MULTIMODAL TECHNOLOGIES AND INTERACTION (MDPI) | SUPPLEMENTARY MATERIAL S2

Student Perception Questionnaire on the Gamified Active-Learning Workshop (Quantitative Likert Scale and Open-Ended Prompts)

Accompanying Article: *"A gamified active-learning workshop versus traditional instruction: digital competence test scores in first-year university students. An exploratory quasi-experimental study."*
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Target Cohort & Administration: Gamified Active-Learning Workshop cohort (n = 29; strictly voluntary participation with a 100% response rate), administered digitally via Google Forms immediately following Session 5 to address Research Question 3 (RQ3).

Methodological Note & Bilingual Presentation

This supplementary document reproduces the complete student perception instrument voluntarily completed by the gamified cohort (n = 29). To ensure full transparency for international peer review while preserving ecological fidelity to the Chilean university setting in which data were collected, each item is presented in both its English translation and its exact original Spanish wording.

Part A comprises the 16-item quantitative Likert-type scale adapted from the validated Questionnaire on Motivation for Cooperative Playful Learning Strategies (CMELAC; Manzano-León et al., 2021), with minor contextual wording adjustments replacing 'the subject' ('la asignatura') with 'the contents covered' ('los contenidos trabajados') in items 4–8. Part B contains the 10 open-ended qualitative prompts designed around the workshop's core pedagogical domains (game mechanics and engagement, permanent squad collaboration, and Game Master facilitation).

Part A. Quantitative Perception Scale (16-Item Likert Instrument — Adapted CMELAC)

Participant Prompt: *"Think about the playful activity/activities carried out in this workshop and rate your level of agreement with each statement" / «Piensa en la actividad/actividades lúdicas realizadas en este taller y responde según tu grado de acuerdo».*

1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree
Totalmente en desacuerdo	*En desacuerdo*	*Ni de acuerdo ni en desacuerdo*	*De acuerdo*	*Totalmente de acuerdo*

Item	CMELAC Factor	English Translation (Peer Review)	Original Spanish Wording (Administered)
1	**Motivation for the task**	In general, I have enjoyed this playful activity.	*En general, he disfrutado de esta actividad lúdica.*
2	**Motivation for the task**	I would repeat these types of activities.	*Repetiría este tipo de actividades.*
3	**Motivation for the task**	I have felt motivated.	*Me he sentido motivado/a.*
4	**Perceived learning**	It improved my knowledge of the contents covered.	*Mejoró mis conocimientos sobre los contenidos trabajados.*
5	**Perceived learning**	It has increased my interest in the contents covered.	*Ha incrementado mi interés por los contenidos trabajados.*

Item	CMELAC Factor	English Translation (Peer Review)	Original Spanish Wording (Administered)
6	**Perceived learning**	This activity format has been appropriate to check my knowledge of the contents covered.	*Este formato de actividad ha sido apropiado para comprobar mis conocimientos sobre los contenidos trabajados.*
7	**Perceived learning**	It helped me identify my weaknesses regarding the contents covered.	*Me ayudó a identificar mis debilidades respecto de los contenidos trabajados.*
8	**Perceived learning**	It helped me understand the contents covered.	*Me ayudó a entender los contenidos trabajados.*
9	**Perceived learning**	With these types of activities, I learn more than in traditional lecture-based classes.	*Con este tipo de actividades aprendo más que en clases magistrales.*
10	**Teamwork**	I feel that I was able to interact with my teammates to learn.	*Siento que pude relacionarme con mis compañeros/as de equipo para aprender.*
11	**Teamwork**	I learned from my classmates during the activity.	*Aprendí de mis compañeros/as durante la actividad.*
12	**Motivation for the task**	I found the game elements fun.	*Los elementos de juego me han parecido divertidos.*
13	**Motivation for the task**	The game elements motivated me when carrying out the activity.	*Los elementos de juego me han motivado a la hora de realizar la actividad.*
14	**Flow / Immersion**	While playing, I was not aware of what was happening around me.	*Mientras jugaba no era consciente de lo que sucedía a mi alrededor.*
15	**Flow / Immersion**	I felt capable of carrying out the proposed activities.	*Me sentí capaz de realizar las actividades propuestas.*
16	**Flow / Immersion**	I found the activities comforting and valuable to me.	*Las actividades me parecieron reconfortantes y valiosas para mí.*

Source & Factor Structure Note: Items and four-factor structure follow the validated Spanish CMELAC instrument (Manzano-León et al., 2021). In the administered digital form, responses were captured using the five verbal anchors shown above and subsequently coded from 1 to 5 for descriptive statistical aggregation.

Part B. Qualitative Evaluation Prompts (10 Open-Ended Questions)

Analytical Alignment Note: All 29 participants in the gamified cohort voluntarily provided open-text responses to the 10 prompts below (100% response rate). As described in Section 2.5 of the manuscript, qualitative coding was conducted by the first author (G.H.), combining a deductive organizational framework anchored in the questionnaire's core conceptual domains (game mechanics and engagement, squad collaboration, and Game Master facilitation) with inductive sub-coding of emergent patterns.

Prompt	Conceptual Domain	English Translation (Peer Review)	Original Spanish Prompt (Administered)
Q1	**Initial Expectations & Engagement Baseline**	Initial expectations: Before the semester started, when you found out you would have a 'Digital Competence' workshop, what did you expect or imagine you would be doing?	*Expectativas iniciales: Antes de comenzar el semestre, cuando te enteraste de que tendrías un taller de "Competencias Digitales", ¿qué esperabas o qué te imaginabas que ibas a hacer?*

Prompt	Conceptual Domain	English Translation (Peer Review)	Original Spanish Prompt (Administered)
Q2	**Overall Experience & Engagement**	Actual experience: Now that the workshop has ended, how would you describe the experience you had compared to what you initially expected?	*Experiencia real: Ahora que el taller terminó, ¿cómo describirías la experiencia que viviste en comparación a lo que esperabas inicialmente?*
Q3	**Perceived Competence Progression**	Evolution of your competencies: Think about your level of technological proficiency on the first day of class and compare it with how you feel today. In which tools, platforms, or skills do you feel you progressed the most? Please explain why you feel that progress.	*Evolución de tus Competencias: Piensa en tu nivel de manejo tecnológico el primer día de clases y compáralo con cómo te sientes hoy. ¿En qué herramientas, plataformas o habilidades sientes que más avanzaste? Por favor, explica por qué sientes ese avance.*
Q4	**Game Mechanics & Motivation**	Game methodology (Gamification): This workshop operated as an 'Intelligence Agency' with missions, experience points (XP), and ranks instead of traditional lectures. In what way did this way of learning affect your motivation to attend and participate? How did this 'game' format influence the way you dealt with mistakes or tried new tools?	*La Metodología de Juego (Gamificación): Este taller funcionó como una "Agencia de Inteligencia" con misiones, puntos (XP) y rangos en lugar de clases tradicionales. ¿De qué manera esta forma de aprender afectó tu motivación para asistir y participar? ¿Cómo influyó este formato de "juego" en tu forma de enfrentar los errores o de probar herramientas nuevas?*
Q5	**Squad Collaboration & Interdependence**	Squad work dynamics: During the workshop, you worked in a permanent 'Squad' to complete the missions. Describe in detail what that experience was like. Did you feel that working in a group helped you, or would you have preferred to work completely alone? Justify your answer.	*Dinámica de Trabajo en Escuadrones: Durante el taller trabajaste en un "Escuadrón" permanente para superar las misiones. Describe detalladamente cómo fue esa experiencia. ¿Sentiste que trabajar en grupo te ayudó o hubieras preferido trabajar completamente solo/a? Justifica tu respuesta.*
Q6	**Instructor Role & Game Master Facilitation**	The instructor's role: In this workshop, the instructor acted more as a mission guide ('Game Master') than as a traditional lecturer presenting material at the board. What did you think of this approach to teaching? Did it generate greater confidence or discomfort? Justify your answer.	*El Rol del Docente: En este taller, el profesor actuó más como un guía de misiones ("Game Master") que como un profesor tradicional dictando materia en la pizarra. ¿Qué te pareció esta forma de enseñanza? ¿Te generó más confianza o te causó incomodidad? Justifica tu respuesta.*
Q7	**Applied Utility & Academic Transfer**	Most useful tools: Out of all the missions we carried out (Security, Excel, Artificial Intelligence, Academic Paper Search, etc.), choose the tool or skill you consider will be MOST useful to you. How do you think it will help you during this first semester and in your future professional life?	*Herramientas más útiles: De todas las misiones que realizamos (Seguridad, Excel, Inteligencia Artificial, Búsqueda de Papers, etc.), elige la herramienta o habilidad que consideres que te será MÁS útil. ¿Cómo crees que te servirá durante este primer semestre y en tu futura vida profesional?*
Q8	**Perceived Relevance Filtering**	Least useful tools: Conversely, is there any tool, skill, or mission we covered that you consider will NOT be useful to you? Explain why.	*Herramientas menos útiles: Por el contrario, ¿hay alguna herramienta, habilidad o misión de las que vimos que consideres que NO será útil para ti? Explica por qué.*
Q9	**Task Challenges & Problem-Solving**	Difficulties: What was the biggest obstacle or the mission you found hardest to overcome during the workshop, and how did you manage to solve it?	*Dificultades: ¿Cuál fue el mayor obstáculo o la misión que más te costó superar durante el taller y cómo lograste resolverlo?*

Prompt	Conceptual Domain	English Translation (Peer Review)	Original Spanish Prompt (Administered)
Q10	**Formative Design Feedback**	Opportunities for improvement: If you had the power to change or improve a single thing about this workshop for next year's students, what would you change and why?	*Oportunidades de Mejora: Si tuvieras el poder de cambiar o mejorar una sola cosa de este taller para los estudiantes del próximo año, ¿qué le cambiarías y por qué?*

Reference

Manzano-León, A.; Camacho-Lazarraga, P.; Guerrero-Puerta, M.A.; Guerrero-Puerta, L.; Alias, A.; Aguilar-Parra, J.M.; Trigueros, R. Development and Validation of a Questionnaire on Motivation for Cooperative Playful Learning Strategies. Int. J. Environ. Res. Public Health 2021, 18, 960. https://doi.org/10.3390/ijerph18030960