

ChatGPT-Supported Higher Education in Tanzania: A Systematic Review of Evidence Informing a Proposed Instructional Clarity–Social Presence Model

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Abstract

This systematic literature review aimed to synthesize evidence on instructional clarity and attributed social presence in ChatGPT-supported higher education and to develop a conceptual serial-mediation model for future empirical testing in Tanzanian higher education. Following the PRISMA 2020 reporting guideline, records were retrieved from Scopus and ScienceDirect, yielding 301 records; after removing three duplicates and excluding 239 records during title or abstract and full-text screening, 59 studies were included in the narrative synthesis and appraised using the Mixed Methods Appraisal Tool (MMAT). The findings showed consistent evidence across multiple contexts that instructional clarity and social presence were independently associated with engagement, perceived usefulness, and participation. However, only a small number of studies examined social presence as a mediator of the effects of instructional clarity on learning-related outcomes, and none were conducted in Tanzania or jointly examined both constructs. A supplementary search of a broader 1,000-record corpus likewise identified no studies jointly indexing instructional clarity and social presence or combining either construct with a Tanzanian context. These findings indicate a contextual and pathway-specific evidence gap and support the development, rather than empirical validation, of a proposed serial pathway linking instructional clarity, social presence, engagement, perceived usefulness, and active participation. The review is limited by its reliance on two databases and ChatGPT-specific evidence. Future research should empirically test the proposed model in Tanzania and other Sub-Saharan African higher-education contexts.

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Introduction

Generative artificial intelligence is moving quickly from experimental novelty to a routine part of academic life, and the pace of that shift is uneven across contexts. Simaremare et al. (2024) reported that 98.96% of surveyed students at Indonesian universities were already using generative AI for academic work, and Sousa and Cardoso (2025) found that 93.8% of students in a 20-country survey used ChatGPT specifically as their first point of entry into AI-supported learning, with adoption moderated by discipline and institution type rather than occurring uniformly. This is consistent with earlier evidence that positive student attitudes toward AI-supported brainstorming, writing, and research support increase once cost and access barriers are removed (Chan & Hu, 2023).

This normalization is not geographically uniform, and figures drawn from well-resourced, urban, or high-connectivity settings should not be read as representative of institutions with more constrained infrastructure and digital literacy (Malatji, 2026). We therefore treat the Indonesian and Portuguese figures above as evidence that large-scale, rapid ChatGPT adoption is possible under favorable conditions motivating why the instructional-communication mechanisms of that adoption

merit study rather than as a direct empirical basis for the Tanzanian case, which is addressed on its own evidentiary footing in Section 1.2.

Adoption has also outpaced institutional governance. Jin et al. (2024) found that few universities worldwide have a comprehensive AI-integration policy, and that existing policies concentrate on academic integrity and data privacy rather than pedagogical strategy. Within Sub-Saharan Africa specifically, Cudjoe and Adebayo (2025) examined AI-policy availability at three institutions in Nigeria, Ghana, and South Africa and found that only six of the nine institutions surveyed across those three countries had a publicly available AI policy—a small, illustrative institutional sample that we do not extend to Tanzania directly (see Section 1.2 for Tanzania-specific institutional evidence).

Reported ChatGPT awareness and use among Tanzanian students is high: Kyumana et al. (2025) and Matto (2024) report 93% and 81.5% usage respectively among students at IFM and Moshi Co-operative University, primarily for study and writing support, and Komba (2024) provides qualitative evidence from Mzumbe University that ChatGPT use is now a normalized part of students' study routines rather than an experimental practice. These figures describe self-reported use; we return in Section 1.3 to why self-reported perception and demonstrated cognitive or behavioral effect must be treated as distinct evidentiary tiers.

Institutional and infrastructural conditions in Tanzania have received separate, more recent attention. Mwakyusa and Ng'webeya (2025) reviewed the institutional procedures governing AI adoption across Tanzanian higher-learning institutions between 2019 and 2025 and found governance to be inconsistent and largely reactive rather than strategically planned. Manyengo (2024) reviewed best-practice conditions for AI use in Tanzanian higher-learning-institution research management and identified infrastructure and staff-capacity constraints as recurring barriers. Chandafa and Fang (2025, 2026) reported, respectively, on ChatGPT integration within competence-based Tanzanian higher education and on Tanzanian teachers' knowledge of and attitudes toward instructional-media and technology integration, both finding uneven readiness linked to institution type and prior technology exposure. Nemes (2025), reviewing barriers to blended-learning implementation in Tanzanian higher-learning institutions, corroborates that connectivity, digital literacy, and resourcing vary substantially across institutions and are not adequately captured by a single national adoption statistic.

Taken together, these five Tanzania-specific sources—rather than an inference imported from the three-country Sub-Saharan policy comparison in Section 1.1—are the evidentiary basis for treating institutional type, language of instruction, connectivity, digital literacy, and policy environment as conditions that plausibly moderate model transfer, and for reading the urban-rural access asymmetry noted regionally (Malatji, 2026) as a contextual hypothesis for Tanzania specifically, not as an established Tanzanian finding.

Uptake has not produced consensus on cognitive consequence. In the IFM–MoCU sample, 55% of respondents perceived a positive influence of ChatGPT use on critical thinking, while 26.7% identified overreliance and erosion of independent reasoning as genuine risks (Kyumana et al., 2025); Matto (2024) similarly concludes that the direction of effect depends on how the tool is used rather than on use per se. Outside Tanzania, Essel et al. (2023) found in an experimental study in Ghana that strategic ChatGPT use can enhance critical and reflective thinking, whereas Ravšelj et al. (2025), in a larger cross-national survey, found that students rate ChatGPT as more useful for

summarizing and simplifying information than for developing higher-order thinking a pattern that again underscores that pedagogical design, not the tool itself, differentiates cognitive benefit from cognitive erosion.

This review synthesizes evidence around two constructs that the manuscript's original draft used without operational definitions. We define them here, and specify the theoretical basis on which one is proposed to influence the other, directly in response to the reviewers' request that constructs not be treated as self-evident or interchangeable.

Instructional clarity, in this review, refers to the comprehensibility, organization, and pedagogical adequacy of ChatGPT's responses to student prompts encompassing prompt clarity on the input side and response comprehensibility, structure, and accuracy on the output side. This adapts construct-level definitions of instructional clarity developed in human-instructor contexts (Gedamu, 2024; Sotlikova, 2025) to an AI-interlocutor setting.

Social presence refers to the degree to which a user attributes a sense of psychological presence, or "being there with another," to an interlocutor during a mediated interaction in this case, to ChatGPT rather than to a human instructor or peer. We follow the reviewers' request to distinguish this explicitly from related but non-identical constructs: anthropomorphism (the tendency to attribute human-like qualities to a non-human agent) and trust (a belief in the reliability or benevolence of the agent) are treated in this review as conceptually adjacent but distinct from social presence, following Bhaskar, Misra, and Chopra (2024), who empirically separate perceived trust and perceived risk toward ChatGPT from other relational constructs among higher-education teachers. A study operationalizing anthropomorphism or trust is not treated in this review as evidence about social presence unless the study itself reports a social-presence measure.

The theoretical basis for treating clarity as an antecedent of social presence, rather than the reverse or an unordered correlation, is instructional-communication-competence theory, in which communicator clarity functions as a specific antecedent condition of a receiver's perceived presence of, and connection to, the communicating source (Morreale, Lowenthal, Thorpe, & Olesova, 2024). Applied to an AI interlocutor, the theoretical claim is that a ChatGPT response perceived as clear, organized, and pedagogically adequate is more likely to be experienced by the student as a presence-bearing communicative act, rather than as a generic text output a claim that, to our knowledge, has not previously been tested with ChatGPT as the referent (see Section 3.4 and Section 4.2).

The role of perceived usefulness in the proposed pathway also requires clarification, since it is treated inconsistently across the literature: some studies model it as an adoption antecedent within Technology Acceptance Model (TAM)-style frameworks (Jurcec, Kolega, & Krecar, 2025), while others model it as a mediating construct linking generative-AI use to engagement and academic performance (Olaitan & Ajao, 2025). In this review's proposed model, perceived usefulness is specified as a mediating construct positioned after engagement and before participation consistent with the latter treatment rather than as an independent adoption driver or a terminal outcome.

This review addresses the following questionsL (1) What evidence links students' perceived instructional clarity of ChatGPT to the social presence they attribute to it as a communicative interlocutor, and how much of this evidence has been generated in Tanzanian or comparable Sub-Saharan African higher-education settings? (2) What evidence, if any, models the social presence attributed to ChatGPT as a mediator of the relationship between instructional clarity and student engagement, perceived usefulness, and active learning participation?

Consistent with a review design, these are evidence-synthesis questions rather than hypothesis tests: the review reports what has been studied and with what pattern of findings, and does not itself estimate a correlation or mediation coefficient. Two objectives follow. Objective 1 is to establish, from the retrieved literature, whether instructional clarity has a documented direct association with engagement, perceived usefulness, and participation, independent of any mediating mechanism a baseline that prior work treats as both conventional and empirically necessary (Wang, 2022; Lasekan et al., 2024). Objective 2 is to establish whether, and how much, existing literature treats social presence as a mediating mechanism for that association rather than as a merely co-occurring variable (Lim, 2023; Wagner et al., 2024; Gao et al., 2024). The conceptual model in Section 5 is the review's synthesis of these two objectives into a single testable structure; it is a proposed model derived from the literature, not a model estimated by this review (see Section 3.4).

Method

This review follows the PRISMA 2020 reporting guideline. The conceptual material formerly presented under this heading in the original draft the broader argument for why a mediation-based inquiry is needed has been relocated to Section 1 (Introduction); this section reports only the review's method. Eligibility was defined using a Population–Concept–Context (PCC) framework, appropriate to a review question that is not restricted to intervention-effect studies.

The population comprised of higher-education students who used ChatGPT in academic or learning contexts. The concept focused on studies examining at least one of the following constructs in relation to ChatGPT use: instructional clarity, social presence, engagement, perceived usefulness, or active learning participation. The context included higher-education settings without geographic restrictions during the search process, allowing the Tanzanian evidence gap to be identified empirically rather than assumed (see Section 4.2). Eligible studies consisted of empirical qualitative, quantitative, or mixed-methods research articles published in English between 2022 and 2026 (inclusive). Although the final year represents only a partial publication period, it was intentionally retained because empirical research on ChatGPT continues to expand rapidly, including online-first publications. Retaining the current year ensured that the review captured the most recent evidence, while the search re-run date (Section 2.2) established the point at which the 2026 literature coverage was necessarily incomplete.

Studies were excluded if they: (i) did not examine any of the five concept constructs; (ii) did not examine ChatGPT specifically studies of generic, earlier, or unnamed conversational agents were excluded unless the study explicitly confirmed ChatGPT as the platform studied; (iii) did not involve higher-education students; (iv) originated from Computer Science or Engineering venues with a systems-design rather than an educational-outcomes focus; (v) were not in English; or (vi) were duplicate records across the two databases searched.

Two databases, Scopus and ScienceDirect, were searched using a Boolean string combining ChatGPT terms with the five construct terms, restricted to the 2022–2026 publication window and to English-language, peer-reviewed journal articles. An illustrative form of the string, to be replaced with the exact syntax used per database, is: ("ChatGPT" OR "generative AI" OR "large language model") AND ("instructional clarity" OR "social presence" OR "engagement" OR "perceived usefulness" OR "active learning") AND ("higher education" OR "university" OR "college")

Records identified through the database search (n = 301) were exported to a reference manager for deduplication; 3 duplicate records were removed, leaving 298 unique records for

title/abstract screening. Records were screened against the eligibility criteria in Section 2.1, and full texts of records passing that stage were assessed for eligibility. In total, 239 records were excluded either at title/abstract screening or at full-text assessment leaving 59 studies included in the review.

For each included study we extracted: country/context, institution type, sample and study design, ChatGPT-use context, construct(s) measured and instruments used, analytic method, and principal findings relevant to RQ1 and RQ2. Extracted data are reported in the study-characteristics matrix (Table 1, Section 3.2). Methodological quality of the 59 included studies was appraised using the Mixed Methods Appraisal Tool (MMAT), which applies design-specific criteria to five study categories: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed-methods studies. Each included study was first classified into the appropriate MMAT category and then rated against that category's specific criteria rather than against a single generic standard; criterion-level ratings and the overall judgment per study are reported in Table 1.

Result and Discussion

Search and Screening Outcomes

The search returned 301 records (Scopus and ScienceDirect combined). After removing 3 duplicates, 298 unique records were screened at title/abstract level; 239 records were excluded across title/abstract and full-text screening for the reasons specified in Section 2.1, leaving 59 studies included in the narrative synthesis and quality appraisal (301 = 3 duplicates + 239 excluded + 59 included).

Study Characteristics

Table 1 summarizes the subset of included studies discussed substantively in this synthesis, drawn from the constructs, contexts, and findings already reported in Sections 1 and 4. It illustrates the matrix structure context, design, constructs, principal finding, and MMAT category that the reviewers correctly noted was missing from the original draft.

Table 1. Subset of the 59 included studies

Study	Context	Design	Construct(s)	Principal finding relevant to RQ1/RQ2
Kyumana et al. (2025)	Tanzania (IFM, MoCU)	Cross-sectional survey	Perceived cognitive effect, use frequency	93% usage; 55% perceived positive influence on critical thinking; 26.7% report overreliance self-reported perception only.
Matto (2024)	Tanzania (MoCU)	Cross-sectional, mixed	Perceived use effect	81.5% usage; effect on critical thinking judged use-dependent, not automatic.
Komba (2024)	Tanzania (Mzumbe Univ.)	Qualitative	Normalization of use	ChatGPT use is a normalized study routine, not an experimental practice.
Ebadi & Amini (2022)	Iran (EFL learners)	Quantitative, SEM	Social presence, human-likeness, motivation	Social presence predicts learner motivation in chatbot-mediated instruction.
Gao et al. (2024)	China (middle-school; adjacent context)	Quantitative, mediation model	Social presence, engagement, learning efficiency	Social interaction reaches learning efficiency only through the joint path of presence and engagement a mediation precedent, not a Tanzanian or higher-education finding.
Almulla (2024)	Cross-national	Quantitative, SEM	Perceived usefulness, ease of use, satisfaction	Usefulness and ease of use mediate the link between communication engagement and satisfaction.

Study	Context	Design	Construct(s)	Principal finding relevant to RQ1/RQ2
Duong et al. (2023)	Cross-national	Quantitative, serial mediation	TAM constructs, knowledge sharing	Serial multiple-mediation model of ChatGPT usage with knowledge sharing as moderator a direct modeling precedent for Section 5.
Wang (2022)	Online HE courses	Quantitative	Teaching presence, engagement	Design, organization, and technological support (teaching-presence dimensions) account for substantial variance in engagement.
Lasekan et al. (2024)	Cross-national	Quantitative	Clarity, feedback, participation	Participation is influenced by clarity and rapid feedback independent of relational constructs.
Lim (2023)	South Korea	Quantitative, SNA	Social presence, interaction, learning outcome	Social presence mediates, not merely co-occurs with, the interaction–learning relationship.
Wagner et al. (2024)	Hybrid classrooms (natural experiment)	Quasi-experimental	Social presence, learning activities	Confirms social presence as a mediating mechanism in a non-self-report design.
Essel et al. (2023)	Ghana	Experimental	Cognitive skills	Strategic ChatGPT use enhances critical/reflective thinking behavioral/experimental evidence, not self-report.
Ravšelj et al. (2025)	20-country survey	Quantitative, cross-national	Perceived usefulness, urban–rural use	ChatGPT rated more useful for summarizing than higher-order thinking; urban students use it more comprehensively than rural students.
Simaremare et al. (2024)	Indonesia	Survey	Adoption prevalence	98.96% of surveyed students use generative AI for academic work.
Sousa & Cardoso (2025)	Portugal (20-country dataset)	Survey	Adoption prevalence, entry point	93.8% used ChatGPT as first entry point to AI-supported learning.

Synthesis by Proposed Path

RQ1 (direct association of instructional clarity with engagement, usefulness, and participation), supporting evidence includes Wang (2022), Lasekan et al. (2024), and for the clarity-adjacent construct of teaching/instructor presence Morreale et al. (2024). This evidence is geographically diverse but contains no Tanzanian study and no study that measures instructional clarity of ChatGPT specifically, as opposed to of a human instructor.

RQ2 (social presence as mediator), supporting evidence includes Ebadi and Amini (2022), Lim (2023), Wagner et al. (2024), and Gao et al. (2024), together with the serial-mediation precedent in Duong et al. (2023) and the usefulness/ease-of-use mediation reported by Almulla (2024). Of these, Essel et al. (2023) and Wagner et al. (2024) provide experimental or quasi-experimental (behavioral) evidence; the remainder are self-reported survey or SEM-on-survey-data designs. None of these mediation studies is set in Tanzania, and none uses ChatGPT specifically as the referent for social presence. Ebadi and Amini (2022) study a different chatbot (CSIEC) with Iranian EFL learners, and Gao et al. (2024) study middle-school, not higher-education, participants.

Consistent with the constructs distinction in Section 1.3, studies of perceived trust or risk toward ChatGPT (Bhaskar, Misra, & Chopra, 2024) and of perceived usefulness as a TAM-style adoption driver (Jurcec, Kolega, & Krecar, 2025; Olaitan & Ajao, 2025) are reported here as adjacent

evidence on adoption and usefulness, not as direct evidence for or against the clarity–presence pathway, since none of these studies measures social presence.

The instructional clarity's association with engagement, usefulness, and participation is independently well evidenced; social presence's role as a mediator of a clarity-type antecedent is evidenced in non-Tanzanian, non-ChatGPT, and predominantly self-report settings; and no included study nor any record identified in the supplementary 1,000-record corpus described in Section 4.2 jointly tests instructional clarity and social presence as a pathway, in Tanzania or elsewhere. This is the specific, quantified evidence gap that motivates the conceptual model in Section 5.

Figure 2 depicts the proposed model as a path diagram, addressing the reviewers' request that the mediation order be made explicit rather than left to narrative description. Following Duong et al. (2023), who model a serial multiple-mediation structure for ChatGPT usage with knowledge sharing as a moderator, and the multilevel mediation template in Wang, Wu, Shen, Wang, and Ji (2025), the model specifies instructional clarity as the antecedent (X), social presence, engagement, and perceived usefulness as sequential mediators (M1–M3), and active participation as the outcome (Y), alongside a direct effect (c') consistent with Objective 1 in Section 1.4.

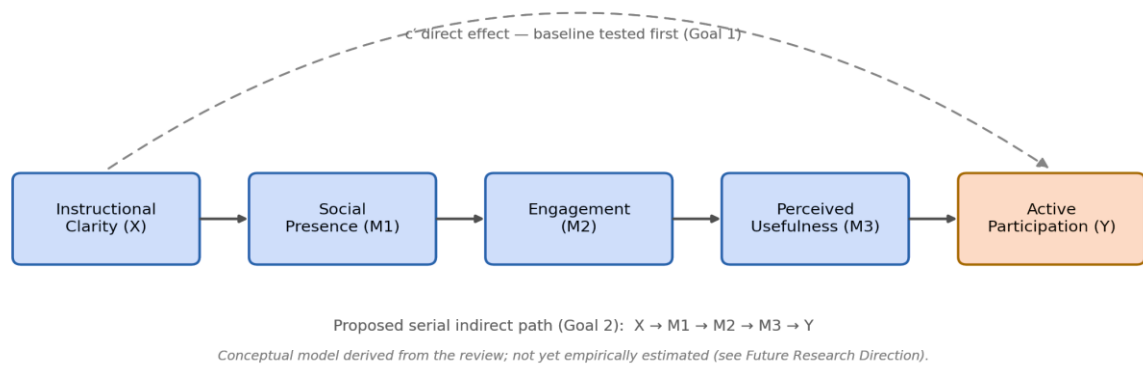


Figure 1. Proposed serial-mediation model: instructional clarity → social presence → engagement → perceived usefulness → active participation, with direct effect c' .

Owolabi, Garutsa, and Maunatlala (2026) identify persistent gender- and resource-based disparities in access to e-learning tools that any "low-cost" recommendation must account for, and Tsindoli (2024) documents the infrastructural prerequisites connectivity, device access, staff digital literacy that condition whether an open or distance e-learning intervention in East or Southern Africa is genuinely low-cost or only nominally so. We therefore no longer characterize prompt-design and interaction-quality interventions as low-cost or immediately implementable without qualification; institutions should assess local connectivity, device access, and staff readiness before adopting them, and equity implications for students with less reliable access should be assessed explicitly rather than assumed away.

Discussion

The findings of this systematic review address the two research objectives by revealing both a relatively well-established evidence base for the individual constructs and a substantial gap concerning their integration into a unified explanatory pathway. Across the 59 studies included in the synthesis, instructional clarity or closely related dimensions of instructional communication were consistently associated with student engagement, perceived usefulness, and participation, whereas social presence was repeatedly linked to favorable learning and interaction outcomes. However, evidence for social presence as a mechanism connecting instructional clarity with

subsequent learning outcomes was considerably more limited. More importantly, none of the studies identified in the formal review directly tested instructional clarity and attributed social presence toward ChatGPT within the same model, and no such study was located in the Tanzanian higher-education context. The supplementary search of the broader 1,000-record corpus similarly returned no records jointly indexing instructional clarity and social presence or combining either construct with Tanzania. These results therefore do not validate the proposed serial-mediation pathway; rather, they demonstrate that its component relationships have differing levels of empirical support and that their integration remains an unresolved theoretical and empirical question. This distinction is important because an evidence gap should motivate hypothesis development and empirical testing rather than be interpreted as confirmation of the proposed causal sequence.

The pattern identified in this review is broadly consistent with international research conducted between 2020 and 2026. Wang (2022), for example, showed that teaching presence was associated with greater engagement among university students in online courses, supporting the broader proposition that the quality and organization of instructional communication can influence students' involvement in learning. More directly, Wang et al. (2025), in a multilevel study involving 3,493 Chinese university students, found instructional clarity to be positively associated with academic engagement, including indirect relationships through academic emotions. These findings strengthen the instructional-clarity segment of the proposed framework, although both studies concern human instructors rather than ChatGPT. Evidence regarding social presence is similarly supportive but indirect. Lim (2023) demonstrated that social presence mediated relationships between patterns of online interaction and perceived learning and satisfaction, while Wagner et al. found that social presence mediated relationships between participation conditions and perceived learning in synchronous hybrid environments. Together, these studies support conceptualizing social presence as an explanatory mechanism rather than merely an accompanying perception. Nevertheless, neither examined social presence attributed specifically to an AI interlocutor. Research directly involving generative AI further reinforces the importance of distinguishing technological adoption from instructional mechanisms. Duong et al. (2023) demonstrated that ChatGPT use can be represented through serial mediation within an extended technology-acceptance framework, but their pathway concerned effort expectancy, performance expectancy, behavioral intention, and actual use rather than instructional clarity and social presence. Likewise, global evidence indicates substantial perceived utility alongside important reservations. Chan and Hu (2023) reported generally positive student attitudes toward generative AI but also concerns regarding accuracy, privacy, ethics, and personal development, while Ravšelj et al. (2025), in a study involving 23,218 students from 109 countries and territories, found that ChatGPT was particularly valued for activities such as brainstorming, summarization, and simplifying information, although its perceived contribution was weaker for several higher-order and interpersonal competencies. Experimental findings from Ghana also indicate that pedagogically structured ChatGPT use can support critical, creative, and reflective thinking, suggesting that educational consequences depend substantially on how AI is incorporated into learning activities rather than on access to the technology alone (Essel et al., 2024).

The Tanzanian evidence presents a comparable pattern of rapid adoption accompanied by uncertainty about its educational consequences. Matto (2024) found that approximately 81.5% of surveyed university students were using ChatGPT for activities including examination preparation,

assignments, and research-related work, while also identifying concerns regarding academic integrity and diminished critical thinking. More recent evidence from Kyumana et al. (2025) indicates even higher reported awareness and use: 93% of respondents reported using ChatGPT, 55% perceived a positive influence on critical thinking, whereas 26.7% identified negative effects such as overreliance and disruption of conventional learning practices. Importantly, these are students' perceptions rather than experimentally measured cognitive effects, and they should therefore not be interpreted as evidence that ChatGPT objectively improves or reduces critical-thinking performance. Mambile and Mwogosi (2024) similarly describe AI in Tanzanian higher education as having transformative potential while emphasizing ethical and implementation challenges. These findings align with the present review in suggesting that widespread adoption does not automatically establish the mechanisms through which ChatGPT affects learning. Comparable evidence is visible in Indonesia. Simaremare et al. (2024), based on 1,157 university students, reported that 98.96% had used generative-AI technologies to support learning, demonstrating how rapidly such tools can become embedded in academic routines. Indonesian research has also shown that ChatGPT can function as a personalized learning resource while simultaneously raising questions concerning plagiarism, academic integrity, and institutional regulation (Margono et al., 2024), while a survey of 2,078 students across five Indonesian universities found behavioral intention to be particularly important in explaining actual ChatGPT use (Habibi et al., 2024). However, these Indonesian studies, like most Tanzanian research, primarily address adoption, utilization, benefits, risks, or acceptance rather than the communication mechanism proposed here. The cross-contextual convergence is therefore important: high adoption can coexist with limited knowledge of how specific communicative properties of AI interactions generate engagement and participation. At the same time, contextual differences should not be minimized. Institutional resources, digital literacy, technology exposure, language of instruction, and access conditions may plausibly alter the transferability of relationships established in well-resourced settings to Tanzanian universities, which reinforces the need for context-sensitive empirical validation rather than simple transplantation of existing models.

Theoretically, the findings justify extending instructional-communication research from human instructors to AI-mediated interactions by treating the perceived clarity of ChatGPT responses as a potential communicative antecedent of attributed social presence. This proposition is compatible with contemporary work connecting instructional communication competence and social presence, but it goes beyond traditional technology-acceptance approaches by asking not simply why students adopt ChatGPT, but how the communicative quality of its responses may initiate subsequent psychological and behavioral processes (Morreale et al., 2024). Positioning perceived usefulness downstream from engagement is likewise a theoretically consequential choice: rather than treating usefulness solely as an initial reason for adopting technology, the proposed model assumes that students may come to perceive ChatGPT as useful partly because clear and socially engaging interactions sustain meaningful learning activity. Pedagogically, these findings suggest that institutions should move beyond simply permitting or prohibiting generative AI and instead teach students to construct precise prompts, evaluate response clarity and accuracy, verify generated information, and use AI outputs as starting points for reflection, discussion, and problem solving. Such practices would support both engagement and AI/media literacy while reducing the risk that fluently generated answers substitute for independent reasoning. Human instructional contact

should also remain central, particularly because social presence attributed to an AI system should not be equated with human interpersonal support. Although emotional well-being and identity formation were not directly measured in the reviewed studies, educators should remain attentive to possible overdependence or excessive anthropomorphic attachment and maintain opportunities for peer and instructor interaction. Policy implications therefore center on responsible generative-AI governance: universities should establish explicit expectations regarding disclosure, academic integrity, data privacy, verification of AI-generated information, equitable access, staff development, and acceptable forms of AI assistance. Direct recommendations concerning social-media regulation or clinical mental-health interventions would exceed the evidence generated by this review; the defensible policy contribution concerns AI-mediated educational interaction and institutional digital-governance practices. The global evidence likewise points to the need for institutional guidance rather than unregulated adoption.

The principal novelty of this review therefore does not lie in demonstrating that instructional clarity, social presence, engagement, or perceived usefulness individually matter; substantial literature already supports these constructs. Rather, the contribution lies in bringing them together into a theoretically ordered, testable pathway—*instructional clarity* → *attributed social presence* → *engagement* → *perceived usefulness* → *active participation*—and in demonstrating that the integrated pathway remains empirically untested within the evidence retrieved. The proposed model consequently connects two bodies of scholarship that have largely developed separately: instructional-communication and social-presence research on the one hand, and generative-AI acceptance and educational-use research on the other. It also shifts attention from a predominantly adoption-oriented question whether and why students use ChatGPT to a communication-process question concerning how characteristics of AI-generated instructional interaction may translate into educational participation. The Tanzania-focused synthesis adds a further contribution by identifying a contextual gap despite evidence that ChatGPT use is already widespread among Tanzanian students. Methodologically, the combination of PRISMA-guided evidence synthesis, MMAT-based quality appraisal, pathway-oriented comparison, and the supplementary corpus search makes the gap claim transparent and bounded. The resulting model should therefore be understood as a theory-building output of the review and a research agenda for empirical validation, rather than as a statistically supported causal model.

Several limitations qualify these conclusions. First, the formal search was restricted to Scopus and ScienceDirect, English-language publications, and ChatGPT-specific higher-education evidence, which may have excluded relevant studies indexed elsewhere, published in other languages, or focused on other large language models. Second, the 2026 literature represents only a partial publication year, and the rapidly changing nature of generative-AI research means that the evidence base will continue to evolve. Third, much of the available literature relies on cross-sectional surveys and self-reported perceptions; perceived usefulness, engagement, social presence, or critical-thinking benefits should therefore not automatically be equated with objectively measured behavior or learning performance. Fourth, instructional clarity and social presence were developed primarily in human-mediated communication contexts, creating questions regarding conceptual equivalence when ChatGPT is treated as the communicative referent. The manuscript itself appropriately recognizes the need for cultural and linguistic adaptation before transferring social-presence and instructional-clarity instruments to Tanzanian students. Future research should consequently test

the proposed pathway using multi-institutional Tanzanian samples representing different institutional types and, where feasible, urban and rural access conditions. Measurement instruments should first undergo cognitive review, cultural adaptation, pilot reliability assessment, and preferably measurement-invariance testing for Swahili- and English-medium populations. A longitudinal or quasi-experimental design would provide stronger evidence than cross-sectional perception data, while structural equation modeling or bootstrapped serial-mediation analysis could estimate direct and indirect pathways simultaneously. Subsequent research should also examine digital literacy, institutional AI policy, connectivity, frequency of ChatGPT use, and prior AI experience as potential moderators. Cross-national replication in other Sub-Saharan African systems would then establish whether the proposed mechanism represents a general pattern of AI-mediated learning or is dependent on specific institutional, cultural, and technological conditions.

Conclusion

This systematic literature review synthesized existing evidence on instructional clarity and attributed social presence in ChatGPT-supported higher education and examined whether social presence has been established as a mediating mechanism linking instructional clarity with student engagement, perceived usefulness, and active participation, with particular attention to the Tanzanian higher-education context. The synthesis indicates that instructional clarity is consistently associated with engagement, perceived usefulness, and participation across diverse educational settings, while social presence is likewise associated with favorable learning and interaction outcomes. However, evidence supporting social presence as a mediator of clarity-related effects remains limited, predominantly derives from non-Tanzanian and largely non-ChatGPT contexts, and does not establish the complete pathway proposed in this review. The absence of studies jointly examining instructional clarity and social presence in Tanzania therefore constitutes a contextual and pathway-specific evidence gap rather than empirical confirmation of the proposed mechanism.

Theoretically, the review extends instructional-communication scholarship into AI-mediated learning by conceptualizing instructional clarity as a potential antecedent of attributed social presence and by integrating social presence, engagement, perceived usefulness, and active participation within a testable serial-mediation framework. Practically, the findings suggest that universities should consider not only whether students use ChatGPT but also the communicative quality of AI-supported learning, including prompt clarity, response comprehensibility, interaction quality, digital literacy, and equitable access. These implications should nevertheless be interpreted in light of the review's reliance on Scopus and ScienceDirect, its restriction to English-language and ChatGPT-specific studies, the incomplete 2026 publication period, and the predominance of cross-sectional and self-reported evidence within the available literature. Future research should therefore empirically evaluate the proposed model using culturally and linguistically adapted measures, multi-institutional Tanzanian samples, and longitudinal or quasi-experimental designs capable of distinguishing perceived benefits from demonstrated behavioral and learning outcomes. Subsequent cross-national replication across Sub-Saharan Africa would further clarify the model's contextual robustness and theoretical generalizability. By identifying both the strongest evidence and the unresolved links within current scholarship, this review provides a focused conceptual foundation for advancing research on the communicative mechanisms through which generative AI may shape higher-education participation.

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