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ENHANCING OBJECTIVE AND HOLISTIC ASSESSMENT IN DUAL HIGHER EDUCATION: A MULTIDIMENSIONAL RUBRIC APPROACH

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Abstract
Assessing student development in dual higher education faces challenges due to inconsistent evaluation practices and overly subjective appraisals. This study proposes a multidimensional rubric designed to standardise assessments while integrating diverse perspectives (student self-evaluation, co-assessment between academic and company tutors, and structured feedback) to ensure holistic and evidence-based evaluations. Initial validation shows improved grading consistency, stronger tutor collaboration, and enhanced student accountability.

1 Introduction

Dual Higher Education (DHE) is characterised by the combination of two places of learning: the Higher Education Institution (HEI) where the emphasis is on theory, and the workplace where the emphasis is on practice (Turk, 2023). Specific DHE models vary according to countries and their particular situations (Dragan & Hochrinner, 2024; Dupouy & Bakni, 2024a; Dupouy & Bakni, 2024b; Halista-Telus, 2023; Laukkanen et al., 2024; Merlo et al., 2023; Sági & Fülöp, 2024; Turk, 2023; Viklund & Elgundi, 2024a; Viklund & Elgundi, 2024b) but all face similar challenges, including collaboration and partnerships, balance between theory and practice, and evaluation of acquired skills (Montalto & Agius, 2024; Varga & Sági, 2024; Varga, 2024).

Objective assessment of student development in DHE poses an ongoing challenge, hampered by inconsistent assessment practices and a tendency towards overly positive grades in workplace-based training (Jackson, 2018). While traditional rubrics provide structure, they are often bureaucratic tools that prioritise compliance instead of truly helping students learn practical skills. Their complexity or lack of detailed criteria often leads to subjective interpretations (Panadero & Jonsson, 2020). Furthermore, the limited feedback mechanisms within existing frameworks fail to promote meaningful student development and alignment between academic and industry expectations.

This study responds to four systemic issues identified in current DHE assessment processes:

- Lack of uniformity and objectivity: differences in grading criteria between academic and industry panels, exacerbated by generic descriptions in assessment tools (Hand & Clewes, 2000).
- Grade inflation: a documented tendency towards overly positive assessments in the workplace, partly because the performance metrics lack necessary detail (Jackson, 2018).

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- Operational complexity: elaborate rubrics that prioritise compliance over pedagogical utility, creating administrative loads for tutors (Cockett & Jackson 2018).
- Feedback gaps: infrequent or unstructured feedback loops that limit opportunities for student reflection and refinement of skills (Carless, 2018).

To address these issues, the Engineering Faculty of Mondragon Unibertsitatea (MU) has reviewed the monitoring process of apprenticeships, and has developed a streamlined, multi-stakeholder rubric based on measurable observations and explicit competency benchmarks. The framework integrates three novel components:

- Student self-assessment, which promotes metacognitive awareness of skill development.
- Co-assessment between academic and company tutors, which ensures balanced assessment of theoretical and applied competencies.
- Structured feedback cycles embedded at critical milestones, which promotes continuous improvement.

The developed framework includes a consistent and progressive evaluation system across all academic levels. This ensures assessments are adapted to the knowledge and skills acquired at each stage. Crucially, this proposal acknowledges the essential role of tutor preparedness, a factor often overlooked in DHE literature (Fialho et al. 2023).

2 Methodology

The development of a new rubric to address the observed challenges in dual assessment requires a critical analysis of existing evaluation frameworks. This begins with a rigorous examination of current assessment protocols, including their procedures, criteria, and stakeholder engagement mechanisms. To define a new evaluation methodology and tools, evidence-based modifications and the introduction of novel strategies are proposed.

2.1 Dual programme of the Engineering Faculty of MU

The dual programme of the Engineering Faculty of MU is implemented in 10 bachelor's degrees and 10 master's degrees, and engages 800 students annually across more than 200 companies. The faculty promotes long term apprenticeships, divided into two stages in both the bachelor's and master's degrees, as shown in Figure 1.

The first stage is optional, and takes place in the 2nd and 3rd year of the bachelor's degree, and in the 1st year of the master's degree. In this stage students are studying and working part-time. On the other hand, the Degree Final Projects (second stage) are compulsory and are carried out full time.

In both stages, students receive financial remuneration based on the time dedicated to the apprenticeship, which is higher in the master's degree because of the greater level of expertise. Moreover, in the master's degrees remuneration is determined by the legally established minimum wage.

The grade of the dual activities significantly impacts the students' average mark, because of the number of ECTS assigned to this program in the curricula. MU is committed to increasing this credit recognition, which reflects the increasing prioritisation of dual apprenticeships as a critical component of higher education. Figure 1 illustrates the proposed breakdown of credits in the Engineering Faculty. The number of credits assigned to the dual activities is 6 and 9 ECTS in the part-time optional stage in the bachelor's degree, and 12 ECTS in the master's degree. In contrast, up to 60 and 30 ECTS are assigned to full-time degree final projects.

The percentage of students in the dual programme in each year ranges from 30 % to 50 % in the optional stage in the bachelor's degree, and up to 75 % in the master's degree. This percentage

rises to 100 % during the compulsory stage, reflecting universal participation as a fundamental requirement.

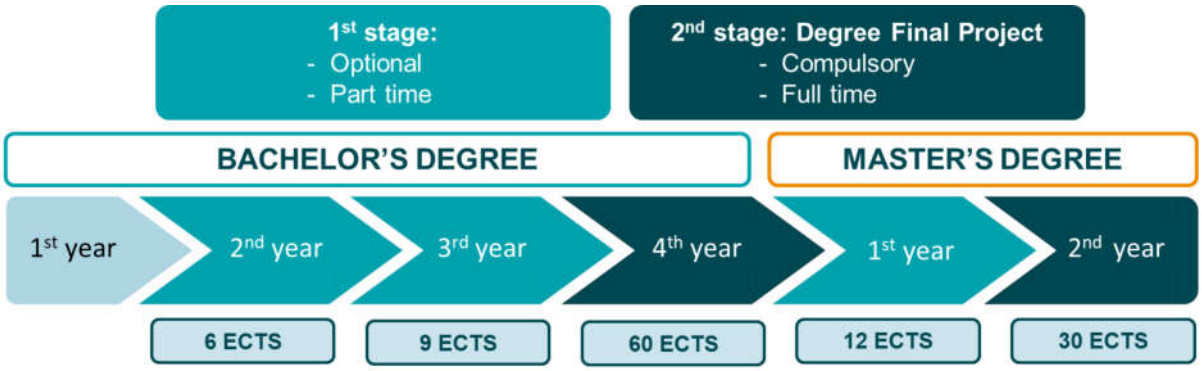

Figure 1. Dual program at the Engineering Faculty of Mondragon Unibertsitatea

2.2 Traditional dual monitoring and assessment in the Engineering Faculty of MU

Academic monitoring of the student throughout the apprenticeship is essential to ensure compliance with the training programme, and to collect evidence of integration into the company environment and their performance. The Engineering Faculty has three established milestones to carry out such monitoring:

1. Workplace integration. This takes place in the company during the first month after the apprenticeship starts. The student and tutors are introduced, and the training program is reviewed to check that the scope of the project is well understood. The academic tutor ensures that the student has received the necessary training in occupational health and safety. In addition, the work plan is reviewed to ensure that the work to be done is well aligned with the technical skills developed in the degree programme.
2. Mid-apprenticeship review. The student prepares a written report and an oral presentation of their achievements to date. The progress of the project is checked to forecast whether the planned objectives will be met within the established timeframe. Academic and company tutors carry out a qualitative assessment and then give feedback to the student, which offers insights for improvement during the remaining project period.
3. Final assessment. A panel composed of professionals from academia and companies, commonly including academic and company tutors, evaluates the final report and oral presentation of the project. This panel is responsible for determining the final grade of the dual apprenticeship.

All dual activities (at both optional and compulsory stages), irrespective of their dedication and duration, are assessed according to five dimensions. It is important to highlight that in addition to the technical skills of the apprentice, which covers the first dimension, soft skills are also integrated into the assessment. The breakdown of all dimensions is as follows:

1. Technical capacity.
2. Written communication.
3. Oral communication.
4. Work ethic & attitude.
5. Project impact analysis, from the economic, social, and environmental point of view.

In the rubrics used in the faculty, dimensions are evaluated by grading a number of given items, on a scale from 1 to 10, where 10 represents the maximum grade (Figure 2). However, no supporting evidence is indicated to ensure that the rating is objective and consistent. Tutors are asked to record written evidence to justify each mark, but doing so is not very common practice.

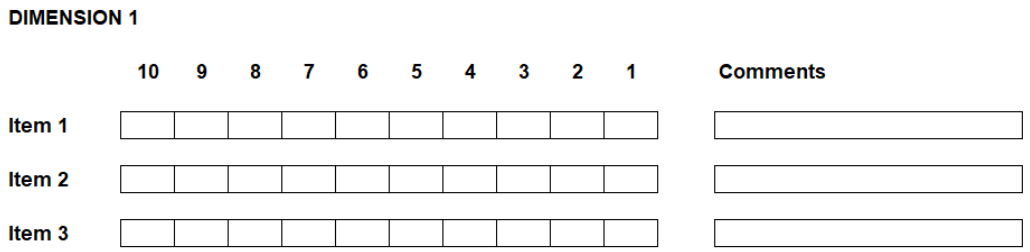

Figure 2. Traditional rubric at the Engineering Faculty of Mondragon Unibertsitatea

The final grade of the dual activity is calculated as the weighted average of the grade assigned to each dimension. This weight is 40 % for the technical skills, and 15 % for each of the other four dimensions. As stated in section 2.1, this grade carries significant weight in the overall assessment, demanding a fair, homogeneous, and evidence-based assessment for all students.

2.3 Assessment methodology and rubric proposal

A thorough and critical analysis was carried out of both the current student monitoring process, and the methodology and tools used for the assessment. The main key lines of work defined from this analysis are as follows:

1. Maintain the three milestones defined in the student monitoring process, and guarantee effective communication between the company tutor and the academic tutor. These milestones should prioritise face-to-face meetings or video-calls.
2. Maintain the five dimensions used in the assessment. The academic tutor must guarantee that they are used not only as a final evaluation, but also to give feedback, especially in the mid-apprenticeship review.
3. Review the items used to evaluate each dimension, and identify facts to uniquely assign a grade for each item. This helps to ensure that the mark is based on objective and measurable criteria, rather than individual subjective viewpoints.
4. Identify items that allow tracking a student's progress through successive stages of education, from bachelor's to master's degree.

The most significant change in the proposed rubrics lies in the revision of the items that correspond to each dimension, and the way they are assessed. Table 1 shows the items to evaluate each dimension.

Table 1. Items for grading assessment dimensions

Technical capacity	*Written communication*	*Oral communication*	*Work ethic & attitude*	*Project impact analysis*
Technical competence	Structure & content	Visual aids	Work management	Occupational health & safety analysis
Learning capacity	Format	Oral delivery	Creativity, initiative & motivation	Sustainable Development Goals (SDGs) analysis
	Style & communication	Defence of the project	Responsibility & personal commitment	Economic impact analysis
			Adaptability	

A list of facts was defined to describe what is expected of an apprentice in each item. Refinements were incorporated into the definitions of these facts, to grade students in the ranges 10-9, 8-7, 6-5, or below 5. Therefore, tutors are asked to locate the student at a range for each fact, depending on their performance, which ensures evidence-based grading. The grade for each item is determined by the average of the marks allocated for each fact.

Table 2 and Table 3 present examples of how facts are described to locate students in the grading ranges for the items "Style and communication" ("Written communication" dimension), and "Creativity, initiative, and motivation" ("Work ethic & attitude" dimension).

Table 2. Facts for assessing Style and communication item, in Written communication dimension

	10-9	*8-7*	*6-5*	*<5*
Fact 1	Excellent technical and formal language	Adequate technical and formal language	Appropriate language	Inappropriate language
Fact 2	Clear and precise communication	Clear communication	Somewhat ambiguous communication	Ambiguous and imprecise communication
Fact 3	Ideas well-organised and presented logically	Ideas organised and presented logically	Organisation and presentation of ideas could be improved	Inadequate organisation of ideas
Fact 4	No spelling or punctuation errors	No spelling or punctuation errors	Some spelling or punctuation errors	Spelling or punctuation errors

Table 3. Facts for assessing Creativity, initiative, and motivation item, in Work ethic & attitude dimension

	10-9	*8-7*	*6-5*	*<5*
Fact 1	Excellent at proposing ideas	Original in some aspects	Lacks original ideas	Does not propose own solutions
Fact 2	Works with enthusiasm	Works with enthusiasm	Poor enthusiasm	Does not show enthusiasm
Fact 3	Highly motivated	Motivated	Partially motivated	Not motivated

The rubric also considers a progressive assessment across all academic levels, from undergraduate apprenticeships to bachelor's and master's degree final projects. This means that extra items are assessed in the master's degrees, such as:

- Undertaking complex or multidisciplinary projects ("Technical capacity" dimension).
- Acquiring knowledge beyond their specialisation ("Technical capacity" dimension).
- Ensuring holistic vision ("Oral communication" dimension).
- Being aware of the impact of their work ("Work ethic & attitude" dimension).

As face-to-face evaluation of all the defined items could be lengthy in the final assessment, tutors prepare pre-analysed suggestions for the grading of each dimension. The company tutor is asked to take the responsibility of grading "Technical capacity" and "Work ethic & attitude" dimensions, given their close oversight of the student's development. On the other hand, "Written communication" and "Project impact analysis", owing to their academic focus, are most appropriately assessed by the academic tutor, who can ensure adherence to established benchmarks. Lastly, the "Oral communication" dimension is jointly assessed by both tutors in the evaluation session, after the student's presentation takes place.

In addition, the student is required to self-assess their technical capacity. This evaluation is conducted on the basis of the planning established for the project, and takes into account the complexity of the tasks, the quality of the work performed, and the level of autonomy shown, which

enhances reflection and awareness of the student's own learning process. Self-assessment fulfils the following functions in the evaluation process: providing qualitative evidence of learning depth, enabling comparative analysis between student and tutors' perspectives, and enhancing feedback quality by revealing potential expectation gaps. While not directly influencing the quantitative assessment, this approach engages students as active participants in their evaluation and progress, and offers tutors valuable insights into workplace learning experiences.

With all this information, tutors collaboratively ratify the final grade for each dimension, integrating student self-assessment and tutor co-evaluation, to reach the overall final mark.

3 Results & Discussion

This methodology and assessment framework are currently undergoing validation by academic staff and industry-based company tutors. Preliminary feedback highlights significant improvements in both confidence and collaboration among stakeholders. Key outcomes emerging from the validation phase include:

1. Enhanced confidence in assessment consistency. Both academic and company tutors report a significant increase in confidence in the accuracy of the marking. This reflects the robustness of the rubrics for dual activities and the clarity of the co-assessment process.
2. Strengthened engagement of company tutors. The new framework reinforces the involvement of industry professionals in student training. Company tutors play a more active, structured role in mentoring and evaluation, integrating theoretical knowledge with workplace competencies.
3. Fostered academia-industry collaboration. The new methodology boosts stronger partnerships between academic institutions and the World of Work (WoW). Regular dialogue between tutors (grounded in shared rubrics and co-assessment practices) creates a coherent, reciprocal approach to student development. Co-assessment eliminates ambiguity because of sharing a common language between academia and industry partners, which benefits both students and curricula design.
4. Self-assessment as a tool for reflective learning. Student self-evaluation, integrated into the process, becomes instrumental in fostering metacognitive skills. Learners demonstrate greater awareness of their progress in dual competencies, aligning self-perception and tutor feedback.

Nevertheless, the specialised training of academic and business tutors was identified as a key element to ensure the effectiveness of the framework. Key components of the training include:

- Contextualisation of the pedagogical importance of dual training.
- Definition of the roles and responsibilities of each tutor.
- Key milestones in the process.
- Practical guidance and tools for giving constructive feedback.
- Guidelines and tools to ensure objective, consistent and evidence-based evaluation.

Effective tutor training, both in academic and workplace settings, substantially strengthens dual programmes by bridging academic and workplace culture and assessment practices. However, significant challenges persist in implementation. Company tutors frequently face time constraints as they combine mentoring responsibilities with their regular professional workload, inevitably limiting training availability. Furthermore, the varied educational backgrounds of company tutors demand highly adaptable training approaches to ensure effective engagement. To address these challenges, initiatives like the EU4Dual project (European Commission, 2023) are developing structured training modules that combine pedagogical foundations with practical tools and mentoring strategies, offering flexible formats as blended learning and micro-credentials.

Once the design phase of the rubric is completed, pilot implementation tests are planned to evaluate its added value in enhancing assessment quality, and to identify optimisation needs through real-case applications. A recognised consideration is whether the new rubric may impose additional workload demands on tutors. This aspect will be objectively evaluated during pilot testing through quantitative time-tracking measures and qualitative feedback. The goal of the proposed rubric is to save tutors time, not create extra work, by making assessments clearer and less tedious.

The preliminary findings confirm the potential of the methodology to reshape dual-activity assessment in higher education. By combining academic and industry perspectives, the framework not only increases the rigour of assessment, but also enriches the student experience and prepares learners to thrive in an evolving professional landscape.

4 Conclusions

The assessment of dual activities in higher education demands an approach that balances academic rigour with workplace relevance. This work proposes a methodology designed to address these complexities through three pillars:

1. A multi-dimensional assessment framework. By standardising criteria across five core dimensions (technical capacity, written and oral communication, work ethic and attitude, and project impact analysis) the proposed rubric ensures a comprehensive evaluation of student skills. This structure not only mitigates subjectivity but also aligns academic and industry expectations, guaranteeing grading consistency across assessment panels.
2. Evidence-based grading through identifiable benchmarks. The systematic identification of observable, evidence-supported facts for each assessment item has proven critical to objectivity. By anchoring grades to recorded data the methodology ensures homogeneity of assessments while providing transparent evidence for accountability.
3. Holistic and collaborative assessment. Integrating co-assessment (between academic and company tutors) with student self-evaluation creates a 360-degree view of apprentice progression. This triangulation of perspectives enriches the quality of feedback, enabling students to merge self-perception with external observations. Furthermore, continuous improvement loops are embedded into the process, ensuring iterative refinement of both student skills and assessment practices.

The success of the methodology relies on providing tutors with the resources to effectively engage with the combined academic and professional dimensions of the framework. Targeted training for both academic and industry tutors must address the pedagogical and professional significance of dual higher education, roles and responsibility of tutors, process milestones, assessment tools, and strategies and guidelines for feedback, among others.

Preliminary validation underscores the potential of the methodology to bridge the academia-industry gap, transforming dual-activity assessment a tool for student and institutional growth.

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