogue (M = 5.79, SD = 1.20).

Concerning **active learning**, results indicate that students perceived themselves as active participants in their learning process.

With respect to **engagement**, students expressed strong involvement in the activities. With similar means (M = 5.6), they reported feeling that their opinions were taken into account, that interactions with classmates made them feel valued, and that personal relationships with classmates were strengthened through the activities.

Similarly, high levels of **satisfaction** were observed. Students considered the work carried out in the practical classes to be valuable, reported being very satisfied with the practical classes overall, and indicated having had a very positive learning experience. Especially, overall engagement with the activity reached the highest mean value within this construct (M = 5.86, SD = 1.22).

Finally, results related to **skills development** show that students perceived notable improvements across a wide range of competencies. Teamwork skills and communication skills were among the most highly rated outcomes. Lower, though still positive, mean values were observed for the development of the ability to work under pressure and conflict management skills).

Table 4. Main descriptive results

Construct	Items	Mean	Standard deviation
Intrinsic motivation	Interesting practical classes	5.25	1.282
	Pleasant practical classes	5.47	1.359
	Entertaining practical classes	5.36	1.335
Interactivity	The activity facilitates interaction among classmates	5.78	1.248
	The activity gives me the opportunity to exchange opinions with my classmates	5.78	1.219
	The activity facilitates dialogue among classmates	5.79	1.197
	The activity allows the exchange of information among classmates	5.85	1.138
	The activity has allowed me to better understand the course concepts	5.43	1.328
Active learning	While doing the activity I felt that I was actively collaborating in my learning	5.50	1.235
	While doing the activity I felt that I contributed to creating my own learning	5.37	1.256
	While doing the activity I felt free to create my own learning	5.24	1.360
	While doing the activity I felt free to participate in my own learning	5.34	1.383
Engagement	In the activity carried out I felt that my opinions were taken into account	5.64	1.319
	In the activity carried out, interactions with my classmates made me feel valued	5.64	1.253
	In the activity carried out, personal relationships with my classmates were strengthened	5.65	1.367
Satisfaction	Overall, the work done in the practical classes is valuable	5.58	1.263
	Overall, I am very satisfied with the practical classes	5.38	1.360
	Overall, I have had a very positive learning experience	5.39	1.360
	Overall, I have been engaged in the activity	5.86	1.220
Skills development	With these classes I have developed my initiative for decision-making	5.25	1.348
	With these classes I have developed my ability to work under pressure	5.13	1.441
	With these classes I have developed my ability to adapt to new situations	5.35	1.289
	With these classes I have developed my teamwork skills	5.68	1.249
	With these classes I have developed my ability to apply theory to practice	5.33	1.411
	With these classes I have developed my communication skills	5.46	1.275
	With these classes I have developed my conflict management skills	5.13	1.442
	With these classes I have developed a better understanding of the course concepts	5.33	1.335

A paired-samples t-test was conducted to compare students' perceived usefulness of the agile methodology and the traditional approach. Results showed that perceived usefulness was significantly higher for the agile methodology (M = 5.88, SD = 1.09) than for the traditional approach

(M = 3.82, SD = 1.48), based on 836 paired observations. The mean difference between conditions was 2.06 points (SD = 1.91), and this difference was statistically significant, t (835) = 31.14, p < .001, The 95% confidence interval for the mean difference ranged from 1.93 to 2.19, indicating a robust and consistent advantage of the agile methodology. The effect size was large (Cohen's d = 1.07), suggesting that the difference is not only statistically significant but also educationally meaningful. These findings provide empirical support for the superior perceived usefulness of the agile methodology compared to traditional instruction.

To examine whether the magnitude of the agile advantage varied across academic years, a one-way ANOVA was conducted using the agile advantage index as the dependent variable and cohort (2021-22, 2022-23, 2023-24) as the factor. The agile advantage index represents the difference between the perceived usefulness of the agile methodology and the traditional approach (Agile - Traditional).

Descriptive statistics showed similar mean values across academics years (Table 5). The one-way ANOVA results showed no significant differences in the agile advantage index across cohorts, F (2, 833) = 0.982 p = 0.375. The effect size was negligible (η^2 = .002), indicating that only 0.2% of the variance in Agile Advantage was explained by academic year, thus the magnitude of the agile methodology effect remained stable over time.

Table 5. Agile advantage index across academic year

Academic year	N	Mean	Std. Deviation
2021-22	169	1.88	1.96
2022-23	418	2.11	1.84
2023-24	249	2.11	1.98
Total	836	2.06	1.19

An independent-samples t-test was conducted to examine potential gender differences in the Agile advantage index. Descriptive statistics showed similar results (Table 6).

Table 6. Agile advantage index across gender

Gender	N	Mean	Std. Deviation
Male	403	2.03	1.894
Female	408	2.13	1.890

The independent samples t-test showed no significant gender differences in the Agile Advantage index, t (809) = -0.753, p = .452. The effect size was insignificant (Cohen's d = -0.053, 95% CI [-0.191, 0.085]), indicating that the positive effect of the agile methodology was consistent across male and female students.

In addition, to examine students' qualitative perceptions of agile methodologies, participants were asked to describe the practical sessions using a single adjective. Based on this question, a textual analysis and thematic categorization of the adjectives provided was conducted. Thus, open-ended responses were subjected to a systematic normalization and semantic coding process. All adjectives were first reviewed for spelling errors and standardized (e.g., harmonizing singular/plural forms and case normalization). Each adjective was treated as an independent unit of meaning; when responses included more than one adjective, each was disaggregated and coded separately. Words originally provided in Spanish were translated into English for reporting purposes while preserving their semantic equivalence. Synonymous terms were consolidated under shared conceptual labels (e.g., "engaging" and "interesting") through inductive semantic clustering to ensure conceptual coherence. Non-adjectival, incomplete, or non-interpretable responses were excluded from analysis. To enhance reliability, two researchers independently reviewed the

normalization and grouping process and resolved discrepancies through discussion until consensus was reached.

Overall, the results presented in the Table 7 reveal that the adjectives used can be largely characterized as positive with regard to these methodologies. Finally, students' overall evaluation is highly positive, as reflected in the ranking of the ten most frequently mentioned adjectives (Table 7), provided in response to the question: "In summary, describe the classes using one adjective."

Table 7. Frequency ranking of adjectives used by students to describe agile-based classes

Rank	Word	Frequency
1	Interesting	141
2	Entertaining	80
3	Useful	79
4	Dynamic	55
5	Good	36
6	Pleasant	27
7	Interactive	20
8	Productive	17
9	Different	16
10	Enjoyable	14

Note: Data from qualitative feedback analysis. Frequencies reflect word counts.

The analysis of the open-ended question reinforces the quantitative findings. The most frequently mentioned adjectives used by students to describe the classes were interesting, entertaining, useful, dynamic, and interactive. These descriptors reflect a positive and meaningful learning experience from the students' perspective.

Thematic categorization of the adjectives (Table 8) shows that the dominant dimension was engagement and active experience (43.66%), with students primarily describing the classes as interesting, dynamic, entertaining, and interactive. It suggests that students primarily experienced the sessions as stimulating and interactive rather than passive. A second major dimension reflected perceived utility and academic value (28.09%), including adjectives such as useful, productive, and practical. Thus, students perceived the sessions not only as engaging but also as academically valuable. While largely positive, some adjectives point to cognitive intensity (6.26%), suggesting that the methodology was demanding. Innovation-related descriptors represented a smaller but meaningful proportion (4.27%), suggesting perceived methodological novelty. Negative evaluations were limited (5.80%) and largely associated with perceived workload or intensity rather than overall dissatisfaction.

Table 8. Thematic distribution of normalized adjectives describing the classes

Thematic category	Representative adjectives (examples)	n	%
Engagement and active experience	interesting, entertaining, dynamic, interactive, enjoyable, participative, active, fun, engaging, motivating	286	43.66%
Perceived utility and academic value	useful, productive, practical, applicable, effective, efficient, functional, meaningful, essential, valuable	184	28.09%
General positive evaluation	good, excellent, great, satisfactory, positive, wonderful, ideal, recommendable	63	9.62%
Cognitive demand and intensity	intense, demanding, complex, challenging, laborious, stressful, excessive	41	6.26%
Negative evaluation	boring, useless, poorly explained, repetitive, insufficient, uncoordinated, disappointing	38	5.80%
Innovation and novelty	different, innovative, original, novel, renewed, unexpected	28	4.27%
Neutral evaluation	normal, correct, basic, traditional, regular, common	15	2.29%
Total		**655**	**100%**

DISCUSSION

The findings confirm that agile methodologies constitute an effective approach to structuring teaching-learning processes in higher education, particularly in applied fields such as marketing. By organizing learning around iterative projects and continuous feedback, students assume an active and central role, which enhances motivation, engagement, and skills acquisition.

Compared to traditional methods, the agile approach fosters greater adaptability and responsiveness to changing contexts, making it especially suitable for uncertain and disruptive environments.

The positive effects observed on **intrinsic motivation** can be theoretically explained through the combined lenses of agile learning and project-based learning. Agile learning emphasizes autonomy, iterative goal setting, and continuous feedback, all of which are key antecedents of intrinsic motivation. By allowing students to organize their work into sprints, make decisions collaboratively, and progressively improve their outputs, the learning process supports students' sense of autonomy and competence.

From a project-based learning perspective, the use of real-company projects enhances task authenticity and perceived relevance, which are central drivers of intrinsic motivation in higher education. The experiential nature of the projects transforms learning activities from externally imposed tasks into meaningful challenges, thereby fostering students' enjoyment, interest, and perceived value of practical classes.

The high levels of **interactivity** reported by students are strongly aligned with both agile learning principles and experiential learning theory. Agile learning frameworks explicitly promote collaboration, frequent communication, and shared responsibility within teams. The sprint-based structure requires continuous peer interaction, discussion, and coordination, making interactivity an inherent feature of the learning process rather than a complementary activity.

From an experiential learning standpoint, social interaction plays a critical role in the reflective observation phase, where learners make sense of their experiences through dialogue and comparison of perspectives. Peer-to-peer exchanges facilitate deeper understanding of theoretical concepts by embedding them in collective meaning-making processes.

The construct of **active learning** is directly embedded in the theoretical foundations of the proposed model. Agile learning conceives students as active agents who plan, execute, and evaluate their own learning activities, while instructors act as facilitators rather than content

transmitters. This role redistribution aligns with constructivist assumptions regarding knowledge construction.

Moreover, experiential learning theory explains how active involvement in real tasks enables students to move beyond passive reception of information toward deeper cognitive processing. By engaging in concrete experiences and subsequent reflection during each sprint, students actively participate in creating their own learning trajectories.

Student **engagement** emerges as a natural outcome of the integration of agile learning and project-based learning. Agile environments foster psychological engagement by giving students voice, responsibility, and visibility in the learning process. Feeling that one's contributions matter within the team enhances emotional and social engagement.

In addition, project-based learning strengthens engagement by promoting sustained involvement over time. Unlike isolated activities, semester-long projects require continuous effort, collaboration, and commitment, which helps explain the high levels of perceived recognition, belonging, and interpersonal connection observed in the results.

Overall **satisfaction** with the learning experience can be theoretically interpreted as the cumulative effect of autonomy, relevance, and perceived learning gains. Agile learning enhances satisfaction by reducing uncertainty about expectations through iterative feedback and clear sprint objectives. Students can monitor their progress and perceive learning as manageable and coherent.

Experiential and project-based learning further contribute to satisfaction by linking theory to practice. When students perceive that what they learn is applicable to real contexts and professional scenarios, their evaluation of the learning experience becomes more positive and meaningful.

The **development of transversal skills** is one of the most theoretically consistent outcomes of agile, project-based, and experiential learning integration. Agile learning environments inherently promote skills such as adaptability, decision-making, time management, and teamwork, as students must continuously respond to evolving project demands.

Project-based learning provides the contextual framework in which these skills are exercised authentically, while experiential learning explains how repeated cycles of action and reflection transform practice into competence. Communication, conflict management, and the application of theory to practice emerge as natural consequences of sustained collaborative work in realistic settings.

CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

This study examined students' perceptions of the implementation of agile methodologies in practical classes within a management and business education context. The results provide consistent evidence of a highly positive student evaluation across all the analyzed dimensions. Students perceived practical classes as interesting, enjoyable, and entertaining. The methodology was perceived as facilitating interaction, dialogue, and information exchange among peers, as well as supporting a better understanding of course concepts. Students expressed high overall satisfaction with the learning experience and strong involvement in course activities. The methodology was also perceived by students as supporting the development of transversal skills such as teamwork, communication, adaptability, decision-making, and the application of theory to practice.

In conclusion, the empirical findings suggest that students perceive agile learning, when operationalized through project-based and experiential learning approaches, as creating a coherent learning environment that supports engagement and skills development. Rather than acting independently, motivation, engagement, satisfaction, and perceived skills development

appear to reinforce one another within an iterative learning structure, positioning students as active participants in their own learning process.

This theoretical-empirical alignment suggests that the perceived value of agile methodologies in higher education lies not only in the techniques applied but also in their capacity to reshape the learning experience in a more student-centered manner.

The findings of this study suggest several relevant **implications** for management and business education. First, the implementation of agile methodologies appears to be associated with a more active and practice-oriented learning process, which students perceive as supporting a deeper understanding of key concepts. By engaging students in iterative tasks, real-world problem-solving, and continuous reflection, learning may move beyond passive knowledge acquisition toward meaningful competence development.

Second, agile-based learning environments appear to provide students with opportunities to practice essential soft skills, including communication, teamwork, time management, and problem-solving. These transversal competencies are increasingly demanded in contemporary labour markets and are particularly relevant in management and business contexts. The collaborative and iterative nature of agile methodologies may create conditions that allow students to experience and practice these skills during the learning process.

Third, the use of real projects and frequent partial deliverables was perceived by students as increasing their motivation and engagement. Active participation and visible progress across iterations may encourage students to take greater ownership of their learning, strengthening their involvement in course activities. In addition, the flexibility inherent in agile approaches may help students develop adaptability and responsiveness to change, competencies that are critical in dynamic professional environments.

From a pedagogical perspective, the integration of digital tools and artificial intelligence within agile projects may support students in becoming familiar with emerging technologies used in professional settings. Rather than replacing cognitive effort, these tools act as facilitators that assist learning, decision-making, and productivity. Moreover, continuous feedback from both instructors and peers appears to support formative learning processes, allowing students to identify areas for improvement and refine their work.

Finally, agile methodologies may help reduce the perceived gap between academic training and professional practice. Exposure to iterative workflows, value-oriented project management, and team-based collaboration familiarizes students with real workplace dynamics, facilitating their transition to the labour market. At the same time, these approaches foster a culture of continuous improvement and self-assessment, encouraging students to critically reflect on their performance and seek ongoing optimization. Additionally, the potential for interdisciplinary collaboration within agile projects can enrich learning experiences and promote broader, more diverse perspectives in management and business education.

Despite the contributions of this study, several **limitations** open possibilities for **future research**. First, the findings are based on a specific educational context and rely on students' self-reported perceptions collected at the end of the course. Consequently, the results reflect students' evaluations of their learning experience rather than objective measures of learning outcomes. Future studies could replicate this research across different universities or disciplines, and educational levels to assess the robustness and transferability of the findings.

Second, the study follows a non-experimental design and does not include a control group or quasi-experimental comparison and given the descriptive nature of the current analysis. Instead, the findings should be understood as descriptive evidence of students' perceptions regarding the implementation of agile practices in the classroom. Future studies could employ longitudinal or experimental designs to examine causal relationships between the use of agile methodologies and learning outcomes over time.

Third, although students evaluated both agile and traditional usefulness within the survey instrument, these responses reflect perceived differences rather than experimentally tested comparative effectiveness.

In addition, future research could explore potential moderating variables, such as gender, prior experience, or digital competencies, to better understand for whom and under what conditions agile methodologies are most effective. This line of inquiry would contribute to more inclusive and personalized pedagogical designs.

Finally, further studies could deepen the analysis of the role of digital tools and artificial intelligence within agile learning environments. Examining how different levels of technological integration influence collaboration, feedback processes, and student autonomy would provide valuable insights for the design of innovative and sustainable teaching practices in management and business education.

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