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ARTICLE

DEVELOPING THE CHAT FRAMEWORK FOR ETHICAL INSTRUCTOR-AI INTEGRATION: A MIXED METHODS STUDY IN TRINIDAD AND TOBAGO

Desenvolvendo o Framework CHAT para a Integração Ética entre Docentes e IA: Um Estudo de Métodos Mistos em Trinidad e Tobago

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ABSTRACT | Purpose: This study introduces the CHAT (ChatGPT, Holistic, Adaptive, Teaching) Framework, a contextually grounded model that integrates UTAUT, TPACK, and UNESCO's AI in Education Policy to support ethical and effective instructor-AI collaboration. It investigates how higher education instructors in Trinidad and Tobago perceive, adopt, and integrate generative AI tools, particularly ChatGPT, within their teaching and administrative practices. **Method:** An explanatory sequential mixed-methods design was employed. A quantitative survey of 101 instructors was followed by 11 semi-structured interviews and one focus group (n = 6) to explain statistical results. Quantitative data were analysed using descriptive statistics, Spearman's rho, and one-way ANOVA. Qualitative data were thematically analysed to interpret and expand quantitative findings. **Findings:** Results indicated moderate adoption of ChatGPT (M = 3.47, SD = 0.81), with effort expectancy (ρ = .62, p < .01) and facilitating conditions (ρ = .57, p < .01) showing the strongest positive correlations with adoption. No significant differences emerged across gender, age, or education level (p > .05). Qualitative findings revealed enthusiasm for AI's instructional efficiency but raised ethical concerns about plagiarism, bias, and data privacy. **Value:** This study contributes an empirically grounded, human-centred framework that explains how adoption conditions, pedagogical practice, and ethical mediation interact to shape instructor-AI integration in Caribbean higher education. **Practical Implications:** The CHAT Framework offers policymakers, administrators, and educators a human-centred model to guide responsible professional development initiatives and institutional strategies for equitable and sustainable AI use.

Keywords | AI, ChatGPT, Higher Education, Mixed Methods, Instructor-AI Collaboration, UTAUT, TPACK, Ethical AI Integration

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RESUMO | Objetivo: Este estudo apresenta o Framework CHAT (ChatGPT, Holístico, Adaptativo e Ensino), um modelo fundamentado no contexto que integra os modelos UTAUT, TPACK e a Política de IA na Educação da UNESCO, com o objetivo de apoiar uma colaboração ética e eficaz entre docentes e inteligência artificial. A pesquisa investiga como docentes do ensino superior em Trinidad e Tobago percebem, adotam e integram ferramentas de IA generativa, especialmente o ChatGPT, em suas práticas pedagógicas e administrativas. **Método:** Foi adotado um delineamento de métodos mistos sequencial explicativo. Inicialmente, realizou-se uma pesquisa quantitativa com 101 docentes, seguida de 11 entrevistas semiestruturadas e um grupo focal (n = 6) para explicar os resultados estatísticos. Os dados quantitativos foram analisados por meio de estatística descritiva, correlação de Spearman e ANOVA de uma via. Os dados qualitativos foram analisados tematicamente, com o objetivo de interpretar e aprofundar os achados quantitativos. **Resultados:** Os resultados indicaram uma adoção moderada do ChatGPT (M = 3,47; DP = 0,81), sendo que a expectativa de esforço (ρ = 0,62; p < 0,01) e as condições facilitadoras (ρ = 0,57; p < 0,01) apresentaram as correlações positivas mais fortes com a adoção. Não foram identificadas diferenças significativas entre gênero, idade ou nível de escolaridade (p > 0,05). Os achados qualitativos revelaram entusiasmo em relação à eficiência instrucional da IA, mas também levantaram preocupações éticas relacionadas ao plágio, ao viés e à privacidade de dados. **Contribuição:** Este estudo contribui com um framework empiricamente fundamentado e centrado no ser humano, que explica como as condições de adoção, as práticas pedagógicas e a mediação ética interagem na integração entre docentes e IA no ensino superior do Caribe. **Implicações práticas:** O Framework CHAT oferece a formuladores de políticas públicas, gestores e educadores um modelo centrado no ser humano para orientar iniciativas responsáveis de desenvolvimento profissional e estratégias institucionais para o uso equitativo e sustentável da inteligência artificial.

Palavras-chave | IA, ChatGPT, Ensino Superior, Métodos Mistos, Colaboração Docente-IA, UTAUT, TPACK, Integração Ética da IA

INTRODUCTION

Generative artificial intelligence (AI) is rapidly reshaping higher education worldwide. Tools such as ChatGPT and other large language models are transforming teaching and learning through automation, personalised feedback, and dynamic content generation (Yan et al., 2024; García-López & Trujillo-Liñán, 2025). Yet these innovations also raise concerns about bias, data privacy, authorship, and academic integrity. In response, UNESCO's AI in Education policy (2023) and related scholarship (Zawacki-Richter et al., 2019; Holmes et al., 2022) emphasise that AI adoption must remain human-centred, pedagogically aligned, and ethically governed. Instructor readiness, institutional capacity, and sustained professional development are now recognised as pivotal to meaningful and responsible integration.

Across the Caribbean, scholarship on AI in education reveals both potential and inequity. Studies highlight enthusiasm among faculty and students (Bissessar, 2023; Madden et al., 2025; Morris, Samuels, & Morris, 2025) but also persistent concerns about plagiarism, bias, and uneven institutional readiness. Earlier empirical work across Caribbean institutions (Baksh, 2025) highlighted student enthusiasm for AI tools but also underscored gaps in pedagogical guidance and institutional preparedness. In Trinidad and Tobago, recent national digital transformation policies have raised awareness of AI in higher education, yet educators remain cautious about fairness, authorship, and academic integrity (Roberts, 2025). Despite these developments, little empirical evidence exists on how instructors adopt and integrate generative AI into their teaching and administrative practice, highlighting the need for contextually grounded research that reflects small-island higher education realities.

Problem

Despite growing attention to artificial intelligence (AI) in higher education, empirical research examining how instructors in Trinidad and Tobago adopt and integrate generative AI tools into everyday teaching and administrative practice remains limited. While national and institutional policies increasingly promote digital innovation, there is little empirical insight into how instructors interpret, operationalise, and regulate AI use within real instructional contexts (Bissessar, 2023; Keith & Waldron, 2024).

Existing studies tend to focus on access, awareness, or general attitudes toward AI, offering limited explanation of how instructors balance pedagogical goals, administrative demands, and ethical considerations when engaging with generative AI tools. As a result, instructors are often left without structured guidance for translating AI adoption into sustained, contextually appropriate practice.

This gap is particularly significant within Caribbean higher education, where uneven professional development, variable institutional support, and concerns related to academic integrity and data governance shape instructors' decision-making around the use of AI (Madden et al., 2025; Morris et al., 2025). Addressing this problem requires a contextually grounded, human-centred framework capable of explaining how instructors integrate generative AI into their work while mediating pedagogical, ethical, and institutional constraints.

Purpose

The purpose of this study is to develop an empirically grounded framework that guides ethical and effective instructor-AI integration in higher education. Focusing on the small-island context of Trinidad and Tobago, the study examines how instructors engage with generative AI across pedagogical and administrative practices. The outcome of this work is the CHAT (ChatGPT, Holistic, Adaptive, Teaching) Framework, a human-centred model designed to support responsible instructor-AI collaboration within contextually constrained institutional environments.

Research Questions and Hypotheses

Mixed Methods Research Question

How do quantitative patterns of ChatGPT use in pedagogical and administrative contexts, when integrated with instructors' qualitative experiences and contextual insights, inform the development of the CHAT Framework for higher education?

Quantitative Research Questions

1. How is ChatGPT's use associated with instructors' pedagogical practices in higher education?

2. What relationships exist between instructors' levels of ChatGPT adoption and their perceived benefits of use?
3. How is ChatGPT use associated with perceived administrative efficiency among higher education instructors?

Hypotheses

- H_1: Higher levels of ChatGPT use are positively associated with instructors' perceived pedagogical practices and administrative efficiency in higher education settings.
- H_2: Instructors' levels of ChatGPT adoption are positively associated with their perceived benefits of generative AI use in higher education settings.

Qualitative Research Questions

4. How do instructors describe their experiences using ChatGPT in pedagogical and administrative contexts?
5. What contextual, institutional, and ethical factors shape instructors' adoption and use of ChatGPT in higher education?

Collectively, these research questions examine instructor-AI integration from complementary perspectives. The quantitative questions focus on patterns of AI adoption and perceived pedagogical and administrative impacts, while the qualitative questions explore instructors' lived experiences, contextual constraints, and ethical considerations shaping these patterns. Integration of both strands informs the development of the CHAT Framework by identifying how adoption conditions, pedagogical practice, and ethical mediation interact within higher education in Trinidad and Tobago.

The CHAT Framework: A Human-Centred Model for Instructor-AI Integration

While existing frameworks explain important aspects of technology use in education, none sufficiently account for how instructors mediate generative AI integration across pedagogical, ethical, and institutional demands in practice. Adoption models such as UTAUT clarify conditions that influence instructors' willingness to use AI, while pedagogical frameworks such as TPACK explain how technology may align with teaching and content knowledge. However, these approaches do not explain how instructors regulate, adapt, and ethically standardise the use of AI once adoption occurs, particularly within contextually constrained environments.

The CHAT (ChatGPT, Holistic, Adaptive, Teaching) Framework addresses this gap by conceptualising instructor-AI integration as a mediated professional practice rather than a technical adoption decision. Grounded in integrated quantitative and qualitative findings from this study, CHAT explains how instructors translate adoption readiness and pedagogical intent into contextually appropriate, ethically regulated practice within higher education.

Philosophical Grounding and Context

The CHAT (ChatGPT, Holistic, Adaptive, Teaching) Framework is grounded in a human-centred philosophy that views instructor-AI integration as an ethical, pedagogical, and administrative process extending beyond technical adoption. Drawing on the principles of reflective teaching and institutional responsibility, the framework positions instructors as designers, mediators, and ethical gatekeepers of the use of AI in higher education. Rather than treating AI as a purely technological tool, CHAT emphasises its role as a supplementary tool that supports instructional creativity, administrative efficiency, and contextual responsiveness.

Integration of UTAUT, TPACK and UNESCO AI in Education Policy

The CHAT Framework synthesises two complementary theoretical models and one global policy foundation. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) provide the behavioural lens, explaining the predictors of instructor adoption (performance expectancy, effort expectancy, social influence, and facilitating conditions) that influence behavioural intention to use AI for both pedagogical and administrative purposes. The Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) contributes to the pedagogical dimension, illustrating how instructors integrate technology with disciplinary knowledge and teaching strategies to maintain instructional integrity. Together, these theories are anchored by UNESCO's AI in Education policy (2023), which provides the ethical and governance foundation. This policy emphasises human-centred, transparent, and equitable AI use, emphasising fairness, inclusion, and professional accountability as prerequisites for sustainable adoption.

Dimensions of the CHAT Framework

The CHAT (ChatGPT, Holistic, Adaptive, Teaching) Framework comprises four interrelated dimensions that collectively promote ethical, pedagogical, and administrative integration of artificial intelligence within higher education. Each dimension centres on human agency and ethical practice, consistent with UNESCO's AI in Education policy (2023). It reflects the dual instructional and administrative focus identified in this study.

1. ChatGPT (Human-centred AI Integration)

This dimension represents the layer of instructor-AI engagement associated with the use of specific AI tools. It focuses on how instructors interact with generative AI tools such as ChatGPT to design lessons, produce exemplars, deliver feedback, and support administrative tasks. Central to this interaction is human oversight, ensuring the use of AI remains guided by professional judgment and pedagogical intent. The emphasis on AI literacy, self-regulated learning, and human control reflects instructors' responsibility to supervise outputs, critically evaluate information, and employ AI as a collaborative assistant rather than a replacement for human expertise. Within the CHAT

Framework, this dimension functions as the technological artefact through which instructor agency, ethical judgment, and pedagogical intent are enacted in practice.

2. Holistic (Human-centric Environment)

The Holistic dimension addresses the ethical and contextual integration of AI use in education. It is grounded in the belief that technological innovation must serve human development and uphold fundamental rights. Instructors consider the moral, cultural, and institutional implications of AI deployment, ensuring transparency, inclusion, and fairness. This dimension aligns with UNESCO's policy call for trustworthy, human-centred educational environments that prioritise wellbeing and academic integrity. It asks a critical question: How can AI enrich learning while sustaining trust, equity, and contextual relevance? Within the CHAT Framework, this dimension functions as the ethical and contextual lens through which instructors mediate the use of AI beyond technical efficiency, ensuring alignment with professional values and institutional norms.

3. Adaptive (Human-informed Adaptability)

The Adaptive dimension highlights instructor agency and contextual responsiveness. It captures how instructors modify their instructional and administrative strategies in response to course level, learner diversity, policy directives, and institutional capacity. Through iterative feedback and reflection, instructors regulate the use of AI to complement rather than constrain pedagogical creativity. Adaptivity also encompasses administrative efficiency (using AI to streamline communication, scheduling, or reporting) while maintaining ethical oversight and professional control. In this sense, adaptation represents both technological flexibility and pedagogical resilience. Within the CHAT Framework, this dimension captures the iterative decision-making processes identified in instructors' reported experiences, through which AI use is continuously adjusted in response to contextual, ethical, and pedagogical feedback.

4. Teaching (Human-driven Pedagogy)

Teaching forms the core dimension of the framework, positioning pedagogy as the ethical compass of AI use. It underscores that human instructors remain the central agents of learning design, facilitation, and assessment. Instructors employ AI to enhance, not replace, interactive, learner-centred teaching. This dimension centres collaborative human-AI practices, such as co-creating formative materials, generating examples, and supporting differentiated instruction. It also extends to the administrative sphere, where aligned systems and clear policies enable instructors to allocate time toward reflective teaching and meaningful student engagement. Within the CHAT Framework, this dimension anchors AI integration in pedagogical purpose, ensuring that technological use remains subordinate to instructional intent rather than automation or efficiency alone.

Together, these four dimensions are unified by ethical practice, which functions as the unifying principle of the CHAT Framework. Ethical practice ensures that AI integration remains purposeful, transparent, and responsive to the educational and cultural contexts of Caribbean higher education.

Operational Mechanisms within CHAT

The framework operates through five interrelated mechanisms that link its four dimensions and illustrate how instructors ethically and adaptively integrate AI within pedagogical and administrative practice. The five operational mechanisms of the CHAT Framework are derived directly from convergent quantitative patterns and qualitative themes identified in this study, reflecting how instructors described negotiating readiness, ethical judgment, institutional support, and pedagogical purpose when integrating generative AI.

Table 1. Operational Mechanisms within the CHAT Framework

Mechanism	Description
Enablement	Institutional and national support (training, policy, infrastructure) that enable responsible experimentation.
Calibration	Instructors weigh benefits against ethical, pedagogical, and administrative risks.
Scaffolding	Effort expectancy improves as instructors develop prompt libraries and classroom and/or administrative templates.
Socialisation	Peer, departmental, and ministry influences that normalise responsible use of AI.
Reflection	Continuous ethical reflection prevents excessive automation or bias.

Jointly, these mechanisms demonstrate how the CHAT Framework functions as a developmental and iterative model for instructor-AI integration. Together, they show that ethical practice is sustained not through isolated actions but through ongoing institutional support, professional reflection, and adaptive decision-making. This developmental process is illustrated conceptually in Figure 1.

The CHAT Framework as a Developmental Model

Unlike static adoption models, CHAT is developmental. It supports professional learning, curriculum design, workflow optimisation, and policy development. It offers a continuum through which instructors move from awareness and experimentation to ethical normalisation. The framework's value lies in its adaptability to diverse higher education settings and its grounding in Caribbean pedagogical realities. Instructors are positioned not as passive adopters but as co-creators of ethical AI practice that balances instructional creativity with administrative sustainability. Figure 1 presents the CHAT Framework as an empirically grounded, human-centred model that illustrates how adoption conditions, pedagogical practice, and ethical mediation interact in instructor-AI integration, informed by UTAUT, TPACK, and UNESCO's AI in Education guidance.

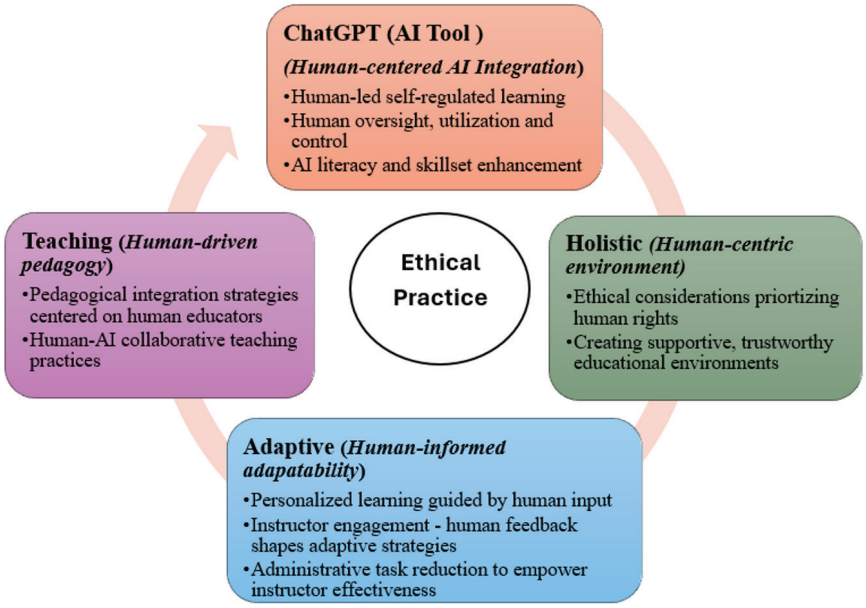

Figure 1. The CHAT Framework for Instructor-AI Integration in Higher Education, developed by the author.

Table 2 translates these theoretical elements into measurable constructs and contextual indicators that structured both phases of the explanatory sequential design.

Table 2. Operationalisation of Constructs within the CHAT Framework

CHAT Dimension / Construct	Theoretical Source(s)	Operational Definition
Performance Expectancy	UTAUT (Venkatesh et al., 2003)	The degree to which an instructor believes generative AI will enhance instructional quality, efficiency, or student engagement.
Effort Expectancy	UTAUT (Venkatesh et al., 2003)	The perceived ease associated with learning and using AI tools for teaching tasks.
Social Influence	UTAUT (Venkatesh et al., 2003)	The extent to which colleagues, institutional leaders, or policy frameworks encourage or legitimise AI use.
Facilitating Conditions	UTAUT (Venkatesh et al., 2003)	The institutional and infrastructural supports that enable effective AI integration.
Pedagogical Knowledge	TPACK (Mishra & Koehler, 2006)	Knowledge of how to design and deliver instruction that integrates AI while maintaining content and pedagogical integrity.
Technological Knowledge	TPACK (Mishra & Koehler, 2006)	Understanding of AI tool functionality, affordances, and limitations.
Content Knowledge	TPACK (Mishra & Koehler, 2006)	Mastery of subject matter that enables critical evaluation of AI outputs.
Ethical Literacy (Holistic Dimension)	UNESCO (2023) and integrated empirical findings	Awareness and application of ethical, cultural, and contextual values in AI use.
Adaptive Practice (Contextual Responsiveness)	Integrated quantitative and qualitative findings	Instructors' reported capacity to adjust AI use across pedagogical, administrative, and institutional contexts in response to ethical reflection and policy conditions.
Teaching (Pedagogical Alignment)	Integrated empirical findings, informed by TPACK	Alignment of AI use with instructional goals, pedagogical strategies, and assessment practices, as reported by instructors.
Administrative Efficiency	Integrated empirical findings	The extent to which instructors use AI to streamline institutional or operational tasks while retaining ethical oversight.

Accordingly, this study operationalises an empirically grounded, human-centred framework that guides instructor-AI collaboration by linking adoption conditions, pedagogical practice, administrative efficiency, and ethical mediation in higher education.

Significance

This study contributes to the growing discourse on AI in higher education by introducing the CHAT Framework, a human-centred model that brings into dialogue adoption theory (UTAUT) and pedagogical knowledge (TPACK) within a single explanatory design. Grounded in the Caribbean higher education context, it advances theoretical understanding of instructor-AI interaction and offers actionable insights for institutions navigating ethical and infrastructural readiness. By complementing emerging Caribbean research on student AI engagement (Baksh, 2025) and aligning with UNESCO's call for equitable, human-centred AI in support of Sustainable Development Goal 4 (UNESCO, 2023), the CHAT Framework strengthens the regional and global discourse on responsible, inclusive AI adoption in education.

LITERATURE REVIEW

Instructor Adoption, Integration, and Ethical Frameworks for AI

Understanding instructors' adoption and integration of artificial intelligence (AI) in higher education requires frameworks that address behavioural intention, pedagogical design, and ethical responsibility. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) identify four adoption predictors (performance expectancy, effort expectancy, social influence, and facilitating conditions), clarifying the behavioural and organisational factors shaping AI uptake. Yet UTAUT explains intention rather than instructional practice. The Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) complements UTAUT by illustrating how instructors integrate technology with disciplinary knowledge and pedagogy (Koehler et al., 2022; Panagopoulou et al., 2023; Vicky D. Wee & Wekasono, 2022). Neither theory alone captures the ethical and contextual dynamics of generative-AI use; integrating both provides a holistic view linking behavioural intention with pedagogical enactment. This dual lens approach aligns with recent studies demonstrating that pedagogical knowledge moderates adoption predictors in AI enhanced teaching (Hwang, Chiu, & Chen, 2023). The third theoretical pillar, UNESCO's Guidance for Generative AI in Education (2023), adds the ethical and governance dimension, emphasising fairness, transparency, and accountability. Considered together, these three perspectives (behavioural, pedagogical, and ethical) provide a comprehensive foundation for analysing instructor adoption and integration of generative AI tools in higher education.

Pedagogical and Administrative Integration of AI

The integration of AI in higher education extends beyond content delivery to encompass both pedagogical and administrative practice. In teaching and learning, generative tools such as ChatGPT

support automated feedback, lesson design, and formative assessment, helping instructors create adaptive and personalised experiences (Yan et al., 2024; García-López & Trujillo-Liñán, 2025; Fauzi et al., 2023). These innovations, however, require continual pedagogical reflection to ensure alignment with curricular goals and learner agency (Ba et al., 2025; Fleckenstein et al., 2023; Koehler et al., 2022; Perkins, 2023). Beyond pedagogy, AI is transforming administrative functions such as assessment reporting, scheduling, and communication, reshaping how instructors organise their work (Murad et al., 2023; Streszelecki, 2023; UNESCO, 2023). When responsibly implemented, automation can reduce routine workload and free time for instructional planning, but such benefits depend on infrastructure, policy, and professional learning opportunities (Keith & Waldron, 2024; UNESCO, 2023; Yakin et al., 2023). Scholars therefore advocate a dual integration perspective in which pedagogical and administrative uses are interdependent, ethical reasoning and adaptive decision-making must ensure that automation complements rather than replaces professional judgment (Keith & Waldron, 2024; Ansari et al., 2023). This synthesis positions AI integration as a continuum linking instructional creativity with organisational transformation, yet existing frameworks offer limited guidance on how instructors mediate this process in practice.

Ethical, Contextual, and Professional Considerations

Ethical and contextual considerations remain central to AI integration in higher education. UNESCO's (2023) guidance stresses fairness, inclusion, and transparency, cautioning that without oversight, AI may deepen inequities or compromise integrity (García-López & Trujillo-Liñán, 2025; Holmes et al., 2022; Panagopoulou et al., 2023). Institutional context strongly shapes how these principles are enacted, while some systems offer governance on data protection, instructors in developing or small-island settings often navigate boundaries independently (Keith & Waldron, 2024; Roberts & Solomon, 2024; Roberts, 2025). Professional identity also mediates adoption. Instructors who treat AI as a collaborative, reflective tool, rather than a substitute, are more likely to integrate it meaningfully and ethically (Madden et al., 2025; Montenegro-Rueda et al., 2023; Shamsudin & Aris, 2023; Yan et al., 2024). Such reflective practice aligns with UNESCO's call for educators to act as responsible innovators, safeguarding autonomy and trust.

Caribbean Perspectives on AI in Higher Education

Globally, research on generative AI in higher education has expanded rapidly, converging on the need for structured frameworks, AI literacy, and sustained professional development to support responsible adoption (García-López & Trujillo-Liñán, 2025; UNESCO, 2023; Yan et al., 2024). By contrast, Caribbean scholarship remains limited and largely exploratory. Existing studies focus on attitudes, readiness, and ethical awareness among educators (Bissessar, 2023; Madden, McKenzie, & Daley, 2025; Morris, Samuels, & Morris, 2025), while broader commentaries highlight infrastructural and policy constraints, including uneven digital literacy training and underdeveloped data governance systems (Cross et al., 2023; Keith & Waldron, 2024; Roberts & Solomon, 2024). Complementing this educator focused work, a recent mixed-methods study applies the Community of Inquiry framework

to examine students' AI use in the Caribbean, evidencing activity across teaching, social, and cognitive presence (Baksh, 2025). Julien (2024) calls for inclusive AI policies to prevent inequity, and Keith and Waldron (2024) advocate aligning educational technology with Sustainable Development Goal 4. This imbalance between global and regional research underscores the need for contextually grounded frameworks that reflect small-island realities where policy, culture, and resources intersect.

Conceptual Gap

Taken together, existing research explains instructors' willingness to adopt AI (adoption models), their capacity to align technology with pedagogy (pedagogical frameworks), and the ethical risks associated with generative AI (policy and governance literature). However, what remains underdeveloped is an integrated explanation of how instructors mediate the use of AI across pedagogical, ethical, and institutional demands in practice. No existing framework accounts for how these dimensions interact within contextually constrained higher education environments, particularly in small-island systems. This gap motivates the development of the CHAT Framework.

METHOD

Research Design

Applying an explanatory sequential mixed-methods design (Creswell & Plano Clark, 2018), grounded in a pragmatic paradigm that prioritises methodological flexibility and practical outcomes over epistemological truth, this study develops and empirically grounds the CHAT Framework through the integration of quantitative and qualitative evidence. Specifically, convergent findings across the two phases were used to justify the framework's dimensions and mechanisms, while formal validation is intentionally deferred to future research. Pragmatism assumes that complex educational phenomena, such as instructor adoption of generative AI, are best understood through the integration of quantitative measurement and qualitative explanation. The design unfolded in two connected phases. The first phase involved a branched online survey that differentiated between users of ChatGPT and non-users or prospective adopters, allowing examination across the adoption continuum, from awareness and intention to integration. The second phase used semi-structured interviews and a focus group to elaborate on quantitative trends and reveal the lived experiences behind adoption and non-adoption patterns. Figure 2 presents an overview of the sequential design procedures, and Table 3 summarises the timing, connection, and purpose of each phase. This sequential integration strengthened validity through triangulation and participant confirmation.

The design choice responds directly to methodological gaps in existing AI in education research. Slimi (2023) notes that many studies exploring the impact of AI in higher education rely exclusively on quantitative surveys, which restrict understanding of the social, cognitive, and ethical dimensions that shape adoption. By incorporating qualitative phases following the survey, the study captures instructors' lived experiences and institutional realities, enabling richer interpretation of quantitative patterns. The sequential integration of both strands also strengthens validity through triangulation and participant confirmation.

Table 3. Procedural Flow of the Explanatory Sequential Mixed-Methods Design

Phase	Purpose	Data/Participants	Integration Point
Quantitative Phase (Survey)	Examine predictors of instructor adoption (UTAUT constructs).	101 instructors across tertiary institutions.	Identify key variables (e.g., training, facilitating conditions, ethics) to inform qualitative exploration.
Connecting Phase	Use quantitative findings to design qualitative instruments.		Quantitative patterns guide interview and focus-group questions on readiness, ethics, pedagogical integration and institutional context.
Qualitative Phase (Interviews + Focus Group)	Explore how instructors interpret and apply AI in pedagogical and administrative contexts.	11 interviews; 1 focus group (6 participants).	Thematic analysis to generate explanatory categories expanding quantitative trends.
Integration & Interpretation Phase	Merge quantitative and qualitative insights to inform the empirical grounding and refinement of the CHAT framework.	Combined datasets (joint display).	Integration of strands through meta-inference aimed at conceptualising the CHAT Framework.

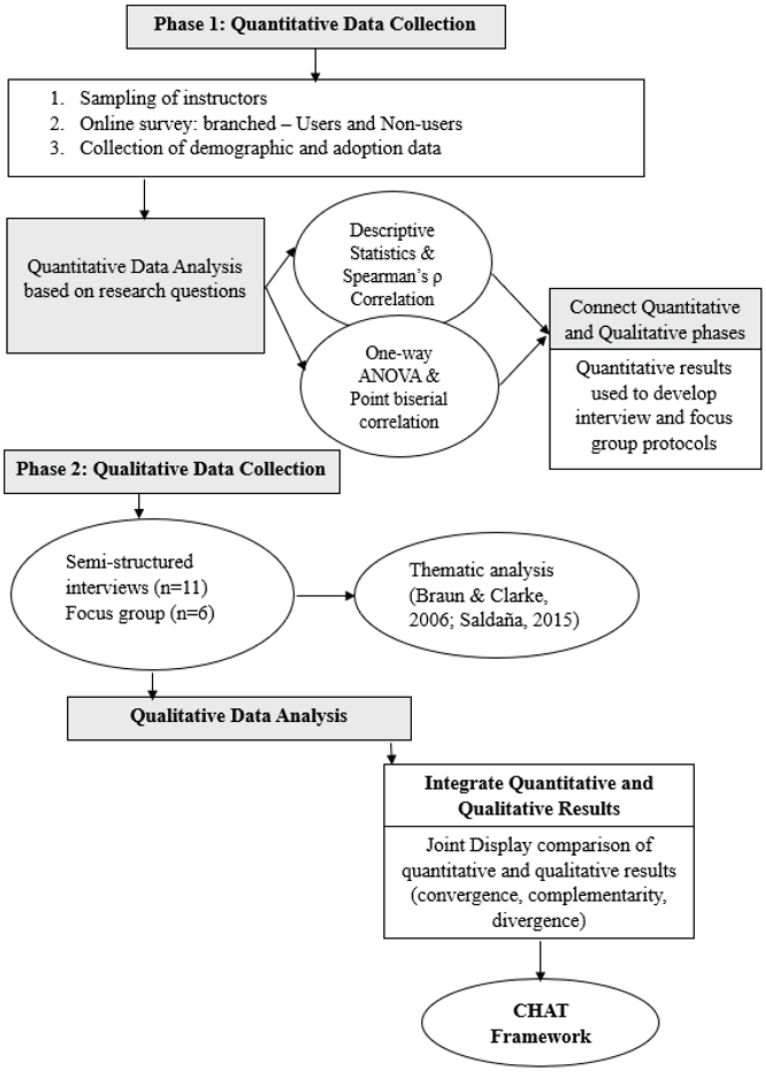

Figure 2. Sequential explanatory mixed methods research design procedures illustrating the phases used in this study.
Adapted from Ivankova, Creswell, and Stick (2006) and re-created by the author.

Participants and Sampling

The quantitative phase targeted higher education instructors employed across public and private tertiary institutions in Trinidad and Tobago. This group was selected because of its central role in implementing generative artificial intelligence (AI) tools within both instructional and administrative contexts. A purposive sampling strategy was used to ensure representation across disciplines, institutional types, and levels of teaching experience, while snowball sampling extended participation through professional networks. The final sample consisted of 101 instructors, representing both users and non-users of ChatGPT. A power analysis confirmed adequacy for correlational and group comparison analyses, ensuring sufficient statistical power to detect medium effects (Cohen, 1992; Creswell & Creswell, 2018). Demographic variables collected included gender, age, educational qualification, years of teaching experience, and prior exposure to AI and digital technologies.

For the qualitative phase, a nested subsample of participants (n = 11) was drawn from the quantitative pool of respondents who volunteered for follow-up interviews. This sequential linkage between strands ensured methodological integration and continuity of interpretation. Additionally, a second nested subsample of six instructors and administrators for the focus group (n = 6) was convened to promote collective dialogue and triangulate insights from the individual interviews. Participants represented a range of disciplines across both STEM and humanities fields, providing diversity in pedagogical approaches, technological exposure, and ethical viewpoints.

Quantitative Procedures and Instrumentation

The researcher developed an online questionnaire to investigate instructors' adoption, training, and perceived pedagogical and administrative outcomes associated with ChatGPT. The instrument was grounded in two complementary theoretical frameworks. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) provided constructs for understanding technology acceptance, specifically performance expectancy, effort expectancy, social influence, and facilitating conditions. The Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) informed items related to instructors' ability to integrate emerging technologies within disciplinary teaching and learning contexts.

The questionnaire underwent expert review by two specialists in educational technology and mixed methods research to establish content validity and ensure alignment between theoretical constructs and operational measures. It was then pilot tested to assess clarity, logical flow, and functionality of the branching design. Feedback from the pilot led to minor lexical and sequencing refinements. An a priori power analysis was conducted, assuming a medium effect size, an alpha level of .05, and a desired statistical power of .80, indicating that the achieved sample size was sufficient for the planned correlational and group comparison analyses. Internal consistency reliability for the finalised instrument was high (Cronbach's α = .88), indicating strong overall coherence among the survey scales. Reliability was also examined at the construct level, with acceptable to strong internal consistency observed across performance expectancy, effort expectancy, facilitating conditions, pedagogical practices, administrative efficiency, and perceived benefits.

Table 4. Internal Consistency Reliability of Survey Constructs

Construct	Theoretical Source	Number of Items	Cronbach's α
Performance Expectancy	UTAUT	5	.89
Effort Expectancy	UTAUT	4	.86
Social Influence	UTAUT	3	.82
Facilitating Conditions	UTAUT	4	.85
Pedagogical Practices	TPACK-informed	6	.90
Administrative Efficiency	Study-developed	4	.88
Perceived Benefits	Study-developed	5	.91

Item reliability and construct validity were further supported through inter-item correlation analysis and expert judgment of conceptual fit between items and theoretical domains. Example survey statements included: "*I find ChatGPT useful for preparing instructional materials*" (Performance Expectancy), "*My institution provides sufficient technical support for AI integration*" (Facilitating Conditions), and "*I have adequate training to use AI tools effectively*" (Effort Expectancy). These items reflected the constructs derived from the UTAUT and TPACK frameworks. Data was collected electronically via Microsoft Forms. The platform's automated branching ensured smooth navigation between user and non-user pathways, minimising response error. Participation was entirely voluntary, and informed consent was embedded on the opening screen before access to survey items was granted.

Qualitative Procedures and Analysis

The qualitative phase followed the quantitative strand in alignment with the explanatory sequential mixed-methods design, serving to elaborate and contextualise statistical trends identified in the survey and to inform the development of the CHAT Framework. This phase was essential for developing a deeper understanding of instructors' experiences, perceptions, and decision-making processes related to the adoption and use, or intended use of ChatGPT in higher education contexts.

The semi-structured interview guide and focus group protocol were developed directly from the quantitative findings and theoretical constructs derived from UTAUT and TPACK, enabling deeper exploration of patterns related to adoption, pedagogical integration, administrative efficiency, and ethical considerations. Sample interview prompts included: "*How has ChatGPT influenced your teaching or administrative work*?" and "*What challenges or ethical issues have you encountered when integrating AI tools*?" These questions were informed by quantitative patterns on adoption, usefulness, and ethical concerns. For instance, themes emerging from survey patterns on effort expectancy and facilitating conditions guided questions exploring institutional support, digital readiness, and perceptions of workload. Similarly, items linked to pedagogical integration within TPACK informed probing discussions about how instructors envisioned or enacted AI supported teaching.

Both instruments were reviewed by one qualitative research expert for content validity, flow, and question neutrality. Minor linguistic adjustments were made to ensure accessibility for participants

from different institutional backgrounds. The guiding principle was to ensure conceptual alignment between strands while allowing participants to introduce unanticipated insights and context specific perspectives.

Qualitative data were collected after completion of the survey phase to elaborate on the quantitative results. Semi-structured interviews were held with 11 instructors who volunteered at the end of the survey to participate in follow-up discussions. Each interview lasted approximately 30 to 45 minutes and was conducted via Zoom, allowing for geographically distributed participation across Trinidad and Tobago. Subsequently, a focus group (n = 6) comprising 3 instructors and 3 administrators (who are also instructors) was convened to validate and extend the emerging findings from the interviews, encouraging dialogic reflection amongst participants.

Qualitative data were analysed using Braun and Clarke's (2006) six-step framework for thematic analysis, supported by the analytic techniques outlined by Saldaña (2016). Through this hybrid deductive-inductive approach, the researcher identified themes that aligned with theoretical expectations and revealed novel contextual dynamics influencing AI adoption and non-adoption. Analytical rigour was maintained through iterative memoing, peer debriefing, and systematic cross verification of codes across data sources. Credibility and dependability were further strengthened by maintaining an audit trail of analytic decisions, conducting member checks with selected participants, and using reflexive journaling to document the researcher's positionality. The thematic structure was refined until theoretical saturation was achieved.

Trustworthiness and Rigour

Credibility and trustworthiness were established following Lincoln and Guba's (1985) criteria. Member checking was conducted by returning preliminary interpretations to participants for feedback and accuracy verification. Dependability was enhanced through the maintenance of a detailed audit trail documenting analytical decisions. Confirmability was achieved through reflexive journaling and peer examination, while transferability was supported by providing rich, contextual descriptions of participants' institutional and disciplinary settings.

Integration of Quantitative and Qualitative Strands

Integration of the quantitative and qualitative strands was the defining feature of this explanatory sequential design. Integration occurred at two distinct stages of the research process. First, during the design phase, the quantitative findings guided the construction of qualitative instruments, a process referred to as connecting (Creswell & Plano Clark, 2018). Patterns identified in the survey, such as relationships between training, adoption, and perceived usefulness, were used to develop targeted interview questions probing instructors' experiences and decision-making processes.

Second, integration was achieved during the interpretation stage through the merging of datasets. After independent analysis of both strands, results were systematically compared and synthesised using joint display matrices that aligned statistical outcomes with thematically derived qualitative

findings generated through a hybrid deductive–inductive analysis. This enabled the researcher to identify points of convergence (where quantitative trends and qualitative narratives supported each other), complementarity (where qualitative data added depth to numerical findings), and divergence (where qualitative findings differed from quantitative patterns). The integrated interpretation culminated in the formulation of meta-inferences that informed subsequent analytic interpretation.

Mixed-Methods Integration Procedures

The mixed-methods integration was conducted following completion of the quantitative and qualitative analyses. Quantitative findings informed the focus of subsequent qualitative inquiry, with interview and focus group protocols designed to explore instructors' experiences and contextual interpretations underlying the survey results. Integration was achieved using joint displays and narrative composing to support systematic comparison of findings across data strands. Meta-inferences generated through this process informed the development and refinement of the CHAT Framework's dimensions and mechanisms, providing an empirically grounded basis for the proposed model without constituting formal validation.

Ethical Considerations

Ethical integrity was maintained throughout all stages of the research. Approval of the study was obtained from the Institutional Review Boards (IRBs) of two accredited universities before data collection. All procedures adhered to established standards for the protection of human participants in educational research. Participants were provided with detailed information outlining the purpose of the study, the voluntary nature of participation, and the assurance of confidentiality. Informed consent was obtained electronically before participating in either phase of the study. Respondents were advised that they could withdraw at any stage without penalty.

Together, these procedures established the methodological foundation for examining patterns and explanations of ChatGPT adoption among higher education instructors.

RESULTS AND ANALYSIS

Quantitative Findings

The quantitative phase examined adoption patterns, readiness, and perceived pedagogical impact of ChatGPT among higher education instructors in Trinidad and Tobago. Data from 101 respondents were analysed using descriptive and nonparametric statistics in keeping with the explanatory sequential design. Table 5 shows the demographic characteristics of the survey participants (n = 101).

Table 5. Demographic Characteristics of Survey Participants (n = 101)

Variable	Category	%
Gender	Female	55%
	Male	41%
	Prefer not to disclose	3%
	Non-binary	1%
Age Range	25–34	22%
	35–44	38%
	45–54	26%
	55–64	9%
	65+	6%
Education Level	High School	3%
	Bachelor's	26%
	Master's	47%
	Doctoral	25%
Years of Experience	<1 year	9%
	1–5 years	18%
	6–10 years	15%
	11–20 years	41%
	>20 years	17%
Institution Type	Public	50%
	Private	22%
	Both	28%
Discipline	STEM	41%
	Humanities	36%
	Social Sciences	23%

Descriptive Statistics

Survey data from 101 instructors revealed key trends in adoption, readiness, and perceived impact. While 87% were aware of ChatGPT, only 43.5% had integrated it into their practice. Notably, 52.9% reported improved lesson planning and administrative efficiency ($r = 0.736$, $p < .001$). Usage patterns varied by discipline, with 45% of STEM instructors applying ChatGPT for problem-solving, and 60% of humanities instructors using it for writing and analysis tasks. Training access emerged as a critical factor. Only 29.7% of instructors had received formal AI training, though 54% expressed a demand for it ($r = 0.55$, $p < .001$). Ethical concerns were also prominent, with 73% citing plagiarism and overreliance as a major risk.

Table 6. Awareness, Adoption, and Perceived AI Impact. *Survey Findings on Instructor Awareness, Adoption, and Perceptions of ChatGPT (n = 101)*

Item	Finding
Awareness of ChatGPT	87%
Active Integration of ChatGPT	43.5%
Reported Improvement in Lesson Planning/Admin Efficiency	52.9% (r = 0.736, p < .001)
STEM Instructors Using AI for Problem-Solving	45%
Humanities Instructors Using AI for Writing/Analysis	60%
Received Formal AI Training	29.7%
Expressed Need for AI Training	54% (r = 0.55, p < .001)
Concern About Plagiarism/Overreliance	73%

Correlational Analysis

Relationships among the UTAUT and TPACK constructs were tested using Spearman's rho due to the non-normal distribution of variables. Results revealed a strong positive correlation between training exposure and adoption (ρ = .62, p < .001), suggesting that instructors who had received some form of AI or digital literacy training were significantly more likely to use ChatGPT. Moderate positive relationships were also found between perceived pedagogical value and frequency of use (ρ = .48, p < .01), as well as between facilitating conditions and confidence in use (ρ = .44, p < .01).

Table 7. Correlations Among UTAUT and TPACK Constructs. *Spearman's Correlations Between Key Constructs Related to ChatGPT Adoption (n = 101)*

Construct Pair	Spearman's ρ	p-value	Strength
Training Exposure ↔ ChatGPT Adoption	.62	< .001	Strong
Perceived Pedagogical Value ↔ Frequency of Use	.48	< .01	Moderate
Facilitating Conditions ↔ Confidence in Use	.44	< .01	Moderate

These results indicate that instructors' readiness and use of ChatGPT were strongly associated with training and perceived usefulness, patterns that are consistent with the performance expectancy and effort expectancy dimensions of UTAUT. Specifically, perceived usefulness, defined as instructors' beliefs that ChatGPT supports teaching and administrative tasks, emerged as a key factor associated with adoption behaviour.

Group Comparison Tests

Group comparison analyses, including one-way ANOVA and point biserial correlations, were conducted to examine differences in ChatGPT adoption patterns across demographic characteristics. No statistically significant differences were observed in ChatGPT adoption, training exposure, or perceived outcomes across gender (p = .41), age (p = .28), or educational qualification (p = .33). These

findings indicate that demographic characteristics were not significantly associated with variation in generative AI engagement within the study sample.

Inferential Results

Relationships among study constructs were examined using Spearman's rho for continuous variables and point biserial correlations for dichotomous measures. Group comparisons were examined using exploratory analyses, as described previously.

Hypothesis 1: ChatGPT Usage and Administrative Efficiency

H_1: There is a significant positive relationship between ChatGPT usage and administrative efficiency among higher education instructors.

Significant positive associations were observed between ChatGPT usage and three indicators of administrative efficiency, namely instructor effectiveness, time reduction, and workload satisfaction (ρ = .392, p = .0004; ρ = .507, p < .001; ρ = .392, p = .0004, respectively). These findings were consistent with H_1, indicating that higher levels of reported ChatGPT use were associated with higher perceived administrative efficiency across these dimensions.

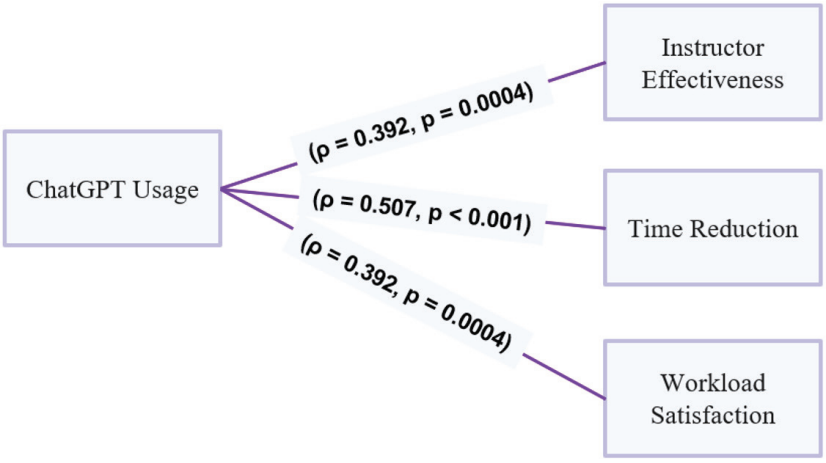

Figure 3. Relationship between ChatGPT usage and administrative efficiency indicators (including instructor effectiveness, time reduction, and workload satisfaction).

Hypothesis 2: Adoption Rates and Perceived Benefit

H_2: Variations exist in adoption rates and perceived benefits of ChatGPT among instructors.

Point biserial correlation analysis indicated a strong positive association between ChatGPT adoption and perceived benefits (r = .736, p < .001). These findings were consistent with H_2, indicating that instructors reporting higher perceived benefits also reported higher levels of ChatGPT adoption.

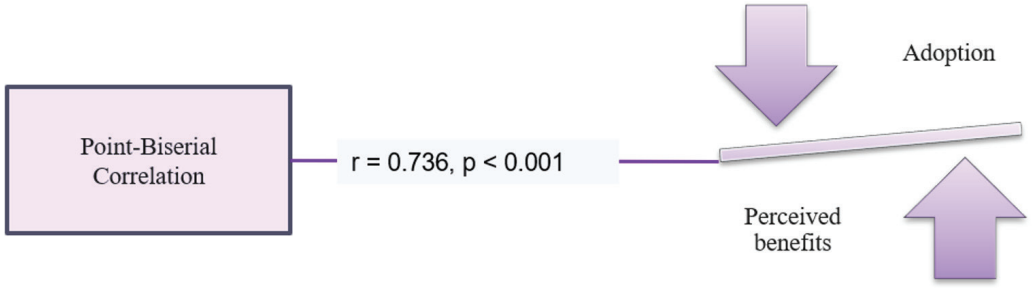

Figure 4. Relationship between adoption rates and perceived benefits of ChatGPT use.

Overall, the quantitative results demonstrated statistically significant associations between ChatGPT usage and multiple dimensions of perceived instructor efficiency and satisfaction. Adoption levels were also strongly associated with perceived benefits and training exposure. These quantitative patterns informed the subsequent qualitative phase, which explored instructors' experiences, motivations, ethical considerations, and contextual factors underlying these observed relationships.

Qualitative Findings

The qualitative phase followed the quantitative results to provide explanatory depth regarding instructors' experiences, motivations, and contextual realities surrounding ChatGPT use in higher education. Semi-structured interviews with 11 instructors and a focus group comprising 3 instructors and 3 administrators (n = 6) generated four major themes that clarify the relationships observed in the quantitative phase.

Table 8. Illustrative Qualitative Evidence for Major Themes

Theme	Illustrative Quotes (Interview / Focus Group)	Interpretive Summary
1. Readiness & Perceived Value	"*I had never used ChatGPT before training, but now I can see how it saves me time with lesson ideas.*" "*Some colleagues are still hesitant because they don't understand how to use it ethically.*"	Instructors recognised AI's usefulness and efficiency but reported uneven readiness linked to exposure and training.
2. Ethical Reflection & Responsible Use	"*You don't just copy and paste everything from ChatGPT because you have to fact-check what it gives you.*" "*I always worry whether what ChatGPT produces is original.*"	Participants expressed heightened ethical awareness, emphasising authenticity, bias, and authorship concerns that moderate adoption.
3. Pedagogical & Administrative Integration	"*ChatGPT helps me generate worksheets and feedback emails; it saves me a lot of time.*" "*AI makes routine tasks faster, but I still review everything to keep my teaching personal.*"	Instructors used AI for both teaching and administrative tasks but maintained human oversight to preserve pedagogical quality.
4. Institutional Culture & Contextual Challenges	"*We lack the infrastructure and strong Wi-Fi, so AI use is uneven and slower.*" "*Policies are unclear; everyone handles AI differently.*"	Institutional support, infrastructure, and clear policy were identified as critical facilitators of sustainable AI integration.

Theme 1: Readiness, Training, and Perceived Value

Participants emphasised that structured exposure and practical demonstrations of ChatGPT were essential for confident adoption. Instructors who had participated in digital-literacy or AI awareness workshops described ChatGPT as "*a teaching assistant that saves preparation time.*" Others admitted uncertainty about prompting and evaluation but expressed willingness to learn. These findings explain the strong correlation between training and adoption quantitatively. Instructors' readiness was not a matter of age or qualification but of meaningful, hands-on experience with the tool. This aligns with the effort expectancy and performance expectancy dimensions of UTAUT, elaborating that perceived ease and usefulness drive intention to use.

Theme 2: Ethical Reflection and Responsible Use

Interviews and focus-group discussions revealed persistent concern about plagiarism, misinformation, and data privacy. Several instructors described establishing personal or departmental guidelines, such as requiring students to disclose AI-assisted work. One administrator noted, "*We need policy before practice right now; everyone is experimenting*". These reflections add depth to the quantitative finding that adoption correlated with perceived benefit but was tempered by ethical hesitation. Ethical self-regulation and the absence of institutional policy emerged as central factors moderating adoption, resonating with social influence and facilitating conditions constructs in UTAUT.

Theme 3: Pedagogical and Administrative Integration

Participants described ChatGPT's dual role, streamlining administrative communication and supporting lesson design. Instructors used it to draft rubrics, feedback comments, and case examples, while administrators cited gains in report writing and correspondence. However, most stressed that AI-generated output required careful editing to maintain authenticity. One instructor explained, "*It helps me organise ideas, but I always revise what it gives me.*" This theme clarifies the quantitative associations between ChatGPT usage and administrative efficiency indicators (Hypothesis 1). It also extends the TPACK framework, showing how technological knowledge intersects with pedagogical and content decisions in practice.

Theme 4: Institutional Culture and Contextual Challenges

Adoption was influenced by institutional readiness, infrastructure, and leadership stance. Participants from institutions with more resources reported stronger facilitating conditions, whereas others noted unreliable internet connectivity, unclear policy, or fear of reputational risk. One participant summarised, "*There's enthusiasm, but no system yet.*" This theme contextualises the non-significant demographic differences found quantitatively by highlighting that institutional factors, not personal demographics, explain much of the variation in adoption behaviour.

Interpretive Connection

Together, these themes provide the explanatory mechanism for the statistical patterns reported earlier. Training and perceived value shaped readiness, ethical concerns moderated usage, and institutional support determined sustainability. The convergence of these findings underscores that adoption was less about individual characteristics and more about the interplay between pedagogical intent, ethical awareness, and structural context. These qualitative insights elaborate on the quantitative patterns related to training and adoption.

Integration of Quantitative and Qualitative Findings

Integration of the quantitative and qualitative strands was achieved through a joint display (Table 9), which aligned statistical relationships with explanatory themes. The table identifies areas of convergence, complementarity, and divergence across both datasets.

Table 9. Joint Display of Quantitative and Qualitative Integration

Quantitative Findings	Qualitative Themes	Meta-Inference
Training exposure strongly correlated with adoption (ρ = .62, $p < .001$)	Theme 1: Readiness, Training, and Perceived Value – Participants emphasised the importance of practical exposure and digital literacy workshops for confident use.	Experiential readiness rather than demographics drove adoption; hands-on training created confidence and sustained engagement.
Adoption associated with perceived usefulness and efficiency (ρ = .48–.50, $p < .01$)	Theme 3: Pedagogical and Administrative Integration – Instructors indicated that ChatGPT improved feedback quality and reduced administrative workload.	ChatGPT's perceived value as a productivity tool enhanced both teaching and administrative efficiency, aligning with performance expectancy.
Adoption correlated with perceived benefit but was tempered by ethical caution (r = .736, $p < .001$)	Theme 2: Ethical Reflection and Responsible Use – Participants described balancing efficiency with integrity and expressed the need for institutional policy.	Ethical awareness moderates adoption; instructors embraced ChatGPT pragmatically while maintaining professional responsibility.
No significant differences across gender, age, or qualification	Theme 4: Institutional Culture and Contextual Challenges – Participants pointed to uneven infrastructure, unclear policy, and leadership hesitancy.	Institutional readiness, not personal demographics, explained adoption variation; facilitating conditions influenced equity of access.

Results Overview

The quantitative findings indicated that instructors' adoption of ChatGPT was strongly associated with training exposure, perceived usefulness, and facilitating conditions, with no statistically significant differences observed across demographic groups. The qualitative analysis elaborated on these patterns through four themes: readiness and perceived value, ethical reflection, pedagogical integration, and institutional culture. Integration across strands highlighted that engagement with generative AI was closely linked to contextual and experiential readiness rather than individual demographic characteristics.

DISCUSSION

Theoretical Implications

This study extends technology adoption theory by integrating UTAUT, TPACK, and the proposed CHAT Framework to interpret instructor interaction with generative AI in higher education. Consistent with prior UTAUT research, the findings indicated that performance expectancy and effort expectancy were strongly associated with instructors' reported adoption of ChatGPT. Instructors who perceived ChatGPT as useful and manageable were more likely to integrate it into pedagogical and administrative activities. However, the qualitative findings suggested that these associations were shaped by broader ethical considerations and institutional contexts. Factors that are less explicitly addressed in traditional technology acceptance models but are emphasised in contemporary AI governance discourse (Holmes et al., 2022; UNESCO, 2023).

The findings also contribute to the TPACK framework by illustrating how instructors blended technological, pedagogical, and content knowledge through reflective and context sensitive practice rather than technical mastery alone. Participants described using ChatGPT to generate instructional materials and feedback while maintaining human oversight and pedagogical judgment. These qualitative insights suggest that effective AI-related competence involves pedagogical reasoning and ethical discernment alongside technical skill, aligning with TPACK's emphasis on integrative knowledge rather than isolated technological proficiency.

The CHAT Framework is an empirically grounded, integrative model that explains how instructors mediate the use of AI across pedagogical, ethical, and institutional contexts. Whereas UTAUT and TPACK primarily address behavioural intention and pedagogical integration, respectively, CHAT brings these perspectives into dialogue while foregrounding ethical reflection and institutional facilitation as integral components of instructor-AI engagement. The integrated findings from this study provide empirical grounding for the CHAT Framework, particularly within developing higher education systems such as those of the Caribbean, where infrastructural constraints and policy uncertainty frequently mediate innovation (Bissessar, 2023; Roberts & Solomon, 2024).

These findings align with broader trends identified in emerging research on generative AI in education. Reviews of empirical studies have highlighted persistent tensions between AI-enabled pedagogical innovation and concerns related to academic integrity, professional agency, and ethical governance (Holstein et al., 2025). The present study adds contextual depth to this literature by illustrating how such tensions are experienced by instructors in under-resourced institutional environments, where ethical reflection and institutional readiness shape adoption alongside perceived efficiency gains.

By responding to calls for more instructor focused and contextually grounded AI research, this study contributes to ongoing efforts to integrate behavioural, pedagogical, and ethical perspectives in AI in education scholarship. Prior work has highlighted the need to connect adoption models such as UTAUT with pedagogical frameworks like TPACK (Hwang et al., 2023), while also attending to sociocultural and institutional mediation (Mustafa et al., 2024). The CHAT Framework, as developed

and empirically informed through this study, represents one possible approach to addressing this conceptual gap by foregrounding ethical reflection, contextual readiness, and institutional facilitation in instructor-AI integration.

Practical Implications

Institutional Level

At the institutional level, the findings highlight how the absence of clear guidance and coordinated support structures shaped instructors' experiences with generative AI adoption. Participants frequently described uncertainty around ethical boundaries, assessment integrity, and professional accountability, particularly in contexts where institutional policies had not kept pace with emerging AI technologies. As a result, instructors reported navigating adoption decisions independently, often relying on personal judgment rather than shared institutional norms.

These patterns suggest that institutions play an important role in shaping the conditions under which generative AI is explored and integrated. Rather than prescribing uniform adoption pathways, institutions may benefit from articulating flexible frameworks that balance innovation with ethical governance and professional autonomy. Such frameworks could provide clarity around expectations while supporting instructor experimentation through training, guidance, and context sensitive oversight.

Departmental Level

At the departmental level, the findings highlight the importance of local academic cultures in mediating how generative AI tools are interpreted and applied within disciplinary contexts. Participants noted that departmental norms, peer dialogue, and informal leadership shaped whether the use of AI was viewed as pedagogically legitimate, ethically appropriate, or professionally risky. These insights suggest that departments function as critical interpretive spaces where institutional guidance is translated into discipline specific practices. Supporting structured dialogue within departments may therefore help instructors negotiate shared expectations around generative AI use, assessment design, and academic integrity while preserving disciplinary autonomy.

Instructor Level

At the instructor level, the findings underscore the role of reflective practice in shaping meaningful engagement with generative AI. Instructors described adopting ChatGPT in ways that aligned with their pedagogical values, ethical commitments, and perceived responsibilities to students. Rather than relying solely on technical proficiency, participants emphasised the importance of critical judgment, transparency, and ongoing learning when integrating AI into teaching and administrative tasks. These findings suggest that professional development initiatives which highlight reflective

and ethical dimensions of AI use, alongside technical training, may better support instructors in navigating evolving educational technologies.

Limitations and Future Work

Several limitations should be considered when interpreting the findings of this study. First, the research was conducted within a specific national and institutional context, which may shape how instructors experience and interpret generative AI adoption. While this contextual focus strengthens the study's relevance to Caribbean higher education, it may limit the direct transferability of findings to other regions or systems. Second, the study relied on self-reported data, which reflects instructors' perceptions and experiences rather than objective measures of instructional or administrative performance. However, such perceptions are central to understanding adoption processes in exploratory research on emerging technologies.

In addition, the explanatory sequential mixed-methods design prioritised the identification and contextualisation of associations rather than causal inference or model testing. Accordingly, the CHAT Framework presented in this study should be understood as empirically informed and conceptually grounded, rather than formally validated. While the integrated findings provide a robust foundation for the framework's proposed dimensions and mechanisms, further research is required to examine its applicability, reliability, and explanatory power across diverse institutional contexts.

Future research could build on this study by conducting targeted validation studies, including scale development, confirmatory testing, and intervention based designs that examine how structured training or institutional policies influence instructor engagement with generative AI. Longitudinal and comparative studies across regions and institutional types would also help clarify how contextual factors shape adoption trajectories over time. Together, such research efforts would extend the present study's contributions by advancing the empirical testing and refinement of the CHAT Framework.

CONCLUSION

This study examined instructors' adoption and use of ChatGPT in higher education through an explanatory sequential mixed-methods design, integrating quantitative and qualitative evidence to inform the development of the CHAT Framework. The findings highlighted consistent associations between generative AI engagement and factors related to training, perceived usefulness, ethical reflection, and institutional context, while also indicating that demographic characteristics were not significantly associated with adoption patterns. Qualitative insights provided contextual depth to these patterns, illustrating how instructors navigated pedagogical, administrative, and ethical considerations in environments marked by evolving institutional guidance.

By synthesising behavioural, pedagogical, ethical, and contextual dimensions, this study contributes an empirically informed framework for understanding instructor engagement with generative AI in higher education. The CHAT Framework, as presented here, offers a conceptual lens

grounded in instructors' reported experiences and perceptions, rather than a validated or predictive model. Its value lies in articulating how readiness, institutional facilitation, and ethical reflection intersect in shaping AI-related practice, particularly within under-resourced or policy emergent contexts such as those examined in this study.

As generative AI technologies continue to reshape educational practice, research that foregrounds instructor experience and institutional context remains essential. This study provides a foundation for subsequent inquiry aimed at testing, refining, and extending the CHAT Framework across diverse settings, thereby contributing to a more distinct and contextually responsive understanding of AI integration in higher education.

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Ethics Statement

The research reported in this paper was reviewed and approved by the UWI IRB committee under approval CREC-OC.0243/04/2024 and the UTT IRB committee under approval UTT-T/57/24.

Conflict of Interest Statement

The author declares that there are no conflicts of interest with respect to the research, authorship, and/or publication of this article.