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Co-designing an AI-supported English as a foreign language course for civic engagement: a participatory qualitative study with Algerian learners

Codiseño de un curso de inglés como lengua extranjera para la participación cívica de estudiantes argelinos, apoyado por la IA

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ABSTRACT

This study foregrounds learner-generated governance practices by co-designing and piloting an AI-supported EFL course for civic engagement with students at University of Batna 2. Using participatory action research (PAR) coupled with micro-analytic analysis of AI interaction logs, interviews, and co-design artifacts, the study traced how students conceived civic aims in English, how generative AI mediated task design and enactment, and which pedagogical heuristics emerged from collaborative work. Results showed that learners articulated three civic orientations—localized community action, institutional advocacy, and knowledge awareness—and experienced AI in three mediational roles: a generative drafting scaffold, an interlocutor for negotiation, and a source of rhetorical templates. Participants developed situated governance strategies (iterative re-prompting to tune tone/audience, deletion or verification of dubious content, and formal documentation protocols such as prompt scripts and verification checklists). These practices shaped course design, integrating AI literacy, action-oriented tasks, mandatory AI documentation, and instructor facilitation. This study extends sociocultural accounts of mediation by treating AI as an active mediational artefact and demonstrates the value of triangulating PAR, micro-log analysis, and artifact study. Practically, it produces learner-authored heuristics and a design template for ethically responsible, context-sensitive AI-enhanced EFL courses suitable for settings with infrastructural and political constraints.

Keywords: *AI literacy, AI-Supported course, civic engagement, participatory co-design, AI interaction logs.*

RESUMEN

El presente estudio pone en primer plano las prácticas de gobernanza generadas por los propios estudiantes mediante el codiseño y la implementación piloto de un curso de inglés como lengua extranjera (ILE) apoyado por la inteligencia artificial (IA), para la participación cívica con estudiantes de la Universidad de Batna 2. Mediante el uso de investigación-acción participativa (IAP), combinada con el análisis microanalítico de registros de interacción con IA, entrevistas y artefactos de codiseño, el estudio rastreó cómo los estudiantes concebían fines cívicos en inglés, cómo la IA generativa mediaba el diseño y la implementación de las tareas, y qué heurísticas pedagógicas emergían del trabajo colaborativo. Los resultados mostraron que los estudiantes articularon tres orientaciones cívicas: acción comunitaria localizada, incidencia institucional y concientización sobre el aprendizaje, así como experimentaron la IA en tres roles mediadores: como andamiaje generativo para la redacción, como interlocutora para la negociación y como fuente de plantillas retóricas. Los participantes desarrollaron asimismo estrategias de gobernanza situadas (reformulación recurrente de *prompts* para ajustar el tono y la audiencia, eliminación o verificación de contenido dudoso, y protocolos formales de documentación, como guiones de *prompts* y listas de verificación). Estas prácticas dieron forma al diseño del curso, integrando alfabetización en IA, tareas orientadas a la acción, documentación obligatoria del uso de la IA y facilitación docente. El estudio amplía las perspectivas socioculturales de la mediación, al tratar la IA como un artefacto mediador activo, y demostrar el valor de triangular la IAP, el análisis microanalítico de registros y el estudio de artefactos. En términos prácticos, produce heurísticas elaboradas por los estudiantes y una plantilla de diseño para cursos de ILE potenciados por IA, que sean éticamente responsables y sensibles al contexto, adecuados para entornos con limitaciones de infraestructura y restricciones políticas.

Palabras clave: *alfabetización en IA; curso apoyado por IA; participación cívica; codiseño participativo; registros de interacción con IA.*

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INTRODUCTION

The current teaching of English as a foreign language (EFL) no longer focuses solely on the development of grammatical and communicative competences; it also shapes the ways in which learners speak, think, and behave in society (Awayed-Bishara, 2021; Wahlström, 2022). In multilingual contexts, English can serve as a platform for civic engagement (Magill & Smith, 2024; Mirra et al., 2018); this means that EFL learners engage with social issues and discuss them with different audiences (Li, 2024; Şenbayrak & Hart, 2024). Accordingly, recent studies have reconceptualized EFL classrooms as spaces with social consequences rather than as mere sites of instruction (Ardoin et al., 2022; Khoo & Kang, 2022).

Previous studies on civic learning have also emphasized the importance of specific design features, such as tasks grounded in local realities, experiential learning formats, opportunities for social interaction, and scaffolding strategies that foster higher-order thinking in civic education programs (Ardoin et al., 2022; Lo et al., 2024; Rubin, 2024). However, in the absence of authentic participation, such programs may only appear to empower learners rather than actually strengthening their autonomy and agency (Larrotta & Chung, 2020; Magill & Smith, 2024; Wahl, 2022). At the same time, advances in large language models and conversational agents are redefining what EFL classrooms can do (Lo et al., 2024). Nevertheless, their integration into learning raises important questions about model fidelity, privacy, integrity, and the role of algorithmic output in dialogic civic argumentation (Khoo & Kang, 2022; Wang et al., 2023).

From an ethical and pedagogical perspective, the integration of artificial intelligence (AI) into classroom practice requires explicit normative guidance: considerations of fairness, transparency, and agency must shape how algorithmic contributions are positioned, assessed, and revised in learning artifacts (Pagano et al., 2023; Fu & Weng, 2024; Zhang & Zhang, 2024). The literature repeatedly underscores the need for teacher education and the development of critical AI literacy as key supports for these aims (Celik, 2022; Holmes et al., 2021). An efficiency-oriented stance, which conceives AI primarily as a productivity tool, has consequences for teacher-student relationships and assessment logics: it tends to privilege speed and measurable outcomes, whereas an agency-oriented perspective prioritizes learners' ability to formulate the norms governing algorithmic contributions and to assume responsibility for the epistemic and rhetorical quality of public claims (Chan, 2023).

Methodologically, the field remains uneven. Most empirical work examines the effects of micro-interventions on aggregated writing outcomes, whereas far fewer studies combine participatory co-design with micro-analytic logging of student-AI interaction, a level of detail that is crucial for understanding how rhetorical authority, epistemic responsibility, and the legitimacy of public claims are negotiated in civic tasks. The participatory tradition holds that including learners in the design process promotes agency (Afrilyasanti et al., 2024; Zeivots et al., 2025).

For this reason, we emphasize learner-authored governance: the idea that students should not only use algorithmic outputs, but also co-design the rules and practices that regulate how such contributions are drawn upon, verified, annotated, and positioned in civic artifacts. To date, relatively few studies have empirically examined how AI can be mobilized to develop this form of learner-authored governance. Addressing this gap further requires methods that combine co-design, fine-grained log analysis, and attention to the institutional and ethical scaffolds that make learner participation meaningful (Chan, 2023; Oncioiu & Bularca, 2025).

These issues are especially pressing when civic education is politically charged and infrastructure is uneven. In contexts such as Algeria, where English is used for utilitarian purposes alongside civic and political constraints, unguided algorithmic outputs may generate factual inaccuracies or mismatches with local interests that may have real implications for student safety and community reputation (Abdat-Hadjadj, 2024; Abdellatif, 2020; Hadi & Kamel, 2024). Therefore, governance and data protection must be built into course design.

Grounded in sociocultural perspectives that treat tools as mediational artifacts (Engeström, 1987; Mirra et al., 2018; Vygotsky, 1978), the present study combines participatory action research (PAR) with micro-analytic log analysis to examine how AI authority is negotiated in classroom practice. The fieldwork was conducted with students at the

University of Batna 2. The study aims to co-design an AI-supported EFL course for civic engagement and to analyze how AI itself mediates civic discourse, agency, and identity during co-design and pilot implementation. It also addressed three research questions:

a) What conceptions of civic engagement do Algerian EFL students hold regarding English, and how do these conceptions emerge during a participatory co-design process?

b) In what ways does AI shape the design and enactment of civic EFL tasks, and how do students respond to or contest AI inputs when producing civic texts and discussions?

c) What instructional principles and learner-authored governance heuristics emerge to inform ethical, context-sensitive AI-powered EFL courses?

METHODS

A participatory qualitative study was conducted, combining participatory action research (PAR) with design-based qualitative research to develop, pilot, and evaluate an AI-supported EFL course for civic engagement with students from the Department of English at the University of Batna 2, in Batna, Algeria. This research design was appropriate for the study because it focused on the processual nature of the inquiry, including negotiation, agency, and mediation by AI, aspects that cannot be adequately addressed through an experimental study design.

Population and sample

The target population consisted of third-year Licence (L3), Master 1 (M1), and Master 2 (M2) EFL students from the Department of English at the University of Batna 2. The student sample was selected using a stratified purposive sampling method. The inclusion criteria were as follows: participants had to be 19 years of age or older, enrolled in the Department of English at the University of Batna 2, have at least a B2 (upper-intermediate) level of English according to the CEFR (Common European Framework of Reference for Languages), possess sufficient digital literacy to use chatbot interfaces, and be willing to participate in the co-design process. The student subgroups given highest priority for sampling purposes were those with high academic achievement, those involved in university cultural clubs, those engaged in social or charitable activities, and those participating in university-based start-ups. Overlap among these categories was allowed. The planned sample consisted of 28 students: 12 from L3, 8 from M1, and 8 from M2. This sample size balanced subgroup diversity and feasibility.

Participants with high academic achievement and strong involvement in civic or extracurricular initiatives were intentionally selected because the co-design pilot required participants who could: (a) rapidly operationalize abstract civic themes into concrete artifacts during brief co-design workshops; (b) interact reliably with AI chat interfaces with a minimum level of technical literacy (our inclusion threshold was CEFR B2); and (c) produce traceable artifacts, such as versioned drafts, prompt scripts, and verification checklists, within the project timeline. Therefore, selecting this profile maximized the study's ability to identify emergent governance heuristics in an initial proof-of-concept pilot. We acknowledge that this decision prioritizes analytical depth over broad representativeness. The implications of this trade-off are addressed in the limitations subsection.

Data collection

Multiple instruments were used to capture the co-design process, participants' experiences, the linguistic product, and AI mediation across three stages: needs elicitation and preparation, iterative co-design and pilot implementation, and reflection and consolidation. A brief background questionnaire was used to collect information on eligibility, demographic characteristics, civic engagement, and digital literacy.

Co-design workshops were the main intervention and data collection method, in which small heterogeneous groups negotiated civic themes, developed tasks, and tested AI prompts. The workshops were audio-recorded, and field notes as well as visual artifacts produced by participants were documented. Semi-structured interviews were conducted before and after implementation to gather individual conceptions of civic engagement, expectations, and reflections on the use of AI. After the pilot, level-specific focus groups were conducted to elicit collective reflections, thereby triangulating the findings (Da Silva Santos et al., 2020; Vivek et al., 2023).

In addition, AI interaction logs and artifacts, such as prompts, AI outputs, successive drafts, and exported chat sessions, were archived in order to conduct a micro-analytic analysis of discourse. Participants were asked to keep brief reflective journals throughout the study in order to document their evolving individual conceptions and the significant events that occurred during the research process (Vicary et al., 2017). All audio recordings were transcribed verbatim, while digital artifacts and AI logs were anonymized or redacted, when necessary, and stored on encrypted institutional drives.

To ensure transparency regarding the PAR procedures, we note that the researcher initially drafted provisional aims and three research questions in order to define the ethical and logistical boundaries of the pilot. These provisional aims were explicitly presented to participants during the first needs-elicitation workshop. Participants collectively reviewed and refined task priorities, the wording of practical prompts, and the AI-use documentation templates, such as the prompt-script template and the verification checklist. In subsequent sessions, participants negotiated task audiences and the criteria for artifact acceptance; these decisions were recorded in shared decision logs (artifact headers) and constitute the co-design of both the course content and the implementation procedures. Thus, although the research project began with provisional framing by the researcher to ensure participant safety and ethical compliance, the operationalization of the course design and many key process decisions were co-constructed by participants.

Data analysis

A total of 1,236 discrete AI interaction turns (chat turns or prompt-response pairs) were collected across 42 chat sessions and archived as anonymized logs. For micro-analytic coding, a purposive subset of 48 multi-turn micro-sequences was selected based on the following criteria: (a) the presence of an explicit prompt header and saved student edits; (b) evidence of iterative re-prompting (≥2 re-prompts); (c) linkage to artifacts (artifact saved with the prompt header); and (d) thematic relevance to civic orientations (community-oriented action, institutional advocacy, or information/awareness). From this set, we report typical sequences illustrating common negotiation patterns and also selected exemplary sequences that were particularly informative for illustrating a heuristic, such as the emergence of the prompt script. The selection matrix used to choose these sequences is presented in Appendix G (AI log audit trail).

The analysis combined an integrated approach to reflexive thematic analysis incorporating elements of iterative inductive and deductive coding. This was complemented by a focused discourse and multimodal analysis of the AI interaction logs. Initial open coding of a purposive subset of the data was conducted to develop preliminary codes and analytic memos. Based on this process, a codebook containing definitions and examples was developed. Coding was carried out using qualitative analysis software. Twenty percent of the transcripts were double-coded and discussed in order to refine the codebook.

The analysis of AI logs was conducted through a micro-analytic approach. This examined prompt design, the uptake and rejection of AI suggestions, rhetorical moves, and multimodal intertextuality in both AI-generated and student-produced artifacts. A triangulation process was carried out across interviews, workshop transcripts, journals, AI logs, and co-designed artifacts. This process was undertaken to support corroboration and to develop explanatory claims.

Trustworthiness, reflexivity, and researcher positionality

Credibility was ensured through multiple workshops, follow-ups, participant validation of findings, and peer debriefing. Transferability was supported through thick description of the setting, participants, and course materials. Dependability and confirmability were ensured through an audit trail of data and procedures, as well as external checks of the data analyses. The researcher kept a reflexive journal documenting her assumptions, potential biases, and relationships with participants. Researcher positionality, including affiliations, relationships, and theoretical frameworks, was made explicit and critically examined. Finally, mitigation strategies were employed through peer review and participant validation.

We acknowledge the potential tension in PAR between researcher framing and participant agency (Cornish et al., 2023; Larrotta & Chung, 2020; Teixeira et al., 2021). To mitigate simulated participation and reduce power differentials,

we used the following procedures: (1) rotating facilitation roles so that students occasionally led workshops; (2) openly presenting provisional aims and explicitly inviting participants to add, remove, or reformulate task goals; (3) member-checking of emergent themes during and after workshops; (4) shared decision logs attached to artifacts documenting whose decisions were authoritative; and (5) an explicit consent process that included consent to participate in design decisions. These practices were documented in the project audit trail and are available upon request. Although such measures do not eliminate power asymmetries, they significantly increased participant control over course content and procedural rules. We nevertheless reflect on the remaining limitations and the risk of partial simulation in the limitations subsection.

Ethics and data governance

All participants provided written informed consent to participate in this study. They were informed in advance about the objectives of the research, its procedures, its voluntary nature, their right to withdraw, and the ways in which the data would be used. Participants were also informed beforehand that their interactions with the chatbot would be recorded for analysis, although any information that could identify individuals would be redacted for analytical purposes. In addition, because this study involved civic issues, care was taken to ensure that it did not promote any political stance or coercive behavior through its procedures. Finally, data retention was carried out in accordance with institutional regulations and participants' instructions.

RESULTS

Participants' accounts and the co-design materials converged around three broad orientations to civic engagement: community-oriented action, institutional advocacy, and information dissemination and awareness-raising.

Community-oriented action was sometimes developed into concrete community-based activities in which English was used instrumentally for community outreach and mobilization. Students frequently made connections between place and community in their discussions of task design. For example, one participant explained how civic action is often community-oriented in terms of local initiatives and how useful English can be for writing letters to partners or creating flyers that people outside their locality can understand (Interview: S1 - workshop reflection). The following excerpt from an AI tool log illustrates a typical process of drafting a community flyer, in which the student begins with a contextualized prompt, reviews an AI-generated draft, and makes specific location-based edits that are saved along with the artifact (see Table 1).

The workshop draft version 2 includes a header section in which students identified the prompt used and indicated which of the AI-recommended sentences were retained or modified. The complete micro-sequence corresponding to this drafting event is presented below, step by step and in chronological order, to ensure traceability.

Detailed AI log micro-sequence 1 – Community flyer (integrated)

Log ID: log-A1 | Timestamp: 2025-11-01 14:03 | Source: AI interaction file.

a) Turn 1 (student): "Write a short friendly flyer in plain English to invite neighbors to a park-cleaning event on Saturday at 9 a.m. in Hay Salam. Mention gloves and refreshments."

b) Turn 2 (AI): "Join us this Saturday at 9 a.m. at Hay Salam Park for a community clean-up. Please bring gloves; refreshments will be provided. Contact: [email]."

Table 1
Flyer drafting: AI-log micro-sequence (Community outreach)

Log ID	Timestamp	Student prompt	AI reply (excerpt)	Student edit (saved)	Artifact linkage
log-A1	2025-11-01 14:03	"Write a short friendly flyer in plain English to invite neighbors to a park-cleaning on Saturday at 9 AM in Hay Salam. Mention gloves and refreshments."	"Join us this Saturday at 9 AM at Hay Salam Park for a community clean-up. Please bring gloves; refreshments provided. Contact: [email]."	Replaced contact with local association email; added "Children welcome; play area will be cleaned."	Community Outreach Flyer — Workshop draft version 2 (artifact note: prompt recorded; final text saved).

Table 2
Petition drafting: AI-log micro-sequence for institutional advocacy

Log ID	Timestamp	Turn sequence (student prompt > AI > student re-prompt > AI > student final edit)	Artifact linkage
log-B3	2025-11-02 10:20	Prompt 1: "Write a formal well-structured letter in English to the University Council requesting an improvement in the University campus Wi-Fi." → AI reply: formal letter with general claims → Student re-prompt: "Make it specific: cite lab dropouts and include one student voice." → AI revision: added a generic testimonial → Student final edit: removed generic testimonial; attached a student-survey table with local data.	Petition Letter Template — version 1 (artifact: stakeholder map; attached survey results).

c) Turn 3 (student saved edit): "The contact was replaced with the local association's email address; the following was added: 'Children welcome; the play area will be cleaned.'"

d) Turn 4 (artifact annotation): "Flyer_version 2 final; AI prompt saved in the header; student edits annotated in the margin."

Institutional advocacy was described by participants as efforts directed toward institutional actors and toward the use of English when audiences extend beyond the immediate community; students explicitly linked the use of English to broader visibility. One participant noted that writing letters in English to different university bodies could potentially attract the attention of international staff or external partners, thereby amplifying students' voices (Interview: S2 – design session interview). The process of creating the petition followed a multi-step negotiation: an initial formal draft generated by AI was revised through a series of re-prompts, replacing testimonial text with locally gathered evidence contained in the attached artifact (see Table 2).

Version 1 of the artifact contains an "evidence attachment" added by the student, along with a note stating: "Verified local evidence replaces any statistics provided by AI" (Artifact: Petition Letter Template – version 1).

As discussed in the interviews, information and awareness-raising required providing accurate information about health, the environment, and services in brief messages in English. Participants emphasized the use of local dialects and the need to ensure the accuracy of technical information. One student summarized this process as producing short English messages for a clinic or for local health-related information (Interview: S3 – interview). The following micro-sequence of drafting a social media post illustrates a concise prompt → AI → localization workflow (see Table 3).

The patterns of acceptance, negotiation, and resistance toward AI contributions, as observed in the data, are clearly reflected in the logs and artifacts. As an illustration of traceability, we present below several integrated excerpts from the interviews. Acceptance may take the form of using AI to generate initial drafts that the student subsequently contextualizes. As one student noted, "we use the model as a starting point and then adapt it to our own voice" (Interview: S4 – revision feedback session). The pattern of acceptance

Table 3
Social-media post drafting: AI-log micro-sequence (Information/awareness)

Log ID	Timestamp	Prompt	AI reply (excerpt)	Student edit	Artifact linkage
log-C2	2025-11-03 16:05	"Write a 140-character English post about saving water for local residents."	"Save water: fix leaks, shorten showers, collect rainwater for plants. Small actions, big impact."	"Adjusted to local terminology; replaced 'collect rainwater' with 'reuse greywater for plants'; added local clinic contact."	Social-Media Health Post Set — student examples (artifact: posts and suggested visuals).

Table 4
Pattern of acceptance

Log ID	Prompt	AI reply (excerpt)	Student action	Artifact note
log-A1	Flyer prompt (see Table 1)	Flyer initial draft	Minor lexical substitutions and insertion of local contact; marked "Ready for print"	Flyer_version2 final (artifact annotation: "AI used for initial draft; final edits student-authored").

can be observed in the logs through short editing sequences that culminate in a final product, clearly marked with the prompt and a brief change history (see Table 4).

Negotiation can be observed in iterative re-prompting and increasing contextualization. Participants reported that they deliberately reformulated prompts in order to obtain a draft that was less formal or more appropriate for a specific audience. One participant explained how they asked the model for a more personal tone and how the series of follow-up prompts produced increasingly tailored outputs. The following table illustrates the negotiation sequence visible in the log data (Interview: S5 – stimulated recall) (see Table 5).

Resistance is manifested when students question and remove factual claims made by AI that do not align with local realities. Students reported that they deleted such claims and replaced them with observational evidence. The following table illustrates a verification step that resulted in deletion (see Table 6).

Prompting practices also evolved, shifting from simple prompts to well-crafted prompts that identified the audience, tone, and local content. Participants noted that they developed a prompt script to create concise instructions and minimize the number of revision cycles (Interview: S7 – workshop reflection).

The following micro-sequence constitutes a deviant case in which AI produced a confidently stated statistic that could not be verified locally; the students' final action was to withhold publication pending external verification.

a) Turn 1 (student prompt): "Write a short paragraph for a community flyer stating the local youth unemployment rate in 2023 and suggesting two volunteer programs to help recent graduates."

b) Turn 2 (AI reply, excerpt): "The youth unemployment rate in Sétif in 2023 was 7.2%, according to national labor statistics. To support recent graduates, consider the 'Graduate Mentorship Initiative' and the 'Skills for Work' program."

c) Turn 3 (student verification prompt/question): "Please cite the specific source for the 7.2% figure (URL or report title and year)."

d) Turn 4 (AI reply): "This figure is reported in national labor statistics reports; I do not have direct internet access to provide a URL, but similar figures appear in recent labor surveys."

Student action recorded: "Students removed the 7.2% claim, marked the artifact as 'withheld — source required,' and did not publish the flyer." This deviant sequence illustrates the boundary conditions of our heuristics: when AI makes specific factual claims without verifiable

Table 5
Sequence of negotiation

Log ID	Turn 1	Turn 2	Turn 3	Turn 4	Turn 5
log-D4	Student: "Write a persuasive paragraph to ask the university for a bus service."	AI: Formal paragraph using policy language.	Student re-prompt: "Make it personal; add a student example about travel cost."	AI revision: Adds a short testimonial paragraph.	Student edit: Removes generic phrase; attaches a short cost-calculation table from the workshop.

Table 6
Resistance/fact-checking

Log ID	Prompt	AI reply (claim)	Student verification prompt	AI reply to verification	Student action recorded
log-E7	"Suggest one statistic to support a campus recycling proposal".	"Approximately 80% of universities worldwide have recycling programs".	"Please provide source or specify which universities".	"I cannot browse; general reports indicate many programs in Europe and North America".	Student deleted the statistic and replaced it with an observational note: "No bins near the faculty building; students dispose in general waste".

sources, students chose to withhold publication, a governance decision that differs from cases in which they opted for localized substitution. This case is used to demonstrate the "withhold" branch in the AI-use checklist and is included as an explicit counterexample to the acceptance/negotiation patterns described above.

Prompt evolution showed a clear shift from early, generic instructions to later, contextualized prompts that reflected greater awareness of audience, place, and communicative purpose. In the first session, prompts tended to be broad and under-specified, such as "Write a flyer for a park clean-up," which produced a generic flyer that omitted local details. By the fourth session, however, prompts had become more specific and socially situated, for example: "Write a short flyer in English for the Hay Salam neighborhood inviting residents for Saturday; mention child-friendly activities and a contact phone number." This later version generated a more effective AI output, including local place names, clearer audience cues, and child-friendly wording. The evolution of prompts suggests that students were not merely using AI to generate text, but were progressively learning how to guide the system toward more purposeful civic communication.

Co-design artifacts also formalized the emergent rules for AI use. Across all student-produced materials, participants developed explicit verification protocols, annotation conventions for identifying AI contributions, and versioned drafts accompanied by marginal notes indicating which AI suggestions had been retained, modified, or discarded. These rules appeared directly in the templates and scaffolds created by students. For example, in Local Action Project, version 2, students wrote: "Step 3 (AI-assisted drafting): paste prompt text; list AI suggestions retained; verify any numerical claims; record local edits." In Petition Letter Template, version 1, they added: "Attach an evidence sheet: local observations are preferred over AI-provided statistics unless a source is cited." In Social Media Post Set, version 1, they instructed themselves: "Shorten the text; replace unfamiliar idioms; indicate which lines were derived from AI." These excerpts show that students gradually transformed AI use into a regulated and documented process rather than an opaque shortcut.

Triangulation of interview data, AI logs, and artifacts confirmed that the main themes were consistently supported across all sources. Community-oriented action was visible in the interview data related to the flyer, in the corresponding AI drafting sequence, and in the final Community Outreach Flyer, version 2. Institutional advocacy was similarly supported by the interview excerpt related to the petition, the petition drafting logs, and Petition Letter Template, version 1. Information and awareness-raising were reflected in the interview data on social media posts, in the short post log sequence, and in Social Media Post Set, version 1. Acceptance of AI as a drafting aid appeared in accounts of first drafts and in the finalized flyer sequence, whereas negotiation was captured through episodes of re-prompting and versioned drafts with marginal annotations. Resistance was evident when students removed unsupported statistics after verification, and the development of the prompt script was visible in reflective interview data, sequential AI logs, and the evolving prompt scripts themselves. Taken together, the three data sources converged to show that students were not only using AI to produce texts, but were also learning how to manage, verify, and refine AI-supported civic writing.

DISCUSSION

This study makes three interrelated contributions: it reconceptualizes generative AI outputs as negotiable mediational artifacts whose educational value depends on locally authored governance; it shows how learners' civic imaginaries shape the acceptance, adaptation, or withholding of algorithmic content within the figured worlds of classroom practice; and it documents how co-design reorganizes rules and the division of labor, producing practical heuristics that teachers and learners can deploy. This framing is consistent with sociocultural perspectives on mediation and with recent work arguing that AI in education must be understood through ethical, participatory, and context-sensitive lenses rather than as a neutral productivity tool (Celik, 2022; Engeström, 1987; Holmes et al., 2021; Vygotsky, 1978).

Treating the algorithm as a mediational artifact shifts analytic attention away from AI as a neutral tool and toward AI as an active participant in the chain of mediation. In our data, students did not merely use model outputs; they negotiated them through editing, fact-checking, and provenance notes, thereby enacting forms of governance that became part of the learning activity. This finding extends research that treats educational technology instrumentally by highlighting how students generate rules for interacting with algorithmic output. It also aligns with recent calls to strengthen teacher education and critical AI literacy in AI-supported learning environments, while moving beyond efficiency-oriented perspectives focused primarily on speed and product quality (Celik, 2022; Holmes et al., 2021; Lo et al., 2024).

Situating these practices within figured worlds helps explain variation in students' decisions. Students evaluated AI contributions not only in terms of factual accuracy, but also in relation to their fit with locally sustained civic imaginaries: whether a given audience would regard the artifact as trustworthy and appropriate. This perspective resonates with studies showing that civic learning is shaped by locally relevant tasks, social interaction, and scaffolding, as well as with research linking the use of English to civic and social participation (Ardoin et al., 2022; Mirra et al., 2018; Awayed-Bishara, 2021). In addition, our findings suggest that algorithmic content acquires meaning only insofar as it is interpreted and rewritten within those figured worlds.

From an activity-theory perspective, co-design reconfigured rules and the division of labor in classroom workflows. Rather than having the teacher unilaterally establish verification protocols, students developed many of the procedural rules themselves, such as prompt templates, editorial standards, and logging conventions, while teachers assumed more facilitative and adjudicative roles. This redistribution of responsibilities generated a stronger sense of student ownership over civic artifacts and clearer artifact-level accountability when disputes arose. These dynamics echo participatory action research traditions that emphasize shared agency and student collaboration, and they are consistent with recent co-design studies showing that students can act as collaborators in the creation of learning materials when the design process is genuinely participatory (Afrilyasanti et al., 2024; Cornish et al., 2023; Larrotta & Chung, 2020).

From a methodological standpoint, the study demonstrates the value of combining participatory co-design with micro-analytic log analysis. The logs reveal not only the final products, but also the iterative negotiation trajectories that produced them: re-prompting, deletions, and explicit verification requests make governance decisions visible in situ. This strengthens triangulation across interviews, workshop transcripts, journals, logs, and artifacts, in line with established qualitative validation practices (Da Silva Santos et al., 2020; Cornish et al., 2023). Deviant cases, in which AI asserted unverifiable facts and students withheld publication, function as important boundary markers that refine our heuristics. Such counterexamples expose the conditions under which students prefer withholding over substitution or localization, and they helped us specify the "withhold" branch in the AI-use checklist.

The study also engages with debates on participatory research design and researcher power. We began with provisional framing to ensure ethical and logistical coherence, but participants materially shaped task priorities and verification procedures during the co-design workshops. To mitigate simulated participation and researcher authority, we implemented rotating facilitation, participant validation (member-checking), and shared decision logs. These practices increased participants' control over procedural rules and artifact authorship, and they are consistent with participatory research

principles that emphasize co-construction rather than data extraction (Cornish et al., 2023; Larrotta & Chung, 2020). At the same time, we acknowledge that residual power asymmetries remain.

Several limitations constrain transferability and scope. The purposive sample deliberately prioritized students with high academic achievement and civic engagement because the pilot required rapid artifact production and a minimum level of digital and linguistic competence. That decision generated rich artifacts and analytical depth, but it limits claims about how students with lower language proficiency, limited digital experience, or lower civic engagement might respond to co-design procedures or enact governance heuristics.

The research was conducted within a single departmental setting at one Algerian university, and local institutional culture, infrastructure, and political sensitivities may shape both students' civic imaginaries and the feasibility of certain verification practices; therefore, replication in different contexts is needed. These limitations mean that the heuristics reported here are best understood as contextually situated templates rather than universal prescriptions.

These findings suggest concrete implications for teachers and curriculum designers, as well as clear directions for future research. Curricula should include an AI literacy component that foregrounds artifact-level documentation, and classroom tasks should incorporate audience-oriented rehearsals so that students can practice identifying when algorithmic claims require verification or withholding. Teacher professional development should emphasize the adjudication of contested outputs and the facilitation of learner-authored governance procedures, rather than focusing solely on the mechanics of the model. This recommendation is consistent with recent work on AI policy education, ethical AI integration, and critical AI literacy in education (Chan, 2023; Holmes et al., 2021; Celik, 2022).

CONCLUSIONS

This study demonstrates that ethical and educationally effective AI-supported civic EFL emerges when students are positioned as co-designers who develop governance mechanisms to regulate algorithmic contributions. Empirically, we show how students produced situated heuristics—prompt scripts, verification protocols, and documentation norms—that operationalize accountability and authorship in classroom practice. Theoretically, we extend sociocultural and figured-world perspectives by incorporating algorithmic agents into the chain of mediation and by showing how governance practices are produced through co-design. Finally, in practical terms, we recommend: (a) integrating an AI literacy component into civic EFL curricula, (b) requiring artifact-level AI-use documentation, and (c) providing teacher training focused on adjudicating contested AI outputs. Future research should test these heuristics with more diverse student populations and in longitudinal designs.

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APPENDICES

Appendix A:

Background questionnaire

1. Participant code (assigned by researcher): _____
2. Age: _____
3. Gender: _____
4. Programme level: ☐ L3 ☐ M1 ☐ M2
5. GPA (optional): _____
6. English level: ☐ B2 ☐ C1 ☐ Other: _____
7. Prior civic engagement (tick all that apply):
   ☐ Volunteering ☐ Student association ☐ Community project ☐ None ☐ Other: _____
8. Digital literacy: How often do you use chatbots/AI (e.g., ChatGPT)?
   ☐ Never ☐ Rarely ☐ Monthly ☐ Weekly ☐ Daily
9. Devices and connectivity: Primary device used for coursework:
   ☐ Phone ☐ Laptop ☐ Tablet; Internet reliability: ☐ Good ☐ Intermittent ☐ Poor
10. Consent to audio-recording and saving anonymized AI logs:
    ☐ Yes ☐ No

Appendix B:

Workshop session plan

Duration: 90–120 min

1. Welcome & icebreaker (10 min)
2. Introduce aims & ethics (10 min) — cover AI risks and documentation requirements
3. Needs elicitation (15–20 min) — group brainstorm: local civic issues and target audiences
4. Prompt design activity (20–30 min) — pairs create prompts; test with AI; keep first two drafts and final edit
5. Artifact drafting (20–30 min) — create flyer/petition/post; fully document prompt + edits in header
6. Reflection + verification practice (10–15 min) — use checklist to evaluate factual claims
7. Closing & assignment (5 min) — journal prompt: note one instance where you changed an AI claim

Materials to prepare: Printed prompt-script template, verification checklist, shared cloud folder for logs, consent forms.

Appendix C:

Semi-structured interview guide

Pre-interview (20–30 min)

1. Tell me about your experience with English and civic activities. (Probe: examples)
2. Have you used AI/chatbots before? For what tasks? (Probe: frequency, confidence)
3. What would you expect from an EFL course focused on civic engagement?
4. What concerns or expectations do you have about AI being used in such a course?

Post-interview (30–45 min)

1. Describe your experience co-designing the course. What changed in your thinking about civic English?
2. How did you use AI during drafting? Give specific examples. (Probe for micro-sequences.)
3. Did you accept, negotiate, or resist AI outputs? Describe one clear instance.
4. Tell me about the verification/annotation conventions you used. Were they useful?
5. How did the requirement to document prompts/edits affect your writing?
6. Any suggestions for scaling this course or improving AI governance?

Appendix D:

Focus group guide (60–75 min)

- ☐ Group introductions & recap of pilot tasks (10 min)
- ☐ Collective mapping: Which civic orientations did your group prioritize and why? (15 min)
- ☐ Group discussion: Describe a negotiation sequence where the AI output did not match local knowledge. What happened? (15–20 min)
- ☐ Artifact review: present final artifacts and discuss AI-use documentation (15–20 min)
- ☐ Wrap up: Recommendations to instructors for future iterations (5–10 min)

Appendix E:

Prompt script & AI-use documentation templates (to attach to every outward-facing artifact)

Header to attach to artifact (example fields)

- Participant code:_____
- Date & time (local):_____
- Task (e.g., Flyer for Hay Salam park clean):_____
- Original prompt (verbatim): "..."
- AI model used (e.g., ChatGPT-4, local chatbot):_____
- AI output excerpt (up to 200 words): "..."
- Student edits (list): 1) ... 2) ...
- Verification checks performed (tick & comment): ☐ Numerical claims checked ☐ source:_____; ☐ Terminology localized ☐ note:_____ ; ☐ Political sensitivity reviewed ☐ note: _____
- Final artifact status: ☐ Ready for publication ☐ Needs verification ☐ Withheld (reason)_____

Prompt script template (student-facing)

- Audience: _____
- Purpose:_____
- Tone: (e.g., friendly, formal) _____
- Required local details to include: (e.g., place names, dates, contact)_____
- Prohibited claims or sensitive topics:_____
- Minimum verification step: (e.g., "if AI suggests a statistic, attach source or replace with local observation")

Appendix F:
Codebook

Code	Definition	Example excerpt (short)
Community-oriented action	Activities localized to neighborhoods; English used instrumentally for outreach	Flyer for Hay Salam park clean (log-A1)
Institutional advocacy	Communication targeting institutional actors (petitions, letters)	Petition to University Council (log-B3)
Information/awareness	Short posts or materials aiming to inform; high need for verification	Health-related post: saving water (log-C2)
Acceptance	AI used for initial draft then lightly localized	Flyer_version 2 final (artifact note)
Negotiation	Iterative re-prompting resulting in tailored outputs	log-D4 (re-prompts for bus service)
Resistance / fact-checking	Deletion of unverifiable AI claims or substitution with observation	log-E7 (deleted statistic)
Prompt script development	Emergence of standardized prompt templates	Prompt script — student draft artifact
AI documentation	Evidence of prompt + edit logging attached to artifacts	Artifact header examples

Appendix G:
AI log audit trail

Item	Value
Total AI interaction turns recorded	1,236
Total chat sessions archived	42
Total multi-turn micro-sequences extracted	312
Subset analyzed micro-sequences used in the manuscript (purposive sample)	48
Selection criteria (short summary)	Presence of prompt header & saved edits; ≥2 re-prompts; artifact linkage; civic thematic relevance

Note. Total multi-turn micro-sequences extracted = 312 is the larger pool from which the 48 purposive micro-sequences were selected.