

Competition as Playful Pedagogy: Student-led Evaluation and Learning in the ESEIC International Design Challenge

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Abstract: Competitions are widely used in higher education and industry to stimulate innovation and engagement, yet they are rarely examined through the lens of games-based learning. This paper conceptualises competitive design challenges as structured playful environments, where rules, roles and feedback mechanisms shape participation and learning. The study draws on the Enhancing Science Education through International Collaboration (ESEIC) project, a multi-institutional initiative involving universities in the UK, Indonesia and Kazakhstan. Students are invited to design a prototype website to support international collaboration and community engagement, producing both a front-end prototype and an accompanying design report. A distinctive feature of the competition is the use of international student panels as first-stage reviewers, positioning learners as both participants and evaluators. Adopting a design-based research approach, the paper examines how competition structures and student-led evaluation function as mechanisms of playful pedagogy. Analysis draws on competition submissions, participant responses, rubric-based evaluation and the collective judging process, providing early evidence of engagement with comparison, criteria and evaluative judgement. The paper argues that competitions can be understood as pedagogical systems in which evaluation operates as a core mechanic. By integrating student-led evaluation, the design aligns participation, critique and application, contributing to discussions of games-based learning, authentic assessment and inclusive assessment in international and interdisciplinary contexts.

Keywords: Playful pedagogy, Student-led evaluation, Interdisciplinary learning, Games-based learning, Design-based research, Authentic assessment

1. Introduction

Competitions are widely used across higher education to stimulate engagement, innovation and problem-solving. They are often assumed to motivate participation through challenge and reward (Deterding et al., 2011; Hamari et al., 2014), however, they are more commonly treated as discrete activities rather than examined as structured learning environments in their own right (Arnab et al., 2015). While games-based learning research has explored simulations, role-play and digital environments, less attention has been paid to how competition structures themselves function pedagogically.

At the same time, higher education continues to grapple with questions of assessment design, particularly in relation to authenticity, inclusion, increasing staff–student ratios and resilience in the context of generative AI. Structural pressures associated with large cohorts and workload efficiency have contributed to the continued reliance on traditional assessment formats such as examinations (Gibbs, 2010). More recently, concerns regarding the misuse of generative AI in assessment have further reinforced this tendency, with institutions increasingly revisiting examinations as a more controlled and secure form of assessment (JISC, 2023, 2024), particularly in response to challenges around academic integrity and reliability.

However, from the perspective of capability and skills development, examinations offer a more limited contribution. Traditional examination formats tend to prioritise the recall and application of knowledge under time constraints, and are less well suited to assessing higher-order capabilities such as criticality, synthesis and creation (Biggs & Tang, 2011; Boud, 2010). This creates a potential misalignment between intended learning outcomes and assessment practices. In the language of constructive alignment, where programmes claim to develop higher-order competencies, reliance on examinations risks assessing only a subset of those outcomes (Biggs and Tang, 2011).

In contrast, authentic assessment emphasises engagement with real-world tasks and the application of judgement in context (Gulikers et al., 2004; Wiggins, 1998). Inclusive assessment further seeks to broaden

participation and recognise diverse perspectives in how quality is defined and evaluated (Boud & Falchikov, 2006; CAST, 2024; Tai et al., 2018). Competitions appear to offer a space in which these concerns intersect, combining real-world tasks with opportunities for multiple forms of participation. However, their underlying pedagogical mechanisms remain under-theorised.

This paper examines a competition developed within the Enhancing Science Education through International Collaboration (ESEIC) project. Students design a prototype website to support international collaboration, producing a front-end and accompanying design report. A central feature is the use of international student panels as the first stage of evaluation, positioning students as co-constructors of judgement rather than passive recipients of assessment.

The paper asks how competition structures, and in particular student-led evaluation, function as mechanisms of playful pedagogy. It argues that competition can be understood as a structured system in which participation, evaluation and feedback are configured to shape engagement. In doing so, it contributes to games-based learning by demonstrating how evaluation can be designed as a core component of the learning environment rather than an external measure.

2. Conceptual Framing

2.1 Playful Learning as Structured Activity

Playful learning is characterised by multiple factors including curiosity, exploration, iteration, fun and intrinsic motivation (Arnab et al., 2021), but it is not devoid of structure. Rather, it is shaped by forms of organisation that enable learners to act with autonomy while remaining oriented towards shared activity. Play operates through cycles of action and feedback, allowing learners to test ideas, iterate and refine their understanding over time (Arnab et al., 2021; Arnab, Wimpenny, et al., 2025; Kolb, 1984).

A key feature of playful learning is its alignment with intrinsic motivational drivers. Drawing on Deci and Ryan (1985, 2012) playful activity supports autonomy, competence and relatedness, enabling learners to engage with tasks in ways that are self-directed yet socially situated. Arnab et al. (Arnab, Masters, et al., 2025; Arnab, Wimpenny, et al., 2025) argue that playful learning environments are shaped by values such as agency, curiosity and experimentation, often within contexts that invite learners to take ownership of both process and outcome. This emphasis on learner agency also aligns with constructivist accounts of learning, where knowledge is actively constructed through engagement rather than transmitted (Piaget, 1970; Vygotsky, 1978).

Within games-based learning, these dynamics are operationalised through identifiable structures. Rules define the boundaries of action, roles position participants within the system, and feedback mechanisms provide information on progress. The notion of the ‘magic circle’ captures this bounded yet interpretive space in which participants engage in rule-based activity (Huizinga, 1938; Salen & Zimmerman, 2004). More broadly, game design scholarship has emphasised the role of structured systems in shaping player behaviour and experience (Gee, 2003). Playful learning should therefore be understood not as unstructured or informal activity, but as a designed environment in which constraints and freedoms are balanced to support meaningful engagement.

This structured view of play has been further developed through mapping approaches that align learning and game mechanics. Work within the ACES project demonstrates how aspects such as autonomy, curiosity, iteration, and social interaction can be intentionally designed and linked to the development of competencies (Arnab et al., 2021). These approaches foreground the relationship between the configuration of activity and the forms of engagement that emerge, suggesting that playful learning can be articulated at a granular level in terms of how specific design elements shape participation (Arnab et al., 2015).

Taken together, these perspectives position playful learning as a design problem rather than a purely experiential one. The question is not simply how to make learning engaging, but how to structure activity in ways that require judgement and produce particular forms of participation and interaction. This shift is particularly important in the context of assessment, where the design of tasks and feedback mechanisms determines not only what learners do, but how they understand and evaluate quality, and how judgement itself is developed through participation (Boud & Molloy, 2013; Carless, 2015).

2.2 Competition as a Playful System

Competitions can be understood as a particular configuration of playful structures. They establish rules and define goals and position participants in relation to shared criteria and outcomes. While often framed as motivational tools, their pedagogical potential lies in how they organise participation and engagement

(Deterding et al., 2011; Kapp, 2012). Participants must interpret criteria and rules, making design decisions, often under conditions of uncertainty where multiple approaches are possible. The requirement to produce an artefact introduces constraint, focusing attention on the relationship between intention and execution. Evaluation introduces a feedback loop, positioning learners in relation to standards that must be interpreted rather than followed mechanically (Nicol & MacFarlane-Dick, 2006; Sadler, 1989).

From a design perspective, this aligns with work on learning mechanics and game mechanics, which emphasises the mapping between structure and engagement (Arnab et al., 2021). Competitions can therefore be understood as systems in which rules, roles, and evaluation criteria function as mechanics shaping how learners engage with tasks and with each other (Arnab et al., 2015). Competitions also introduce multiple roles. Learners may act as designers, collaborators, and evaluators, moving between positions that require different forms of judgement. This aligns with work on evaluative judgement, which highlights the importance of learners developing the capacity to assess quality in their own and others' work (Boud & Falchikov, 2006; Tai et al., 2018).

When designed in this way, competitions resemble game systems in which participation is structured through interaction and progression rather than linear completion. Evaluation is not positioned as an external process applied after participation, but as an integral component of the system through which learning is enacted. This reflects broader shifts in assessment theory towards integrating feedback, participation and judgement within the learning process (Carless, 2015; Boud and Molloy, 2013).

2.3 The Problem of Evaluating Playful and Value-based Learning

Previous work on the ACES initiative (Mahon, Arnab, et al., 2025) highlighted the challenges of evaluating learning designs that prioritise values such as playfulness, creativity and contextual relevance (Arnab, Masters, et al., 2025). These forms of learning resist standardisation, as outcomes are not easily reducible to predefined metrics. Rather than producing uniform outputs, they generate diverse artefacts shaped by local context, participant interpretation, and the dynamics of co-creation. This challenge is reinforced by the underlying principles of the ACES model, which emphasise community, playfulness, frugality and co-creation as core design values (Arnab et al., 2023). As a result, what counts as 'quality' cannot be fully specified in advance, but must be interpreted in relation to the aims, constraints and stakeholders involved in each instance.

This creates a tension within assessment practices. Structured criteria are required for transparency and consistency, yet overly rigid criteria risk constraining the exploratory and emergent qualities that these designs seek to promote. The ACES Challenge demonstrated variation in expert evaluations, suggesting that even experienced judges interpret values such as playfulness and creativity differently (Arnab, Masters, et al., 2025). Such variation is not simply noise within the system, but reflects the inherently interpretive nature of evaluation in these contexts.

Rather than treating this variation as a problem to be eliminated, it can be understood as a necessary feature of value-based learning environments. Evaluation in such contexts involves judgement, comparison and negotiation, rather than the application of fixed standards. This raises a further question: if evaluation is inherently interpretive, should it be positioned as an external process applied after learning has taken place, or as an integral component of the learning environment itself? This question is particularly significant in the context of assessment design. If learners are expected to engage with complex, open-ended tasks that require interpretation and judgement, then the processes through which quality is defined and evaluated may need to be made visible and participatory. This opens up the possibility of designing learning environments in which evaluation is not simply a measure of learning, but a mechanism through which learning is enacted.

2.4 Student-led Evaluation as a Core Pedagogical Mechanism

This paper examines student-led evaluation as an integral component of competition design. The inclusion of student panels introduces an additional layer of participation in which learners engage directly with the criteria used to assess submissions. Rather than positioning evaluation as an external process conducted by experts, the design brings learners into direct contact with the standards and judgements that define quality.

Students act as both participants and evaluators, although these roles are distributed across different individuals. While some produce submissions, others evaluate the work of their peers, focusing on usability, communication, style, feasibility and audience. This distinction is important: students do not assess their own work, but engage with the work of others. This requires them to articulate and justify their judgements, making visible the reasoning that underpins evaluation. In doing so, they engage in evaluative judgement, defined as

the capability to make decisions about the quality of work (Tai et al., 2018). Rather than applying criteria mechanically, students must interpret, prioritise and negotiate these criteria in relation to diverse submissions.

From a games-based learning perspective, student-led evaluation functions as a core mechanic. It introduces feedback loops, expands participant roles and deepens engagement with criteria. Rather than receiving feedback as an external judgement, learners participate in its production. This aligns with playful learning models in which iteration, experimentation and reflection are central, and where feedback emerges through cycles of action and response rather than being applied after the fact. The approach extends existing mappings between learning and game mechanics by repositioning evaluation as a central element of the system (Arnab et al., 2021). Participation shifts from task completion towards engagement with standards, judgement and shared understanding. Learners are required not only to produce work, but to locate that work within a broader field of comparison, making decisions about quality in relation to others.

In this sense, student-led evaluation operates as a mechanism through which learning is enacted rather than measured. Integrating evaluation into participation embeds judgement within the learning process (Arnab et al., 2021). This is particularly significant in interdisciplinary and international contexts, where standards must be negotiated across perspectives. Rather than eliminating variation, the design foregrounds it as a site of learning, positioning evaluation as a process of interpretation, comparison and shared meaning-making.

3. Context: The ESEIC Competition

The study is situated within the ESEIC project, a multi-institutional collaboration funded by the British Council involving universities in the UK, Indonesia and Kazakhstan (Mahon et al., 2026). The project focuses on international, interdisciplinary and problem-based learning aligned with real-world challenges and the UN Sustainable Development Goals.

The competition invited students to design a prototype website to support international collaboration and community engagement. Submissions consisted of a front-end prototype and a report outlining design decisions, usability principles and implementation considerations, including hosting, security and maintenance. The task was intentionally open-ended, requiring participants to balance creativity and feasibility within defined requirements. Six entries were submitted across participating institutions, varying in approach and interpretation of the brief.

Participation in evaluation was voluntary. Students from participating institutions formed international judging panels representing intended users of the platform, with each institution contributing three students. Participants received a small voucher in recognition of their contribution. A core design feature is structured student-led evaluation. Panels assessed submissions using a shared six-domain rubric aligned with the competition brief.

This design positions evaluation as a distributed and participatory process. Students engage with purpose, user experience and feasibility, making judgements through interpretation, comparison and justification rather than applying fixed standards. Variation across submissions, combined with the multi-dimensional rubric, creates conditions in which judgement cannot be reduced to a single answer but must be negotiated across perspectives.

4. Methodology

This study adopts a design-based research (DBR) approach, focusing on the design and early-stage implementation of the competition. DBR is suited to examining interventions in real-world contexts, where the aim is to understand how design functions in practice and to generate insights into the relationship between design, participation, and learning (Baumgartner et al., 2003; Wang & Hannafin, 2005).

A central design feature is the structured process of student-led evaluation. Nine student judges participated across three institutional contexts (University of Surrey, Universitas Negeri Malang and Universitas Tidar), with three representing each site. Around 200 ESEIC students were invited by email to express interest, from whom three judges per institution were selected; competition entrants were excluded. Evaluation proceeded in three stages. First, students completed a trial evaluation and attended an online briefing and calibration session, where scoring differences and ambiguities were discussed using sample submissions to establish a shared interpretation of the rubric. Second, judges independently reviewed all submissions. Finally, they attended a post-evaluation meeting to discuss scores and preferred entries before reaching a collective decision.

The rubric comprised six domains: visual design and branding, usability and navigation, communication of the ESEIC project, required content, innovation and engagement, and practical feasibility. Each was scored on a 0-5 scale. Judges also provided written feedback identifying strengths and areas for improvement.

Scores were recorded in a shared spreadsheet and aggregated to support comparison across the six submissions. Aggregate scores were used as indicators of relative strength rather than as the sole determinant of the outcome; the final decision was reached through discussion between the student judges. This enabled analysis of both criterion-based scoring and the transition from individual to collective judgement.

Data for this analysis comprise student submissions, rubric scores and written feedback, competition-specific participant responses, and observations of the evaluation process, including the briefing and post-evaluation discussion. These data sit within the wider ESEIC evaluation, which also includes surveys and focus groups across project activities. The present analysis uses these wider data only where responses can be related specifically to participation in the competition.

Analysis focused on how participants engaged with comparison, criteria and judgement rather than on establishing longer-term learning outcomes. Qualitative responses and evaluation material were coded collaboratively, with multiple researchers examining a subset of the data and refining the emerging categories through discussion. The one-hour post-evaluation meeting, attended by all judges, was documented through researcher notes capturing the discussion and decision-making process. The resulting analysis examined evidence of comparison, interpretation of criteria, evaluative judgement and collective decision-making.

5. Early Insights from Implementation

This section presents early insights from implementation, drawing on participant responses, evaluation data and observations of the judging process. It examines how competition structures were enacted and how participants engaged with comparison, evaluative roles and shared criteria.

5.1 Structuring Participation Through Competition

The competition organised participation through clearly defined tasks, constraints and outputs. Students produced a prototype and supporting documentation, aligning their work with usability, communication and implementation considerations. At the same time, the task remained open-ended, allowing multiple approaches to emerge. The six submissions demonstrated this variation, with teams producing different responses to the same brief and balancing priorities including usability, innovation and feasibility.

Participant accounts indicate that the competitive structure also created a comparative dimension to the activity. One participant described seeing work produced by students at other institutions as a “valuable benchmarking opportunity”, reporting that comparison with other submissions encouraged the team to raise its standards and think more critically about its UI/UX decisions. Another participant described the international scale of the competition as inspiring them to work harder and increasing their enthusiasm and motivation. These accounts suggest that competition operated not simply through the prospect of winning, but by positioning participants within a wider field of comparison in which alternative approaches and standards of quality became visible.

5.2 Student Engagement With Evaluation

Student-led evaluation extended participation beyond the production of competition entries to the assessment of work produced by others. Evaluation was conducted by three panels of three students, with one panel from the UK and two from Indonesian institutions, creating an internationally distributed process. Judges independently evaluated all six submissions using the shared six-domain rubric.

This required students to apply common criteria across substantially different responses to the same design brief. Rather than identifying a single correct solution, judges had to make judgements across several dimensions of quality, including usability, creativity, communication and technical feasibility. Evaluation therefore involved not simply allocating scores, but interpreting criteria in relation to different submissions and articulating judgements about their relative strengths and limitations.

5.3 From Individual Scoring to Collective Judgement

Following independent evaluation, aggregate scores across the six submissions ranged from 36% to 89%, with four entries scoring between 73% and 89%. Judges entered the subsequent one-hour decision-making meeting having completed their individual rubric scores. Scoring showed relatively close agreement, including a five-

point difference between the highest and lowest individual scores for the eventual winning entry. The numerical results were treated as indicators rather than determinative of the outcome, and judges were asked to explain both their scoring and their preferred winner. All nine ultimately agreed on the winning entry, although their rationales varied and drew on comparisons with other submissions and information contained in the accompanying reports. The process therefore moved from calibrated individual judgement to collective evaluation and consensus.

5.4 Emerging Forms of Engagement

Taken together, the implementation data provide early evidence that the competition generated engagement with comparison, criteria and judgement. Participants described benchmarking their work against submissions from other institutions and using the competition requirements to resolve differing views within their own teams. One team reported discussing competing design ideas and combining elements of different suggestions to produce a solution that met the competition requirements.

For student judges, evaluation similarly moved beyond the allocation of scores. Independent rubric-based evaluation was followed by collective deliberation over the strongest submissions, requiring judges to move between individual judgements and a shared decision about overall quality. In this configuration, evaluation operated as part of participation rather than as a terminal assessment activity, involving the interpretation of standards, comparison of alternatives and consideration of different dimensions of quality.

These findings provide early evidence of processes associated with evaluative judgement, perspective-taking and reasoning about quality. They do not establish the longer-term development of these capabilities, but demonstrate how the competition design brought comparison, interpretation and judgement into the learning process itself.

6. Discussion

The findings indicate that competition structures can function as game-like pedagogical systems in which rules, roles and feedback mechanisms shape participation. Participant accounts showed that competition created opportunities for benchmarking and comparison, while the judging process moved students from individual criterion-based scoring to collective deliberation about quality. Evaluation therefore operated not simply as an external measure but as a component of participation itself.

This design aligns with principles of authentic assessment, as learners engage with a task that reflects real-world constraints and requires the application of judgement in relation to shared criteria (Gulikers et al., 2004; Wiggins, 1998). It also aligns with inclusive assessment, in that evaluative roles are distributed across participants, introducing multiple perspectives into the process and reducing reliance on a single authoritative judgement (Boud & Falchikov, 2006; Tai et al., 2018).

While competition is often associated with ranking and exclusion, the design examined here redistributes participation across multiple roles. Learners are positioned across complementary roles as performers and evaluators, engaging with criteria, comparison and judgement. In this sense, value is generated not solely through performance, but through participation in evaluative processes. This has implications for how assessment is conceptualised within games-based learning. By framing evaluation as a core mechanic, the paper extends existing approaches that focus primarily on engagement or motivation. The findings illustrate how assessment can be integrated into the design of learning environments, such that participation and judgement are structurally aligned through feedback processes. It also creates conditions in which learners must coordinate multiple dimensions of quality, such as usability, communication and feasibility, within a single task, rather than applying these as separate competencies (Mahon, Purnomo, et al., 2025).

The analysis remains limited to early-stage implementation. While the data demonstrate engagement with comparison, criteria and collective judgement, they do not establish the longer-term development of evaluative capability. Some participant responses were also drawn from the wider ESEIC evaluation rather than a standalone evaluation of the competition. Further work will examine how evaluative judgement develops over time and across institutional contexts.

7. Conclusion

This paper has examined competition as a form of playful pedagogy, focusing on the role of student-led evaluation within a structured learning environment. It has argued that competitions can be understood as systems in which participation, evaluation and feedback are deliberately configured to shape engagement. The

inclusion of student panels repositions evaluation as a participatory process, aligning production, critique and application within a single system. In doing so, the paper provides early empirical evidence of how evaluation can operate not only as a means of assessment, but as a structured component of the learning process.

This contributes to discussions of games-based learning, authentic assessment and inclusive assessment by showing how assessment can be designed as part of the learning environment itself, rather than applied externally. It also highlights the role of evaluation in supporting engagement with standards, comparison and judgement, particularly in international and interdisciplinary contexts where quality is not fixed but must be interpreted across perspectives. Further work will examine the full dataset to explore how participation in evaluation relates to the development of judgement and capability across contexts, and how variation in evaluative practice shapes learning over time. This positions evaluation not as the endpoint of learning, but as a central component of how learning is structured and experienced.

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