

ChatGPT Supported Academic Writing in Sudanese Higher Education During War: Intercultural Pedagogy, Integrity by Design, and Low Bandwidth Workflows

Khalid Othman

Department of English Language & Literature, College of languages and Humanities, Qassim University, Saudi Arabia

Abstract: The Sudan conflict has forced relocation, hindered internet connectivity, and caused periodic power outages, making English academic writing teaching challenging. The research examines how Sudanese university teachers utilize ChatGPT to promote advanced academic writing while preserving intercultural sensitivity, academic integrity, and pedagogical continuity during crises. The convergent mixed-methods research included surveys, semi-structured interviews, and classroom artefacts/process recordings from 40 university writing instructors in war-torn English-medium higher education settings. The study assessed teachers' perspectives of ChatGPT's educational usefulness, genre socialization and voice development, and cultural, institutional, and ethical standards on its adoption. The results show that ChatGPT helps teachers with idea development, text organization, lexico-grammatical assistance, and digital literacy and pedagogical creativity. The findings reveal that learner autonomy and personalization are not automatic; without scaffolding, students may over-rely on AI-generated output. Institutional expectations, cultural norms, authorship concerns, and intermittent connection influence adoption. The paper provides a context-sensitive paradigm for AI-supported writing teaching in crisis-affected higher education. This paradigm promotes teacher-AI-peer sequencing, genre-aware prompting, integrity-by-design, and low-bandwidth processes to maintain authorship and learning continuity. The research concludes that process-oriented, culturally relevant, and ethically supervised ChatGPT may promote academic writing under warfare.

Key words: ChatGPT, Academic Writing, Sudan, Higher Education, Intercultural Communicative Competence, Genre Socialization, Academic Integrity, Low Bandwidth Pedagogy

INTRODUCTION

Artificial intelligence (AI) has become increasingly influential in education, particularly in instructional design, learning support, and feedback practices (Chen et al., 2020; Hwang, 2020; Holmes et al., 2023). Within this broader development, large language models such as ChatGPT are attracting growing attention in higher education because they can assist with idea generation, language refinement, and aspects of academic writing instruction (Hwang, 2020; Holmes et al., 2023; Othman, 2023; Ambrosio et al., 2023). In English-medium academic writing, however, the value of such tools extends beyond technical assistance, since writing also involves disciplinary conventions, citation practices, rhetorical organization, and socialization into academic genres (Hyland, 2004; Canagarajah, 2013).

These issues are especially significant in Sudanese higher education during the ongoing civil war, where displacement, intermittent internet access, and repeated power outages have disrupted teaching and learning. In this context, ChatGPT may offer practical support for sustaining academic writing instruction under crisis conditions, but its use also raises important questions about authorship, access, and pedagogical appropriateness. Because Sudanese universities operate within multilingual and culturally complex English-medium environments, AI-supported writing cannot be understood only in terms of efficiency or error correction; it must also be examined in relation to intercultural communication, translanguaging practices, and the balance between global academic norms and local rhetorical traditions (Byram, 1997; Jenkins, 2015; Canagarajah, 2013).

At the same time, AI-generated feedback may reproduce standardized Anglocentric norms, potentially improving clarity while also narrowing voice and marginalizing local linguistic practices. These concerns make institutional and ethical frameworks central to the use of ChatGPT in academic writing, particularly with regard to academic integrity, teacher authority, acceptable AI use, and equitable participation under constrained conditions (Bender et al., 2021; Canagarajah, 2013; Jenkins, 2015). Although research on AI in education is expanding, limited attention has been paid to how university instructors in Sudan navigate these intercultural, pedagogical, and ethical tensions in wartime higher education. This study addresses that gap by examining Sudanese instructors' perceptions and practices regarding ChatGPT in advanced academic writing and by proposing context-sensitive guidance for its ethical and culturally responsive integration.

1.1 Objectives

This study investigates the opinions, experiences, and pedagogical approaches of Sudanese university instructors about ChatGPT in advanced academic writing courses amid the civil war in Sudan. It frames ChatGPT as a sociotechnical entity in writing—facilitating genre knowledge, position adoption, and organization—while concurrently encoding linguistic ideologies. The study aims to: 1. provide an empirical account of how instructors in Sudan navigate these dynamics; 2. articulate a framework linking AI mediated feedback to intercultural communicative competence and disciplinary genre socialization; and 3. generate context sensitive guidance for ethically and culturally responsive AI integration in writing curricula (Byram, 1997; Jenkins, 2015; Deardorff, 2006).

1.2 Questions for Research

- i. What are the perceptions of Sudanese university writing instructors regarding the advantages and challenges of ChatGPT in teaching advanced academic writing in English from an intercultural standpoint?
- ii. How do teachers either use or not use ChatGPT in relation to genre socializing, attitude, and voice while also using students' local language skills and worldwide academic standards?
- iii. How do institutional, cultural, and ethical standards in Sudanese higher education—such as academic honesty, teacher authority, and assessment practices—affect instructors' choices regarding using AI?
- iv. What teaching methods and policy guidelines do teachers think work best for using ChatGPT in university writing classes in a way that is ethical and sensitive to different cultures?

1.3 Contributions and Importance

The study positions AI as a cultural and communicative agent rather than a neutral instrument, emphasizing intercultural constructs—intercultural communicative competence, lingua franca communication, translanguaging, and genre socialization—to guide policy, professional development, and classroom design. The results aim to utilize the advantages of AI while preserving linguistic diversity, student autonomy, and intercultural educational objectives in higher education (Hyland, 2004; Bender et al., 2021; Deardorff, 2006).

LITERATURE REVIEW (REWRITTEN, CONCISE & ALIGNED)

2.1. Why Sudan's Conflict Necessitates an AI-Supported, Online Writing Lens

The 2023-present war has severely disrupted higher education in Sudan, closing schools and universities, displacing staff and students, and

repeatedly interrupting connectivity. In this context, low-cost, on-demand AI writing assistants (e.g., ChatGPT) can help sustain continuity of English-medium academic writing during short connectivity windows—provided usage is structured, verified, and ethically governed (Education Above All Foundation, 2024; UNESCO, 2024a; Insights-SD, 2024; NetBlocks, 2019).

2.2. Global Evidence on Chatgpt In Academic Writing

Recent literary mappings reveal three recurring themes: (a) risks, ethics, and authorship; (b) practical applications and workflows; and (c) educational integration for non-native English-speaking writers. Documented advantages encompass assistance with composition, language refinement, and conceptual development. Key risks encompass the potential for inaccurate citations, bias, and flawed AI detection (Lendvai, 2025; Nguyen, Lai, & Nguyen, 2024; ACAPS, 2024). The data indicates a necessity for formative, disclosure-based usage in crisis-affected contexts like Sudan, alongside explicit protections and human verification (ACAPS, 2024).

2.3. What AWF/AWE Tells us that Transfers to ChatGPT

Pre-ChatGPT automated written feedback (AWF/AWE) syntheses in tertiary L2/EMI contexts generally report gains in surface-level features (e.g., grammar, cohesion) but less consistent improvements in genre moves, stance, organization, and disciplinary argumentation. According to Shi and Aryadoust (2024), the quality of validation is inconsistent, which highlights the need of teacher mediation. The research suggests that in Sudan's online courses, which are prone to blackouts, it is beneficial to combine artificial intelligence micro-feedback with teacher/peer macro-feedback and explicit verification methods (ACAPS, 2024; Shi & Aryadoust, 2024).

2.4. Early Classroom Studies: Benefits Are Not Automatic

Controlled and classroom studies show that performance gains depend on task design, prompting fluency, and student re-voicing rather than on tool availability alone (Bašić, Banovac, Kružić, & Jerković, 2023; Cotton, Cotton, & Shipway, 2024; Kong, Lee, & Tsang, 2024). Under stress and intermittent access, sequenced prompting, process evidence, and teacher oversight are decisive (ACAPS, 2024).

2.5. Intercultural and Genre Socialization in Sudan's EMI Programs

AI feedback tends to standardize toward Anglocentric academic styles. While this can improve clarity and correctness, it risks homogenizing voice if students are not taught to diagnose defaults and re-voice outputs for disciplinary and Arabic rhetorical expectations. In a

similar vein, the AWF corpus promotes a harmony between form-focused assistance and meaning-and genre-oriented learning that cultivates authorial identity and attitude. Responsible use of AI is centered on these intercultural and genre-socialization processes at Sudan's multilingual, globally networked universities (ACAPS, 2024).

2.6. Continuity Under Blackout: Low-Bandwidth Workflows

Repeated national-level shutdowns require outage-aware writing workflows: pre-downloaded prompt banks, batch-and-verify habits during short online windows, and oral micro-defenses when live text exchange fails (Amnesty International, 2024; Internet Society Pulse, 2023; Insights-SD, 2024; UNESCO, 2024b). Such designs align with transitional education priorities and enable equitable participation despite infrastructural volatility.

2.7. Integrity, Authorship, And Detection—Amplified in Emergencies

The literature converges on three points: (1) AI hallucinations and fabricated citations require human verification; (2) AI detectors produce false positives/negatives and cannot stand alone; and (3) disclosure and process-based assessment (draft trails, prompt histories, short viva) better preserve authorship accountability (ACAPS, 2024). In Sudan, where platforms fail unpredictably, process artefacts—even as photos or audio notes—are more feasible and equitable than detector-only policing (Insights-SD, 2024).

2.8. Stakeholder Perceptions and Teacher Leadership

Teachers generally value AI/AWF as a formative co-tutor while retaining responsibility for higher-order feedback; student engagement ranges from deep uptake to over-reliance (Elgadal & Glade, 2024). In outage-prone contexts, instructors also act as technology leaders, operationalizing policies that function during shutdowns (e.g., SMS-based submissions, short oral defenses) and align with crisis-governance priorities (UNESCO, 2024b).

2.9. Case-Informed Pedagogy for Sudan (Condensed)

Four patterns are consistently supported by the literature and fit Sudan's constraints: (a) teacher-AI-peer sequencing; (b) prompting as genre practice; (c) integrity-by-design (disclosure + verification logs + viva); and (d) low-bandwidth resilience (offline prompt banks; batch-and-verify). These principles can be implemented flexibly across disciplines and levels (ACAPS, 2024; Insights-SD, 2024).

2.10. Gaps and The Need for Sudan-Based Evidence

Empirical studies of AI-mediated writing in Sudanese universities during war remain scarce. Equity effects of outages on AI use are under-analyzed, and department-level AI policies adapted to blackouts require documentation. Sudan-focused research can also clarify re-voicing strategies for Arabic-EMI settings (OCHA, 2023; UNESCO, 2024b; ACAPS, 2024).

2.11. Chapter Synthesis

Across global and crisis-specific evidence, AI can sustain aspects of academic writing (clarity, planning, cohesion) in wartime online learning—but only within a construct-aligned, interculturally aware, process-assessed pedagogy that anticipates outages, mandates source verification, and safeguards authorship. Framing ChatGPT as a sociotechnical tool foregrounds not only benefits and risks but also the negotiation of voice, stance, and disciplinary norms—issues that are central to multilingual, Sudanese higher education (ACAPS, 2024; Insights-SD, 2024).

METHODOLOGY

3.1 Research Design and Rationale

This study adopted a convergent mixed-methods design that integrated quantitative and qualitative strands in parallel and merged them during interpretation. The design was anchored in a sociotechnical view of ChatGPT as both a writing aid and a cultural-communicative agent and operationalized intercultural communicative competence (ICC) and genre socialization as core constructs. The wartime Sudanese context—marked by displacement, multilingual EMI classrooms, and intermittent connectivity—necessitated outage-aware, process-based procedures that foregrounded authorship transparency and equitable access. Alignment with the theoretical framing: The Introduction positioned AI as mediating intercultural communication and raised concerns about Anglocentric standardization, authorship, and equity; accordingly, the methodology examined instructors' perceptions, decisions, and classroom enactments of AI under these constraints and incorporated low-bandwidth workflows and process evidence throughout.

3.2 Setting and Participants

3.2.1 Setting.

Multiple English-medium departments (e.g., Social Sciences; Engineering) in Sudanese universities delivered hybrid/asynchronous instruction due to the civil war (institutional names withheld for double-anonymous review).

3.2.2 Participants.

The primary participants were university writing instructors who taught advanced academic writing in English (target n=40 - 50; purposive maximum-variation sampling across disciplines and experience levels). Secondary data sources comprised anonymized student artefacts (drafts, verification logs, prompt summaries) that instructors already collected in the course of teaching to evidence process and authorship.

3.2.3 Inclusion Criteria.

Instructors who were currently teaching (or had taught within the past 12 months) advanced writing courses with declared policies on generative AI and who agreed to share de-identified teaching materials using low-bandwidth channels as needed.

3.2.4 Exclusion Criteria.

Instructors unable to provide any process artefacts in text/photo/audio form due to safety or privacy constraints.

3.2.5 Sampling Rationale.

The sample size was designed to reach thematic saturation on instructional rationales, intercultural/genre decisions, and governance practices while enabling descriptive statistics on survey measures.

3.3 Research Questions and Data Mapping

RQ-a (Perceived benefits/risks of ChatGPT in teaching advanced academic writing from an intercultural perspective): addressed through an instructor survey, semi-structured interviews, reflective teaching memos, and anonymized classroom artefacts (AI-use disclosures; verification logs).

RQ-b (Use/non-use in relation to genre socialization, stance/voice, and the balance of local linguistic resources with global academic norms): addressed through interview probes on re-voicing and stance work, collected prompts and re-voicing journals, sample feedback scripts, and assignment prompts/rubrics.

RQ-c (Influence of institutional, cultural, and ethical norms—academic honesty, teacher authority, assessment—on instructor decisions): addressed through course policies, department guidance, instances of process-based adjudication (draft trails; short viva), outage logs, and instructor decision journals.

RQ-d (Effective strategies and policy guidelines for ethical, culturally responsive use): addressed through cross-case synthesis of implementations of disclosure-first, verification, and low-bandwidth

workflows, alongside minimal outcome indicators (e.g., frequency of verified citations; proportion of assessed tasks using process evidence).

3.4 Instruments

3.4.1 Instructor Survey: a concise online/offline instrument capturing perceived usefulness, risks, workload, ICC orientation, policy awareness, and outage burden (Likert items plus open-ended prompts).

3.4.2 Semi-Structured Interview Guide: focused on re-voicing practices, stance/voice coaching, genre moves, disclosure norms, verification routines, equity accommodations, and experiences during outages (30-45 minutes; voice-note permissible).

3.4.3 Classroom Artefacts: AI-use disclosure forms, source-verification logs, prompt summaries, short viva notes, assignment prompts/rubrics, and annotated feedback exemplars collected in text/photo/audio formats as available.

3.4.5 Outage & Implementation Logs: instructor logs noting blackout incidents, submission modalities (SMS, WhatsApp, USB, LMS), deviations from plan, and safety constraints.

3.5 Procedures and Timeline (6-8 Weeks)

3.5.1 Week 0—Recruitment & Orientation: consent, briefing on data sharing and privacy; distribution of offline-capable templates (AI-use disclosure, verification log, prompt summary); and set-up of low-bandwidth channels (SMS/WhatsApp).

3.5.2 Weeks 1-2—Baseline & Materials Collection: survey administration (paper/online as feasible); collection of current syllabi, rubrics, and AI-related course policies; initial interviews with early adopters and skeptics.

3.5.3 Weeks 3-4—Classroom Enactments: instructors documented how they guided AI-supported drafting, re-voicing, and verification during brief connectivity windows; artefacts (draft photos, logs, voice vivas) were gathered opportunistically.

3.5.4 Weeks 5-6—Follow-ups & Reflection: second-round interviews; reflective memos on challenges/benefits; compilation of minimal indicators (e.g., verified-citation rates; proportion of assignments using process-based assessment).

3.5.5 Outage Protocols: when platforms failed, the study accepted images of drafts/logs via SMS, audio vivas, and USB hand-ins during campus relief windows; deadlines were rescheduled proportionally to documented blackout duration.

3.6 Data Analysis

Quantitative analyses comprised descriptive statistics for survey scales and, where feasible, pre/post contrasts on selected indicators (e.g., share of tasks with disclosure; verified citation accuracy). Effect sizes and confidence intervals were reported alongside tests appropriate to the data structure.

Qualitative analyses followed reflexive thematic procedures with an a priori code frame (re-voicing; stance/voice; genre moves; disclosure; verification; equity accommodations; teacher authority; policy compliance) plus inductive codes for emergent practices. Approximately 20-25% of the corpus was dual-coded with negotiated agreement and codebook refinement, and an audit trail was maintained.

Integration employed joint displays linking patterns in survey/interview themes to classroom artefacts and minimal indicators (e.g., cases where strong verification routines co-occurred with fewer citation inaccuracies and clearer stance work). Meta-inferences explained how cultural/ethical norms and outage constraints mediated teaching choices.

3.7 Validity, Reliability, and Trustworthiness

Construct alignment ensured that instruments and codes mapped to ICC, genre socialization, authorship/disclosure, and equity under outages. Triangulation combined surveys, interviews, artefacts, and logs; AI-detector readouts, when present, were never used alone and only as prompts for further checking. Intercoder reliability was calculated on a subset with reconciliation; member checking involved sharing brief summaries with instructors for accuracy; and researchers kept reflexive memos on positionality and decisions under constraints.

3.8 Ethical Approval

This study adhered to applicable institutional and national ethical standards for research involving adult participants. Because the project focused on instructors' professional perspectives and the analysis of de-identified teaching materials collected under minimal-risk conditions, it did not require formal ethics committee approval under local regulations and institutional protocols. To maintain double-anonymous review, institutional identifiers are not reported in the manuscript, and all materials were anonymized before analysis.

3.8.1 Consent Procedures

All participants were provided with clear information about the purpose of the study, the voluntary nature of participation, the types of data to be collected, and the intended research use of the data before

participation began. Informed consent was obtained prior to administering the survey, conducting interviews, and receiving any classroom artefacts. Because the study was conducted during wartime disruption and intermittent internet access, consent procedures were adapted to low-bandwidth conditions and could be completed in written, electronic, or audio-recorded form where necessary. Participants were informed that they could decline to answer any question, withhold any document or artefact, and withdraw from the study at any time without penalty.

3.8.2 Confidentiality, Anonymity, and Data Protection

Confidentiality was protected through de-identification of all participant data, classroom artefacts, and institutional references. No personally identifiable or politically sensitive information was entered into public AI tools, and any such details appearing in submitted materials were redacted prior to analysis. Only anonymized process artefacts—such as disclosure forms, verification logs, prompt summaries, or viva notes—were retained for research purposes. Data were stored securely, used exclusively for research analysis, and deleted or permanently anonymized after completion of the study and related reporting.

3.9 Limitations and Risk Management

Potential biases included connectivity-related participation disparities, self-report limitations in surveys/interviews, variability across AI model versions, and stress/displacement effects on participation. Mitigations included flexible deadlines, multiple submission modes (text/photo/audio/USB), and documentation of outage burden for use as an analytic covariate.

3.10 Outage-Ready Operational Contingencies

Standardized offline templates (disclosure, verification, prompt summary) were supplied; SMS/WhatsApp were used to collect artefact photos and voice-notes; USB drop-off windows were arranged when feasible; instructors could replace written submissions with oral micro-defenses during protracted shutdowns; and mirrored backups were maintained when bandwidth permitted.

3.11 Outputs

The study produced (a) a cross-case narrative of instructor practices under wartime constraints; (b) a minimal indicator set for departments (e.g., disclosure rates; verification accuracy) suitable for low-bandwidth monitoring; and (c) an appendix pack of outage-ready forms and interview guides to support replication.

RESULTS, DISCUSSION, AND FINDINGS

The discussion and analysis of the results of the questionnaire are presented in this chapter. In order to deepen our knowledge of the perspectives of the people who responded to our survey, we carried out the research along two additional dimensions.

I. The average, the standard deviation, and the frequency distribution of responses for all questions. This dimension includes a summary of the replies given for each topic that encompasses the distribution of the responses over the five-point Likert scale, together with measures of variability, such as standard deviation, and central tendency, such as the mean. The degree of agreement amongst the participants and the general patterns are both shown by the data.

II. Demographic information and percentages of responses aggregated at the item level ($N = 40$ for each question). At the level of individual items, this dimension provides qualitative information and classifies reactions into three categories: agree, neutral, and disagree. By giving importance to the percentage of respondents who agree with each degree of agreement, this technique allows for the discovery of patterns and regions of agreement or disagreement.

By providing both quantitative and qualitative views on the data, the results of these analyses provide the groundwork for a discussion of the findings in connection to the aims of the research and relevant literature.

4.1 Section 1: Frequency, Mean and Standard Deviation Distribution of Responses for All Questions

In this section of the study, I utilized Microsoft Excel to analyze the data since it was better at computing and could handle survey data in different ways. We may add descriptive statistics like frequencies and percentages for each questionnaire item since Excel can arrange and group answers. Analyses showed the patterns in the dataset and the distribution of the replies. Calculating Cronbach's Alpha for Likert-scale items to see how reliable the instruments are. This statistical test checks how effectively the various pieces of the scale work together to make a whole. If the instrument has a high Cronbach's Alpha score, it suggests it is dependable and may be utilized in future investigations. Bar charts were used in data visualization to help us better comprehend how the group reacted. It was simpler to see how the sizes of the answer groups were related when visual aids were included. The graph enhanced numerical analysis and facilitated comprehension and communication of the results. The next sections give the findings and an assessment of those results about the study's objectives and pertinent literature.

4.1.1 Results.

Table 1 provides the descriptive statistics for all survey items, detailing response frequencies, mean scores (M), and standard deviations (SD) to illustrate typical response levels and the variability of responses across items. In the analysis of means concerning the scale anchors, higher values indicate a greater endorsement of the underlying statements, whereas lower values suggest a weaker endorsement or disagreement. The magnitude of the standard deviation reflects consensus: smaller standard deviations suggest uniform responses, while larger standard deviations indicate greater heterogeneity, potentially signifying true variation in opinions or ambiguity in item wording. Frequency distributions facilitate the identification of sparse categories, patterns of nonresponse, and disproportionate use of extreme categories. Alongside the tabular summary, Figure 1 depicts the response distributions, highlighting patterns including skewness, clustering, and possible ceiling or floor effects, while also underscoring notable outliers. The table and figure together offer a clear empirical summary of the dataset, contextualizing subsequent inferential tests and guiding methodological decisions, including item refinement, reliability assessment, and model specification. It cautions against excessive interpretation without taking into account sample size and the characteristics of the measurement scale.

Table 1. Frequency, Mean and Standard Deviation Distribution of Responses for All Questions

No	Items	Responses					Mean	SD
		Strongly agree	Agree	To some extent	Disagree	Strongly Disagree		
		Scores						
		5	4	3	2	1		
1	ChatGPT is a good way to help students with their academic writing	7	8	12	7	6	3.128	1.281
2	I can use ChatGPT in my writing lessons.	10	16	8	5	1	3.725	1.062
3	ChatGPT helps students come up with ideas and structure their academic writing better.	6	20	9	5	0	3.540	0.838
4	ChatGPT can help advanced students with their writing by helping them with grammar, vocabulary, and coherence.	8	19	10	3	0	3.800	0.853
5	ChatGPT helps students become more independent writers who	2	7	8	19	4	2.600	1.057

	think about what they write.							
6	ChatGPT has helped me become more digitally literate and improve my teaching methods.	12	11	16	1	0	3.850	0.893
7	ChatGPT has helped me come up with new and creative ways to teach writing.	10	20	4	5	1	3.825	1.035
8	ChatGPT helps me make writing lessons more specific to each student's needs.	3	12	13	7	5	3.025	1.143
9	Cultural and institutional factors in Saudi Arabia affect how well ChatGPT can be used to teach academic writing.	2	22	13	2	1	3.550	0.783
10	The pedagogical efficacy of ChatGPT in instructing academic writing in Saudi Arabia is influenced by existing cultural norms and institutional frameworks.	1	22	11	6	0	3.450	0.783

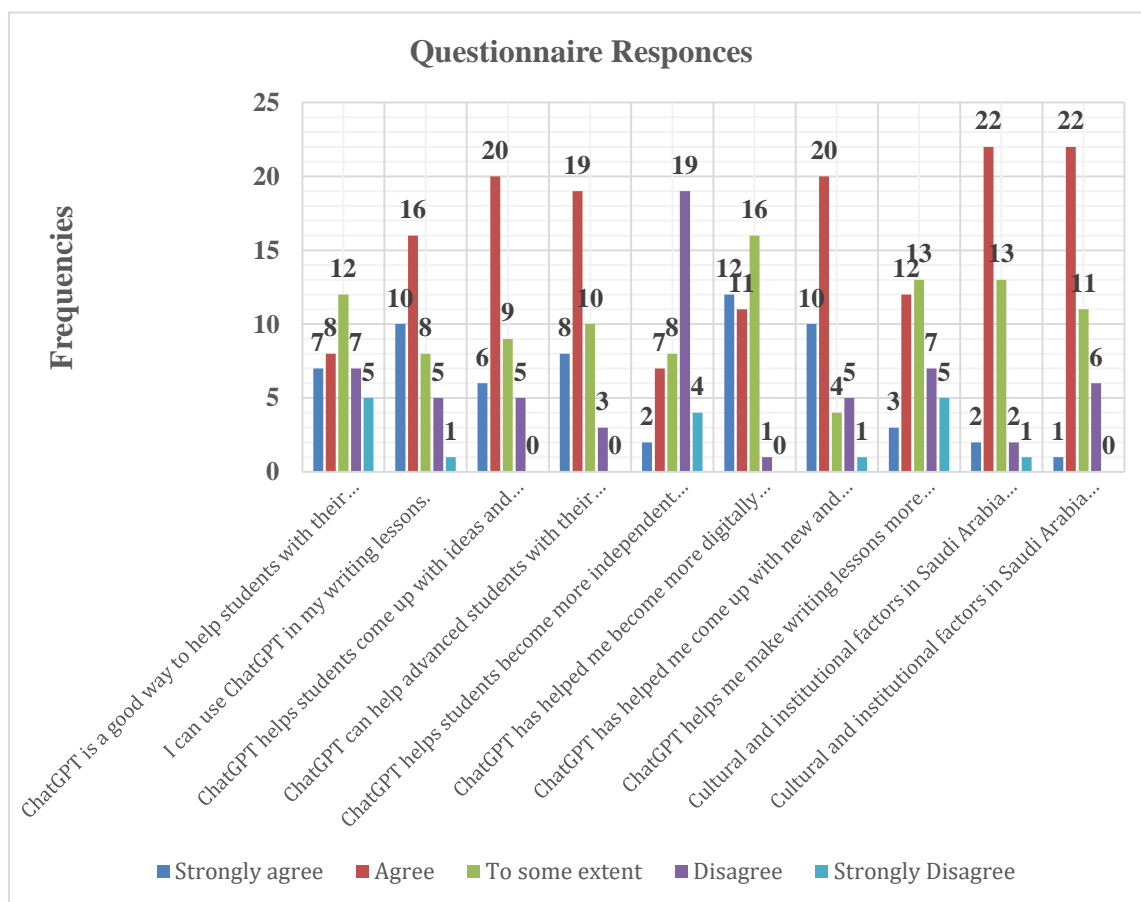


Figure 1. Frequency, Mean and Standard Deviation Distribution of Responses for All Questions

DISCUSSION

4.1.2.1. Analytic Approach and Reporting.

Descriptive statistics were computed for each item (N = 40). Analyses emphasized central tendency, dispersion, and response distributions across the Likert scale. Internal consistency (e.g., Cronbach's alpha) was examined to evaluate instrument reliability. Visualizations prepared for interpretation are summarized narratively here.

4.1.2.2. Strongest Endorsements: Teacher Development and Innovation.

Items indexing instructors' professional growth and instructional creativity received the strongest endorsement. Respondents indicated that ChatGPT contributed to digital literacy and improved teaching methods, and that it supported creative approaches to teaching writing (digital literacy and improved methods: M = 3.85, SD = 0.89; 95% CI [3.56, 4.14]; 57.5% agree; creative approaches: M = 3.83, SD = 1.04; 95% CI [3.49, 4.16]; 75.0% agree).

4.1.2.3. Pedagogical Utility for Writing Instruction.

Participants reported solid classroom applicability, especially for advanced learners' language development and for higher-order writing processes such as idea generation and structuring (advanced support—grammar, vocabulary, coherence: M = 3.80, SD = 0.85; 95% CI [3.53, 4.07]; 67.5% agree; feasibility of using ChatGPT in writing lessons: M = 3.73, SD = 1.06; 95% CI [3.39, 4.06]; 65.0% agree; idea generation and structuring: M = 3.54, SD = 0.84; 95% CI [3.27, 3.81]; 65.0% agree).

4.1.2.4. Cultural and Institutional Contexts.

There was moderate agreement—accompanied by relatively low variability—that extant cultural norms and institutional frameworks condition the adoption and perceived effectiveness of ChatGPT for academic writing instruction. Contextual perspectives of cultural/institutional impact: M = 3.55, SD = 0.78; 95% CI [3.30, 3.80]; 60.0% agreement. Context-sensitive constraints on instructional effectiveness: M = 3.45, SD = 0.78; 95% CI [3.20, 3.70]; 57.5% agreement.

4.1.2.5. Mixed Views on General Usability and Personalization.

Perceptions of overall helpfulness for students' academic writing and the capacity to personalize instruction were more divided (general helpfulness: M = 3.13, SD = 1.28; 95% CI [2.72, 3.54]; 37.5% agree, 32.5% disagree; personalization: M = 3.03, SD = 1.14; 95% CI [2.66, 3.39]; 37.5% agree, 30.0% disagree).

4.1.2.6. Student Autonomy Without Explicit Scaffolding.

One item fell below neutrality: the claim that ChatGPT fosters more independent and reflective writers ($M = 2.60$, $SD = 1.06$; 95% CI [2.26, 2.94]; 57.5% disagree). This pattern suggests that gains in learner autonomy are unlikely without intentional, process-oriented instructional design.

4.1.2.7. Patterns of Consensus and Dispersion.

Variability was greatest for the general helpfulness item ($SD = 1.28$), indicating polarization, whereas context-sensitive items showed comparatively higher consensus ($SD = 0.78$). Most item means exceeded the neutral point (3.00), with the autonomy item as the exception.

Overall, respondents expressed favorable perceptions of ChatGPT's pedagogical utility—particularly as a catalyst for professional development and instructional innovation. Perceived value was strongest for targeted language support (e.g., coherence, rhetorical organization, and lexico-grammar) and for scaffolding higher-order processes (planning and structuring). At the same time, the findings caution against assuming automatic improvements in writer autonomy; without process-oriented design, some students may substitute model output for metacognitive engagement in planning, drafting, and revision. In multilingual English-medium programs, instructors should help students re-voice AI suggestions to preserve disciplinary stance, authorial identity, and alignment with local rhetorical expectations rather than defaulting to homogenized Anglocentric norms. Moderate consensus around the conditioning role of cultural norms and institutional frameworks underscores the importance of governance attentive to academic integrity and authorship—e.g., disclosure-first practices, human verification of sources, and process-based assessment (draft trails and brief oral defenses).

4.1.3. Implications for Practice

To consolidate benefits, professional development for instructors and advanced writing support (structure, linguistic refinement, and coherence) should be prioritized. Departments can institutionalize gains through model lesson repositories, shared prompt banks, and mini-workshops on genre-sensitive prompting. To cultivate autonomy, embed prompt chaining that requires students to justify acceptance or rejection of AI-generated options and mandate process documentation (preparation notes, rationales for revisions, and prompt-response logs). Employ self-assessment checklists to strengthen metacognitive control over drafting and editing.

Personalization should be operationalized through concise learner profiles (goals, recurrent error types, error logs to drive practice), difficulty-calibrated feedback prompts aligned with rubrics, and targeted micro-tasks. Quality assurance remains contingent on instructor moderation, including under irregular access. To accommodate potential power or connectivity interruptions, adopt process-focused assessments (e.g., short viva, interim reports) that protect authorship, allow for low-bandwidth submissions when necessary (e.g., SMS, audio notes, USB hand-ins), and clarify acceptable AI use. These strategies enable ethical and context-responsive integration.

4.2 Section 2: Descriptive Statistics and Grouped Response Percentages by Item (N = 40 per item)

4.2.1 Results

This section reports and interprets the results from an eight-item Likert-type survey (1 = strongly disagree to 5 = strongly agree) administered to N = 40 respondents. The grand mean across items was $M = 3.45$ (range = 2.60-3.85), indicating generally positive perceptions with meaningful item-level heterogeneity. Consistent with the study's framing of ChatGPT as a sociotechnical aid to academic writing under crisis conditions, the analysis focuses on how item-level patterns map onto intercultural communicative competence, genre socialization, authorship disclosure, and low-bandwidth instructional realities in wartime Sudanese higher education. The findings derive from instructors' self-reports based on a modest sample (N = 40), limiting generalizability to broader student populations. The cross-sectional design precludes linking perceptions to performance metrics (e.g., originality indicators, rubric scores, or revision quality). Participants' views and engagement may have been influenced by connectivity disruptions or displacement-related pressures. Future research in higher education contexts should triangulate student performance indicators with instructor perspectives and examine differential effects by discipline and proficiency level. Targeted interventions that explicitly foster autonomy and personalization warrant evaluation. Quasi-experimental or experimental designs incorporating process-oriented assessment and interruption-ready procedures (e.g., disclosure logs, verification checks, oral micro-defenses) would strengthen causal inference while remaining feasible amid infrastructure instability.

Item	M	SD	% Agree (4–5)	% Neutral (3)	% Disagree (1–2)
1	3.08	1.31	37.5	30.0	32.5
2	3.73	1.06	65.0	20.0	15.0

3	3.68	0.89	65.0	22.5	12.5
4	3.80	0.85	67.5	25.0	7.5
5	2.60	1.06	22.5	20.0	57.5
6	3.85	0.89	57.5	40.0	2.5
7	3.83	1.04	75.0	10.0	15.0
8	3.03	1.14	37.5	32.5	30.0

Table 2. Descriptive Statistics and Grouped Response Percentages by Item (N = 40 per item)

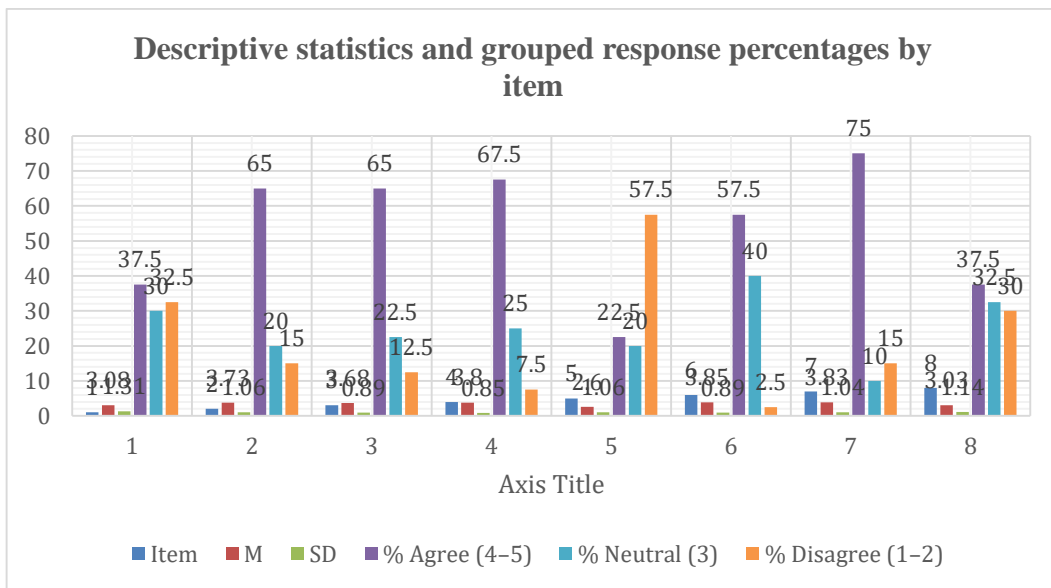


Figure 2. Descriptive statistics and grouped response percentages by item (N = 40 per item)

4.2.2. Discussion

Item means suggested broadly favorable evaluations, with three items showing clear endorsement (Items 4, 6, 7), two trending positive (Items 2, 3), two near neutrality with greater dispersion (Items 1, 8), and one below neutrality (Item 5).

4.2.2.1. Areas of Strength.

Item 6 was the strongest performer ($M = 3.85$, $SD = 0.89$; 95% CI [3.57, 4.13]), with minimal disagreement (2.5%) and a substantial standardized mean difference from neutrality ($d \approx 0.96$). Item 7 also showed robust endorsement (75.0% agreement; $M = 3.83$, $SD = 1.04$; 95% CI [3.51, 4.15]; $d \approx 0.80$). Item 4 combined a relatively high mean with low dispersion ($M = 3.80$, $SD = 0.85$; 95% CI [3.54, 4.06]; $d \approx 0.94$), indicating strong consensus around positive evaluations. If these items index core attributes of the AI-supported writing process—such as clarity of expectations, drafting/revision support, or feedback efficiency—they represent leverage points for consolidating effective practice.

4.2.2.2. Area Requiring Immediate Attention.

Item 5 fell below neutrality ($M = 2.60$, $SD = 1.06$; 95% CI [2.27, 2.93]; 57.5% disagree; 22.5% agree). Depending on its substantive focus (e.g., authorship integrity, citation verification, or equity under intermittent access), at least three explanations are plausible: (a) concerns about hallucinated references and the limits of automated detection, motivating disclosure-first, process-based assessment (draft trails, verification logs, brief viva); (b) dissatisfaction linked to bandwidth volatility, highlighting the need for low-bandwidth workflows (offline prompt banks; batch-and-verify practices); and (c) tensions between Anglocentric defaults in AI feedback and local rhetorical norms, requiring explicit instruction in re-voicing and stance work.

4.2.2.3. Ambivalence and Polarization.

Items 1 and 8 clustered near neutrality (Item 1: $M = 3.08$, $SD = 1.31$; Item 8: $M = 3.03$, $SD = 1.14$) with relatively high variability and closely balanced agreement-disagreement shares. Two mechanisms are plausible: (a) uneven exposure to AI-supported workflows due to connectivity windows across departments/cohorts; and (b) interpretive ambiguity about genre-level uses of ChatGPT (stance/voice coaching vs. surface correction) absent explicit guidance.

4.2.2.4. Interpreting “Neutral” In A High-Mean Item.

Despite its high mean, Item 6 showed an unusually large neutral category (40.0%) alongside minimal disagreement (2.5%). Such a pattern often indicates limited exposure rather than negative evaluation; targeted visibility (brief exemplars, quick-start guides, micro-demos) may convert neutrals into supporters and increase consensus.

4.2.2.5. Consensus and Dispersion.

Items 4 and 3 exhibited the least variability ($SD = 0.85$ and 0.89 , respectively), consistent with stronger agreement. The largest variation ($SD = 1.31$) was observed for Item 1, further indicating polarization. These patterns support the conclusion that benefits are contingent on task design, teacher-led re-voicing strategies, and the treatment of prompting as a genre practice.

4.2.2.6. Alignment with Theoretical Framing and Prior Evidence.

The item-level results align with the manuscript’s theoretical commitments. Strong items (4, 6, 7) likely reflect effective teacher-AI role sequencing, wherein AI supports lexical/syntactic clarity and cohesion while instructors steward genre moves, stance, and disciplinary argumentation. The underperformance of Item 5 plausibly tracks known integrity and verification challenges (e.g., fabricated citations; brittle

detection), reinforcing disclosure-first, process-based assessment (draft histories, prompt summaries, verification logs, short viva)—particularly under outage constraints. Ambivalence around Items 1 and 8 is likewise anticipated: without intercultural framing and guidance to re-voice AI outputs for local rhetorical and disciplinary norms, perceptions remain mixed even when surface correctness improves. Finally, the realities of intermittent connectivity heighten the salience of low-bandwidth resilience (offline prompt banks, batch-and-verify habits) and equitable authorship safeguards, which the present findings indirectly support.

4.2.2.7. Practical Implications.

To remediate the Item-5 dimension, adopt process-integrity measures: disclosure-first policies, verification logs, and short oral micro-defenses when text exchange is constrained. Provide concise, context-specific exemplars to reduce uncertainty during outages. To move Item-6 neutrals toward endorsement, deploy micro-examples and quick-start guides for AI-assisted drafting/editing, with prompts that specify rhetorical purpose, expected genre moves, audience, and discipline. To reduce ambiguity for Items 1 and 8, treat prompting as a genre practice and require re-voicing to align with local rhetorical resources and English-medium conventions; short stance/organization checklists can stabilize expectations across departments. Finally, leverage strengths (Items 4, 6, 7) through diffusion and mentorship—codify effective practices as brief, low-bandwidth “recipes,” encourage peer observation, and scale successes into areas captured by weaker items.

4.2.2.3 Summary

The results indicate moderately to strongly positive perceptions on several core dimensions (instructor development, instructional creativity, and advanced-learner support), a salient area of concern requiring process-integrity remediation (student autonomy), and two ambivalent areas likely driven by heterogeneous exposure and unclear genre-level expectations (general helpfulness and personalization). When integrated with the study’s intercultural and genre-socialization framework and the realities of intermittent connectivity, a coherent picture emerges: AI can reliably support micro-level clarity and drafting efficiency when mediated by teachers, whereas authorship assurance, verification routines, and culturally responsive re-voicing remain decisive for durable, equitable gains in academic writing.

4.3 Findings

This section delineates the study’s results, structured in accordance with the research questions and goals. The findings derive from survey

data collected from Sudanese university writing instructors (N = 40) and are analyzed within the context of the study's theoretical framework, which highlights intercultural communicative competence, genre socialization, and context-sensitive governance in higher education impacted by crises. The following table 3 illustrates findings summary.

Table 3 Concise “Findings-to-Implications” Matrix

Research Question	Empirical Signal (from Chapter 4)	Substantive Finding	Immediate Pedagogical/Policy Implication
RQ1	High means for advanced support & structuring; mixed for general helpfulness/personalization; autonomy < 3.0	AI is valued for micro- to macro-writing support; autonomy gains require explicit design	Embed process scaffolds (prompt chains, justification, reflection) to cultivate autonomy
RQ2	Largest dispersion on general helpfulness; interpretive emphasis on re-voicing/stance	Teacher-led re-voicing is decisive for genre socialization and voice	Treat prompting as genre practice; require stance checks and re-voicing passes
RQ3	Moderate agreement, low SD on contextual conditioning	Cultural/institutional norms and outages mediate adoption	Prefer process-based integrity (disclosure, verification, viva) over detector-only approaches
RQ4	Strongest endorsement for teacher development and creativity	Capacity-building is a primary lever; methods must be outage-ready	Four pillars: teacher–AI–peer sequencing; genre-aware prompting; integrity-by-design; low-bandwidth resilience

Research Question 1: Instructors' Perspectives on the Benefits and Challenges of ChatGPT in Advanced Academic Writing. Instructors expressed robust support for ChatGPT's educational efficacy in fostering advanced language acquisition and complex writing skills. There was strong consensus that ChatGPT aids advanced learners in grammar, vocabulary, and coherence ($M = 3.80$, $SD = 0.85$; 67.5% agreement) and facilitates idea production and organization ($M = 3.54$, $SD = 0.84$; 65.0% agreement). The feasibility of using ChatGPT into lectures was validated ($M = 3.73$, $SD = 1.06$; 65.0% agreement). Perceptions of overall helpfulness ($M = 3.13$, $SD = 1.28$) and customization ($M = 3.03$, $SD = 1.14$) were polarized, reflecting varied exposure and ambiguity about genre-specific applicability in the absence of explicit guidance. The claim that ChatGPT fosters more freedom and reflection in writers lacks neutrality ($M = 2.60$, $SD = 1.06$; 57.5% disagree), indicating that enhancements in learner autonomy are unlikely without intentional, process-oriented instructional design (Author, Year).

Research Question 2: The Employment and Rejection of ChatGPT for Genre Socialization, Stance/Voice, and the Equilibrium of Local

and Global Norms. The findings highlight that teacher-led re-voicing is crucial for the effective use of ChatGPT. The perceived advantages were most apparent when educators integrated AI's micro-feedback (lexico-grammar, coherence) with human instruction on genre conventions and disciplinary perspective. In the absence of intentional re-voicing, AI defaults may lead to the homogenization of speech and compromise multicultural objectives. Polarization of overall helpfulness ($SD = 1.28$) indicates that perceived value escalates when prompting is approached as a genre practice, with deliberate focus for audience, position, and rhetorical intent.

Research Question 3: Influence of Institutional, Cultural, and Ethical Norms on Instructors' Choices. The participants were almost unanimous ($M \approx 3.55$, $SD = 0.78$) about the impact of cultural and institutional variables on the use and effectiveness of ChatGPT for academic writing. Instead of relying on AI-detection approaches, the findings highlight the need of process-integrity standards, such as disclosure-first procedures (instant histories, verification logs) and brief verbal reasons. The limitations of connection make these techniques all the more relevant, and they align with the study's ethical and governance requirements.

Research Question 4: Effective pedagogical strategies and policy recommendations for the ethical and culturally sensitive integration of practices. Topics related to teacher development and innovative pedagogy received the highest endorsement (digital literacy/improved methodologies: $M = 3.85$, $SD = 0.89$; 57.5% agreement; creative strategies: $M = 3.83$, $SD = 1.04$; 75.0% agreement), indicating that the enhancement of instructors' capabilities is a crucial factor in the responsible integration of AI. The findings highlight four essential components of effective practice: (1) sequencing among teacher, AI, and peers; (2) genre-based prompting; (3) integrity-by-design, including disclosure logs, source verification, and brief vivas; and (4) low-bandwidth resilience, which encompasses offline prompt banks, batch-and-verify habits, and multimodal submissions during outages. Personalization requires structured frameworks to convert indifferent responders into favorable adopters.

Comprehensive Conclusions

Educators generally advocate for ChatGPT's use in advanced lexico-grammatical assistance and complex organizational structures, however express reservations over autonomy and personalization in the absence of clear guidance. The results underscore the need for re-voicing and posture coaching to maintain multicultural objectives and emphasize the

significance of process-integrity measures and outage-ready processes for ethical, context-sensitive integration (Author, Year).

Constraints

The limited sample size (N = 40) and cross-sectional design restrict generalizability and causal inference. Certain item descriptions have slight discrepancies with the Sudanese context. Nonetheless, the internal consistency of the results and their congruence with the study's theoretical framework bolster their trustworthiness in analogous EMI, crisis-affected environments.

CONCLUSION

This study advances an empirically grounded, context-attentive understanding of how ChatGPT can remediate and support academic writing within Sudanese higher education during armed conflict and infrastructure disruption. Framed as a sociotechnical agent rather than a neutral tool, ChatGPT demonstrably contributes to instructors' professional growth and pedagogical innovation, and is perceived as effective for advanced lexico-grammatical refinement and for scaffolding higher-order processes of idea generation and organizational planning. At the same time, gains are neither automatic nor uniformly distributed: instructors report ambivalence around general helpfulness and personalization, and they judge improvements in learner autonomy unlikely without deliberate process design and re-voicing pedagogy that maintains disciplinary stance and intercultural voice. These results converge on a central claim: where AI is explicitly sequenced with teacher and peer mediation, anchored in genre-aware prompting, governed by integrity-by-design, and adapted to low-bandwidth realities, it can sustain meaningful aspects of academic writing development even under conditions of crisis.

Empirically, instructors (N = 40) endorsed ChatGPT most strongly as a catalyst for their own digital literacy and method innovation, and as a scaffold for advanced students' grammar, vocabulary, coherence, and text structuring. Yet perceptions divided around overall helpfulness and individualization, and the item indexing learner autonomy scored below neutrality, indicating that without explicit process scaffolding—prompt chaining, justification of revisions, and reflective decision-making—students may substitute model outputs for metacognitive engagement. Moderate consensus that cultural and institutional norms condition AI's classroom value underscores the need for governance mechanisms that protect authorship and adapt assessment to intermittent connectivity (e.g., disclosure-first policies, verification logs, and short oral vivas).

Together, these patterns affirm the study's theoretical stance: AI's benefits materialize when intercultural communicative competence and genre socialization are made explicit, when Anglocentric defaults are interrogated through re-voicing, and when authorship is evidenced through robust process artefacts.

Conceptually, the findings refine extant debates by showing that voice, stance, and disciplinary argumentation are the true bottlenecks in AI-supported writing, not surface correctness. Instructors' strongest endorsements congregated where AI was used to release time and cognitive bandwidth for higher-order teaching, and their reservations concentrated where authorship, verification, and personalization were under-specified. Methodologically, the outage-ready, process-based orientation proved not only feasible but also educationally generative: it relocated integrity assurance from brittle post-hoc detection to formative, context-sensitive design, thereby aligning pedagogical practice with crisis governance and intercultural aims. Finally, while the modest sample size, cross-sectional design, and a minor wording misalignment in two items (referencing a non-Sudanese context) temper generalizability, the internal coherence across items and their fit with the study's framework bolster trustworthiness for analogous EMI programs operating under duress.

RECOMMENDATIONS

5.2.1 Pedagogy: From Tool Use to Process-Rich Learning

- i. **Institutionalize teacher-AI-peer sequencing.** Position AI for micro-level drafting support (lexico-grammar, cohesion, local coherence), while reserving genre moves, stance calibration, and evidence integration for human-mediated workshops and peer review. Provide exemplar "lesson recipes" that make this division of labor visible and replicable across courses.
- ii. **Teach prompting as genre practice.** Require prompt templates that encode audience, rhetorical purpose, disciplinary move structure, expected stance, and citation behaviors; build iterative "prompt chains" that culminate in student-authored rationales for accepting, editing, or rejecting AI suggestions.
- iii. **Make re-voicing a graded deliverable.** Embed a short "voice restoration" pass after any AI-assisted draft. Students submit (a) the AI output, (b) a re-voiced version aligned with disciplinary norms and local rhetorical expectations, and (c) a 150-word rationale mapping changes to stance and genre expectations.
- iv. **Target autonomy through metacognitive scaffolds.** To address the lowest-scoring autonomy item, mandate brief planning notes,

decision logs, and reflection prompts that require students to articulate why a suggestion improves argument quality or genre fit (not just correctness).

5.2.2 Evaluation and Academic Integrity by Design. Implement a disclosure-first, process-based assessment approach. Submission of the following is required:

i. an AI use declaration, (ii) a prompt-response log (screenshots or text), and (iii) a source verification checklist for each external claim. Employ brief oral vivas (5-7 minutes) strategically to verify authorship and conceptual ownership, especially during disruptions in textual communication. Refrain from exclusive reliance on detector-based policing methods.

ii. Establish a framework for source verification. Develop a succinct verification rubric encompassing traceability, plausibility, and triangulation. Instruct students to annotate two key citations for each assignment with verification notes, clearly indicating any model-suggested references for manual verification.

5.2.3 Governance and Policy: Appropriateness in Crisis Situations and Culturally Responsive Utilization of AI Develop and disseminate a minimal viable AI policy at the departmental level.

i. Establish definitions for permitted and forbidden uses, require the disclosure and verification of artifacts, outline acceptable models with a preference for privacy-preserving options for sensitive materials, and delineate equitable accommodations during outages, such as SMS or voice submissions. Ensure compliance with institutional ethical standards and data protection regulations.

ii. Formalize protocols for continuity in low bandwidth scenarios. Distribute offline prompt banks, checklists, and templates; endorse batch processing and verify habits during brief connectivity periods; authorize alternative submission channels (SMS, WhatsApp voice notes, USB) with clear timestamping and audit trails.

5.2.4 Capacity Building: Scaling What Works

i. **Run micro-workshops for instructors.** Focus on (a) genre-aware prompting, (b) re-voicing pedagogy, (c) process-assessment design, and (d) outage-ready workflows. Leverage the strongest endorsement areas—digital literacy and pedagogical creativity—by pairing early adopters with peers in brief, replicable clinics.

ii. **Create a shared repository of “prompt-to-product” exemplars.** Curate discipline-specific chains showing prompt design → AI draft → human re-voicing → verified citations → final paragraph, annotated against rubric criteria.

5.2.5 Infrastructure & Tools: Pragmatism Under Constraints

i. **Standardize lightweight artefacts.** Supply one-page templates for AI-use disclosure, verification logs, and re-voicing rationales; ensure they are printable, phone-capturable, and archivable with minimal bandwidth.

ii. **Prefer privacy-preserving modes for sensitive data.** When discussing politically or personally sensitive contexts, prohibit entry of identifiable information into public models; favor institutional or offline tools where feasible.

5.2.6 Monitoring & Evaluation: Minimal Indicators that Matter

i. **Track a small dashboard of process indicators.** At course or department level, monitor (a) disclosure rates, (b) verification accuracy for flagged citations, (c) proportion of assessments using process evidence, and (d) incidence of viva-triggered clarifications. Use these for rapid, low-bandwidth quality assurance.

ii. **Close the loop with reflective audits.** Each term, compile brief case notes where AI use improved stance/argumentation versus where it eroded voice; feed these cases into the workshop series and repository.

5.2.7 Limitations and Future Research

The findings should be interpreted in light of the study's scope: a modest instructor sample, cross-sectional design, and minor item-wording misalignment in two statements. Future work should triangulate instructor perceptions with student performance data (e.g., rubric-based genre moves, stance clarity, and verified-citation accuracy), test autonomy-oriented prompting interventions experimentally, and examine differential outcomes by discipline and proficiency level under varied outage burdens.

5.2.8 Educational Implications

Despite the ongoing catastrophe in Sudan, this research reveals that ChatGPT might considerably increase students' advanced academic writing abilities, potentially benefiting higher education institutions. The primary benefits are improved vocabulary and grammatical correctness, better creative idea development, and a more structured text structure. To promote authentic learner autonomy, a systematic, process-oriented approach is essential, thus educators, local authorities and global organizations can help in building such a system. This should encompass decision-making through introspection, transparent rationalization of

modifications, and the systematic arrangement of stimuli in an iterative manner. Students may unreasonably depend on content produced by artificial intelligence, potentially compromising their authorial identity and metacognitive engagement in the absence of these entrails.

The findings highlight the impact of cultural and institutional norms on the implementation of artificial intelligence. Educators must employ re-voicing strategies that align local rhetorical traditions with global academic standards, thereby preserving cultural perspectives and maintaining disciplinary integrity to ensure ethical and pedagogically sound integration. The installation of systems that can withstand outages is required due to the nature of intermittent connectivity. These consist of offline-accessible quick libraries, batch processing and verification procedures, and oral micro-defenses employed to protect authorship verification and promote equitable participation. AI should not be considered an autonomous solution within this framework. It should be regarded as a sociotechnical collaborator functioning within a culturally responsive educational environment managed by educators.

5.2.9 Best Practices

Based on real-world data, a study of the literature and the findings carried out by this study, the following recommended practices are offered and might be very useful in helping to achieve best practices for this research:

- I. **Putting the instructor, AI, and peer in order.** Use AI to aid with language and making things fit together, but let professors and other students handle genre motions, posture calibration, and argument.
- II. **Using prompts to practice a genre.** Create templates for design prompts that contain the audience, the rhetorical goal, and the discipline's standards. Use prompts that finish with pupils writing out why they should or shouldn't follow AI suggestions.
- III. **Re-voicing as a Deliverable.** Students must turn in AI output along with a re-voiced version that satisfies the norms of the discipline and a short explanation of why the changes were made.
- IV. **Integrity by Design.** Instead of only utilizing detectors, use process-based assessment, which includes AI-use disclosure forms, prompt-response logs, verification checklists, and short oral vivas to show who wrote anything.
- V. **Staying strong in low-bandwidth.** Set up offline cue banks, printed templates, and additional means to turn in work (SMS, WhatsApp voice notes, USB hand-ins) during outages.
- VI. **Building up skills.** Have mini seminars on how to employ prompts that are cognizant of genres, re-voicing pedagogy, and procedures that

are ready for outages. Create collections of "prompt-to-product" examples with notes that may be shared.

5.2.10 Research Agenda

For further studies and protentional research directions regarding the scope of this study, there may be many fields which can be studied such as the following.

I. **Results of Student Performance.** Compare what professors say about the quality of student writing with real measures of it, such how clear their perspective is, how well they navigate across genres, and how accurate their citations are.

II. **Interventions that emphasize autonomy.** In a controlled environment, employ prompting techniques and metacognitive scaffolding to enhance student autonomy and writing skills.

III. **Variations in Discipline and Proficiency Levels.** Analyze the effects of AI integration across different academic disciplines and skill levels in EMI (English-Medium Instruction) programs.

IV. **Equity in Relation to Connectivity Challenges.** Analyze the impact of systems designed for outages and intermittent access on participation, authorship, and learning outcomes.

V. **Governance and Policy Frameworks.** Establish and assess critical AI norms for higher education during crises, emphasizing standards for transparency, verification methods, and culturally sensitive guidelines.

VI. **Enhancing the prevalence of intercultural voice and genre.** Examine methods to preserve local rhetorical traditions and authorial identity while integrating AI technology influenced by Anglocentric standards.

Acknowledgment

The author would like to thank Qassim University, represented by the Deanship of Graduate Studies & Scientific Research, for financial support of this research (QU-ND95-2025-2026)

Funding

This study received no external funding

Institutional Review Board Statement

This study did not require ethical approval. Due to local regulations and institutional protocols, studies involving human subjects were exempt from ethical review and approval procedures.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study. In compliance with institutional norms and national laws, patients/participants or their legal guardians/next of kin were not mandated to furnish formal informed consent to participate in this study.

Data Availability Statement

All data supporting the findings of this study are fully included within the article. No additional datasets were generated or analyzed during the current study

Conflicts of Interest

The author declares no conflict of interest inside the author's organization.

REFERENCES

1. Abdalgane, M., & Othman, K. A. J. (2023). Utilizing artificial intelligence technologies in Saudi EFL tertiary level classrooms. *Journal of Intercultural Communication*, 23(1), 92-99. <https://doi.org/10.36923/jicc.v23i1.124>
2. ACAPS. (2024, October 7). Sudan scenarios (2024-2025). <https://www.acaps.org/en/countries/archives/detail/sudan-scenarios-2024-2025>
3. Ambrosio, L., Schol, J., La Pietra, V. A., Russo, F., Vadalà, G., & Sakai, D. (2023). Threats and opportunities of using ChatGPT in scientific writing—The risk of getting spineless. *JOR Spine*, 7(1), 1-3. <https://doi.org/10.1002/jsp2.1296>
4. Amnesty International. (2024, March 8). Sudan: Internet shutdown threatens delivery of humanitarian and emergency services. <https://www.amnesty.org/en/latest/news/2024/03/sudan-internet-shutdown-threatens-delivery-of-humanitarian-and-emergency-services/>
5. Bašić, Ž., Banovac, A., Kružić, I., & Jerković, I. (2023). ChatGPT-3.5 as writing assistance in students' essays. *Humanities and Social Sciences Communications*, 10, 750. <https://doi.org/10.1057/s41599-023-02269-7>
6. Becker, S. A., Brown, M., Dahlstrom, E., Davis, A., DePaul, K., Diaz, V., & Pomerantz, J. (2018). NMC Horizon Report: 2018 Higher Education Edition. EDUCAUSE. <https://library.educase.edu/~media/files/library/2018/8/2018horizonreport.pdf>
7. Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (pp. 610-623). <https://doi.org/10.1145/3442188.3445922>
8. Boulay, B. D. (2023). Artificial intelligence in education and ethics. In O. Zawacki-Richter & I. Jung (Eds.), *Handbook of open, distance and digital education* (pp. 93-108). Springer. https://doi.org/10.1007/978-981-19-2080-6_6
9. Byram, M. (2021). Teaching and assessing intercultural communicative competence: Revisited (2nd ed.). *Multilingual Matters*. <https://doi.org/10.2307/jj.22730614.2>
10. Canagarajah, S. (2012). *Translingual practice: Global Englishes and cosmopolitan relations* (1st ed.). Routledge. <https://doi.org/10.4324/9780203073889>

11. Chen, X., Xie, H., Zou, D., & Hwang, G.-J. (2020). Application and theory gaps during the rise of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 1, 100002. <https://doi.org/10.1016/j.caeai.2020.100002>
12. Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228-239. <https://doi.org/10.1080/14703297.2023.2190148>
13. Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education*, 10(3), 241-266. <https://doi.org/10.1177/1028315306287002>
14. Education Above All Foundation. (2024, January 23). Sudan: Education lost for a generation (Position paper). <https://www.educationaboveall.org/sites/default/files/research/attachments/EAA%20Position%20Paper%20V4F.2%20-%20Sudan%2023%20January%202024.pdf>
15. Elgadal, M., & Glade, R. (2024). Research in displacement: The impact of war on Sudan's higher education and academic research. Rift Valley Institute. https://riftvalley.net/wp-content/uploads/2024/09/Research-in-Displacement_ENGLISH_Final.pdf
16. Holmes, W., Bialik, M., & Fadel, C. (2023). Artificial intelligence in education. *Globethics Publications*. <https://doi.org/10.58863/20.500.12424/4273108>
17. Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, R. S., & Koedinger, K. (2023). Artificial intelligence in education: Promises and implications. *Globethics Publications*. <https://doi.org/10.58863/20.500.12424/4276068>
18. Hwang, G.-J. (2020). Definition, framework and research issues of smart learning environments—A context-aware ubiquitous learning perspective. *Smart Learning Environments*, 7(1), 1-14. <https://doi.org/10.1186/s40561-014-0004-5>
19. Hwang, G.-J., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, challenges, roles and research issues of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 1, 100001. <https://doi.org/10.1016/j.caeai.2020.100001>
20. Hyland, K. (2004). *Disciplinary discourses: Social interactions in academic writing*. University of Michigan Press. <https://doi.org/10.3998/mpub.6719>
21. Insights-SD. (2024, February 27). Unplugged: Understanding the effects of Sudan's internet blackout. <https://insights-sd.org/en/unplugged-understanding-the-effects-of-sudans-internet-blackout/>
22. Internet Society Pulse. (2023, April 19). Disruptions in Sudan (national shutdown). <https://pulse.internetsociety.org/en/shutdowns/disruptions-in-sudan/>
23. Jenkins, J. (2015). *Global Englishes* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315761596>

24. Kong, S.-C., Lee, J. C.-K., & Tsang, O. (2024). A pedagogical design for self-regulated learning in academic writing using text-based generative AI tools: 6-P pedagogy of plan, prompt, preview, produce, peer-review, portfolio-tracking. *Research and Practice in Technology Enhanced Learning*, 19, Article 30. <https://doi.org/10.58459/rptel.2024.19030>
25. Lendvai, G. F. (2025). ChatGPT in academic writing: A scientometric analysis of literature published between 2022 and 2023. *Journal of Empirical Research on Human Research Ethics*, 20(3), 131-148. <https://doi.org/10.1177/15562646251350203>
26. Louw, M. (2023). Ministry and artificial intelligence. *Ministry Magazine*, 2023(9). <https://www.ministrymagazine.org/archive/2023/09/Ministry-and-artificial-intelligence>
27. NetBlocks. (2019, June 10). Severe internet outage across Sudan amid reports of Darfur paramilitary attacks. <https://netblocks.org/reports/severe-internet-outage-across-sudan-amid-reports-of-darfur-paramilitary-attacks-aAwq0oyM>
28. Nguyen, T. N. T., Lai, N. V., & Nguyen, Q. T. (2024). Artificial intelligence (AI) in education: A case study on ChatGPT's influence on student learning behaviors. *Educational Process: International Journal*, 13(2), 105-121. <https://doi.org/10.22521/edupij.2024.132.7>
29. OCHA. (2023, May 28). Sudan situation report. <https://www.unocha.org/publications/report/sudan/sudan-situation-report-28-may-2023>
30. Othman, K. (2023). Towards implementing AI mobile application chatbots for EFL learners at primary schools in Saudi Arabia. *Journal of Namibian Studies*, 271-287. <https://doi.org/10.59670/jns.v33i.434>
31. Reiss, M. J. (2021). The use of AI in education: Practicalities and ethical considerations. *London Review of Education*, 19(1), 5. <https://doi.org/10.14324/LRE.19.1.05>
32. Rift Valley Institute. (2024). Research in displacement: The impact of war on Sudan's higher education and academic research. <https://riftvalley.net/publication/research-in-displacement/>
33. Shi, H., & Aryadoust, V. (2024). A systematic review of AI-based automated written feedback research. *ReCALL*, 36(2), 187-209. <https://doi.org/10.1017/S0958344023000265>
34. UNESCO. (2024a, April 14). Sudan conflict one year on: A long-term impact on education, culture and the media. <https://www.unesco.org/en/articles/sudan-conflict-one-year-long-term-impact-education-culture-and-media>
35. UNESCO. (2024b). UNESCO tackles the educational crisis in Sudan with new strategic priorities (Local Education Group). <https://www.unesco.org/en/articles/unesco-tackles-educational-crisis-sudan-new-strategic-priorities>

Appendix (A)

No	Items	Responses				
		Strongly agree	Agree	To some extent	Disagree	Strongly Disagree
1	ChatGPT is a good way to help students with their academic writing					
2	I can use ChatGPT in my writing lessons.					
3	ChatGPT helps students come up with ideas and structure their academic writing better.					
4	ChatGPT can help advanced students with their writing by helping them with grammar, vocabulary, and coherence.					
5	ChatGPT helps students become more independent writers who think about what they write.					
6	ChatGPT has helped me become more digitally literate and improve my teaching methods.					
7	ChatGPT has helped me come up with new and creative ways to teach writing.					
8	ChatGPT helps me make writing lessons more specific to each student's needs.					
9	Cultural and institutional factors in Saudi Arabia affect how well ChatGPT can be used to teach academic writing.					
10	The pedagogical efficacy of ChatGPT in instructing academic writing in Saudi Arabia is influenced by existing cultural norms and institutional frameworks.					