Science Technology and Sustainability Review
Volume 2, Article 5 | August 2025

CamTech
University Press

A Sociotechnical Perspective on Generative AI in Graduate Programs at CamTech University: An Autoethnographic Reflection Using the SCOT Framework

Phirom Leng[1]

[1]Research and Innovation Center, CamTech University

Abstract

The integration of Generative Artificial Intelligence (AI) into higher education has generated both excitement and anxiety among faculty members, students, and policymakers, as institutions strive to balance innovation with educational integrity. This article draws on the Social Construction of Technology (SCOT) framework and an autoethnographic approach to examine how CamTech University, a research-oriented institution in Cambodia, has integrated Generative AI in ways that reflect local pedagogical values, institutional negotiation, and ethical principles. Rather than viewing AI through a deterministic lens, CamTech positions itself as an active co-constructor of AI's educational meaning. The experience offers a critical reference point for universities in the Global South, particularly regarding the contextual dynamics of AI adoption.

Keywords: Generative AI, Social Construction of Technology, Cambodian Higher Education, Autoethnography, AI Ethics

Introduction

The integration of Artificial Intelligence (AI) into higher education has sparked renewed interest in the sociotechnical dimensions of teaching, learning, and knowledge production. Universities around the world, including Harvard University, the National University of Singapore (NUS), the University of Sydney, and Tsinghua University, are actively exploring how to respond to the rapid proliferation of AI tools such as ChatGPT, Claude, and DeepSeek, which are reshaping educational practices and institutional cultures. These tools offer significant potential to support instructional delivery, enhance learner engagement, and improve academic productivity (Luckin et al., 2016; Selwyn, 2019). At the same time, they raise complex questions regarding authorship, academic integrity, originality, and the future of critical thinking and assessment practices (Williamson et al., 2022; Yan et al., 2024). In response, many institutions have begun to formulate "AI-inclusive" or "AI-aware" policies to guide usage. For example, the University of Cambridge and Stanford University have

Peer review under responsibility of Research and Innovation Center, CamTech University.
*Corresponding author: phirom.leng@camtech.edu.kh

issued preliminary guidelines, while others like the University of Tokyo and Nanyang Technological University (NTU) are piloting AI-integrated teaching tools. However, most policy frameworks remain generic and technologically focused, lacking the contextual sensitivity required to align AI adoption with local pedagogical values, institutional priorities, and meaningful learning outcomes (Jin et al., 2024; Prinsloo, 2023). This reveals a critical gap in the development of ethically informed and culturally responsive strategies for AI integration in higher education.

At the heart of these developments lies a critical theoretical question: should Generative AI be conceptualized as an autonomous technological force that unilaterally shapes educational practice, an understanding aligned with the logic of technological determinism, or as a socially constructed phenomenon whose meaning and utility emerge through negotiation among institutional actors, pedagogical norms, and cultural contexts? This article advances the latter view, drawing upon the Social Construction of Technology (SCOT) framework (Pinch & Bijker, 1984), which emphasizes that technologies do not possess inherent or universal functions, but acquire significance through the interpretive flexibility of relevant social groups. From this perspective, the integration of AI in higher education is not a linear or inevitable process, but one shaped by the institutional configurations, value systems, and epistemic traditions within which it is embedded (Feenberg, 1999). Rather than viewing AI as a neutral or technologically deterministic agent, this article contends that its educational role must be understood in terms of human agency, institutional discourse, and contested meaning-making processes (Kline & Pinch, 1996).

To empirically ground this theoretical stance, the study adopts an autoethnographic approach (Ellis, Adams, & Bochner, 2011; Chang, 2008), which enables situated reflection on institutional practices through the lens of the author's lived experience. As both a senior academic and practitioner at CamTech University in Cambodia, the author draws on personal involvement in curriculum design, academic supervision, and policy development within the university's graduate programs in Science, Technology, and Sustainability (STS). Established in late 2023, these programs cater primarily to working professionals across fields such as technology management, educational technology, cybersecurity, and science and technology studies. Reflecting the diverse professional backgrounds of the student body, Generative AI tools at CamTech are positioned not as autonomous educational agents, but as collaborative supports for inquiry, analysis, and academic expression. Their value is negotiated through iterative practices, ranging from course-level adaptations to institutional guidelines, and shaped by broader discursive formations, including Buddhist ethics, national development priorities, and the sociocultural particularities of higher education in the Global South. In this way, AI becomes part of an evolving sociotechnical assemblage, whose legitimacy and application are continuously rearticulated through institutional culture and pedagogical intention.

Autoethnographic Methodology

This study employs an autoethnographic methodology to generate critically reflective and contextually embedded insights into the institutional processes surrounding the integration of Generative AI at CamTech University. Autoethnography, situated at the intersection of personal narrative and cultural analysis, enables the researcher to examine the interplay between individual experience and organizational practice through a reflexive lens (Chang, 2008; Ellis, Adams, & Bochner, 2011). As a senior academic administrator and faculty member directly involved in institutional decision-making, curriculum development, and graduate supervision, the author draws on a dual positionality as both practitioner and researcher. Data sources for this inquiry include longitudinal reflective memos, minutes from academic and policy committee meetings (2023-2025), and internal documentation related to the development and implementation of AI-related policies. This methodological approach is particularly well-suited for unpacking the sociocultural and organizational dimensions of educational technology adoption within a Global South context, where institutional values, resource conditions, and ethical frameworks are deeply intertwined with policy enactment and pedagogical innovation.

SCOT Framework: Interpreting Generative AI as Socially Constructed

The Social Construction of Technology (SCOT) framework, first articulated by Pinch and Bijker (1984), challenges essentialist and deterministic views of technological development by emphasizing that technological artefacts do not possess intrinsic meanings or predetermined outcomes. Instead, their significance, function, and trajectory are shaped through a process of interpretive flexibility, wherein multiple social groups construct different understandings and uses of the same technology. This theoretical lens foregrounds the role of human agency, institutional discourse, and sociocultural context in shaping the evolution of technological systems, thereby offering a counter-narrative to technological determinism – the view that technology autonomously drives social change with limited room for human intervention (Feenberg, 1999; Kline & Pinch, 1996).

When applied to Generative AI in higher education, SCOT enables us to move beyond deterministic narratives that frame such technologies as inevitably “replacing teachers” or “eliminating student writing.” These narratives reflect a passive view of educational institutions as reactive entities, rather than as sites of active negotiation, adaptation, and resistance. In contrast, SCOT emphasizes that students, instructors, administrators, and policymakers engage with Generative AI tools from distinct positionalities, bringing with them diverse expectations, competencies, constraints, and ethical orientations. The educational deployment of AI is thus not a one-size-fits-all process, but a negotiated outcome influenced by institutional norms, pedagogical values, and sociocultural dynamics (Selwyn, 2010; Orlikowski, 1992).

While SCOT offers a robust account of human agency in technological development, it has been critiqued for insufficiently addressing structural conditions such as capitalist market logics, geopolitical asymmetries, and platform monopolies (Winner, 1993; Oudshoorn & Pinch, 2003). Nevertheless, its focus on local meaning-making processes remains particularly useful for understanding the situated adoption of AI in higher education, especially in diverse contexts such as the Global South, where cultural values and institutional priorities may differ significantly from dominant Western models.

Table 1: Summary of Key Practices of Generative AI at CamTech University

Educational Stage	AI Usage	Safeguards
Admissions	Proposal drafting, including preliminary literature review	Oral interview defense
Coursework	Assignments, presentations, and reading summaries	Instructor-defined guidelines
Research Progress	Writing assistance, literature review, formatting and editing	Bi-monthly advisor review and meeting; Students must disclose AI use in reports.
Comprehensive examinations (PhD only)	Preparation and learning assistance	In-person, closed-book exams
Dissertation	Language editing, idea scaffolding, and researching	Panel defense, citation of AI tools and declaration of AI use

Three core SCOT concepts are especially instructive for analyzing the evolving role of Generative AI at CamTech University. First, interpretive flexibility highlights that technologies are subject to multiple interpretations depending on the perspectives of distinct user groups. Second, the identification of relevant social groups, including faculty, students, administrators, and policymakers, illuminates how institutional actors co-construct the meanings and uses of AI. Third, the notion of stabilization refers to the process by which certain technological practices become routinized and institutionalized, resulting in relatively fixed norms, policies, and expectations around AI use in educational contexts, albeit always subject to future contestation and revision.

Generative AI at CamTech: Policy and Practice

CamTech University adopted an AI-friendly approach early on, particularly after the release of ChatGPT by OpenAI in 2022. Students are encouraged to use generative AI tools throughout their studies, while faculty retain the autonomy to define acceptable use in their courses. This balance supports innovation while safeguarding academic integrity, especially in graduate programs. Table 1 summarizes how generative AI is applied across key stages of the academic journey at CamTech, highlighting its functions and the measures that ensure rigor and accountability.

As shown above, at the admissions stage, CamTech University encourages prospective graduate students to begin engaging with Generative AI even before formal enrollment. During open house sessions and application workshops, applicants are introduced to the potential of AI tools, such as ChatGPT, as aids for articulating preliminary research interests and structuring initial proposal drafts. This early exposure aims to demystify AI and promote its responsible use as a support for academic ideation and communication. However, applicants are later required to defend their proposed ideas orally during the admissions interview. This evaluative step ensures that submitted content reflects authentic intellectual engagement rather than over-reliance on AI-generated output.

Within the coursework phase, CamTech University adopts a flexible, faculty-led approach to Generative AI integration. Instructors are encouraged to develop discipline-specific guidelines that reflect their course objectives, resulting in varied applications of AI across assignments, presentations, and reading tasks. Common uses include generating literature review outlines, summarizing texts, or supporting reflective writing. These practices are typically accompanied by pedagogical scaffolding, such as in-class discussions, to promote critical engagement rather than passive reliance. This aligns with research emphasizing the importance of instructor mediation in AI-supported learning (Luckin et al., 2016). However, because assessment practices vary across faculty, the monitoring of AI-generated content is not uniformly enforced. While some instructors implement structured checks, others rely on informal oversight. As such, the system cannot guarantee comprehensive detection of AI use in all coursework. Nonetheless, the broader institutional policy promotes transparency, academic responsibility, and the cultivation of ethical and critical AI literacies.

The university has maintained a firm commitment to preserving the integrity of its examination processes, particularly at the doctoral level. PhD candidates are required to undergo comprehensive examinations under strictly controlled, closed-book conditions. While students may utilize Generative AI tools during the preparatory phase, for purposes such as review, summarization, or concept clarification, these tools are strictly prohibited during the actual examination. This clear demarcation ensures that AI functions as a support mechanism rather than a substitute for the candidate's independent mastery of theoretical and disciplinary knowledge.

At the research stage, particularly for thesis and dissertation preparation, AI is treated as a productivity-enhancing but ethically bounded tool. Graduate students are allowed to use AI for writing assistance, such as grammar correction, formatting, and literature exploration. However, intellectual responsibility for the content remains solely with the student. To ensure accountability, the School of Graduate Studies (SGS) mandates bi-monthly research progress reports and advisory meetings, which serve as touchpoints to monitor appropriate AI use and guide methodological rigor.

Dissertation writing similarly benefits from AI-enabled support, especially for students working in English as a second language. However, any use of AI tools must be transparently declared in the dissertation document, and students are required to defend their research orally before an academic panel, ensuring that conceptual understanding and critical reasoning remain demonstrably their own.

A key feature of CamTech's approach is the deliberate grounding of AI integration in ethical and cultural values. The establishment of the Center for Buddhist AI Ethics in 2024 represents a formal institutional commitment to contextualizing technology use within local moral frameworks. The Center promotes principles such as compassion, truthfulness, and respect for learning, drawing on Buddhist philosophy to guide policy discourse, curriculum design, and academic practices around AI ethics. This ethical anchoring reinforces the idea that technological adoption should not be culturally neutral but must be responsive to local value systems and social responsibilities (Feenberg, 1999; Prinsloo, 2023).

Conclusion

The experience of CamTech University demonstrates that Generative AI is not a neutral or universally defined tool, but a sociotechnical artefact whose educational role is actively shaped through institutional practices, pedagogical intent, and cultural values. Drawing on the Social Construction of Technology (SCOT) framework, CamTech emphasizes interpretive flexibility, recognizing that students, faculty, and administrators hold diverse understandings and expectations of AI. These relevant social groups negotiate its meaning and use through ongoing dialogue and decision-making. Over time, certain practices have stabilized into institutional norms and policies that promote responsible, context-sensitive integration. Rather than accepting deterministic narratives of AI's inevitability, CamTech positions itself as an active co-constructor of AI's educational function. Through locally grounded policies, stakeholder engagement, and ethical guidance, AI is leveraged to support, rather than supplant, critical thinking, academic integrity, and contextual relevance. This approach offers a compelling model for universities, particularly in the Global South, seeking to adopt AI in ways that align with their core educational commitments.

However, the adoption of Generative AI at other universities in Cambodia and beyond must proceed with caution. At the time of writing, all graduate students at CamTech are mature, working professionals with strong self-directed learning skills and a solid foundation in English, the language of instruction. These conditions make it easier for them to access and adopt AI tools that primarily operate in English. Moreover, CamTech's relatively small class sizes, featuring a faculty-to-student ratio of approximately 1:4, comparable to world-class universities, enable close supervision and meaningful engagement with AI as a learning support. In contrast, programs taught in the local language or with significantly larger cohorts may experience different patterns of interpretation, negotiation, and stabilization. These contextual differences should inform any attempt to replicate or adapt CamTech's model elsewhere.

Reference

Chang, H. (2008). *Autoethnography as method*. Routledge.

Ellis, C., Adams, T. E., & Bochner, A. P. (2011). Autoethnography: An overview. *Forum: Qualitative Social Research*, *12*(1). https://doi.org/10.17169/fqs-12.1.1589

Feenberg, A. (1999). *Questioning technology*. Routledge.

Jin, Q., Al-Abdulkareem, F., Park, H., & Glassman, E. (2024). How are universities adopting generative AI? A qualitative study of policy, support, and culture. *arXiv preprint*. https://arxiv.org/abs/2405.11800

Kline, R., & Pinch, T. (1996). Users as agents of technological change: The social construction of the automobile in the rural United States. *Technology and Culture*, *37*(4), 763–795. https://doi.org/10.2307/3107097

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson Education. https://www.pearson.com/content/dam/corporate/global/pearson-dot-com/files/innovation/Intelligence-Unleashed-Publication.pdf

Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science*, *3*(3), 398–427. https://doi.org/10.1287/orsc.3.3.398

Oudshoorn, N., & Pinch, T. (Eds.). (2003). *How users matter: The co-construction of users and technology*. MIT Press.

Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artifacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, *14*(3), 399–441. https://doi.org/10.1177/030631284014003004

Prinsloo, P. (2023). Artificial intelligence and the Global South: Between aspirations and inequalities. *Higher Education Research & Development*, *42*(3), 515–529. https://doi.org/10.1080/07294360.2022.2157750

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. Polity Press.

Selwyn, N. (2010). Looking beyond learning: Notes towards the critical study of educational technology. *Journal of Computer Assisted Learning*, *26*(1), 65–73. https://doi.org/10.1111/j.1365-2729.2009.00338.x

Williamson, B., Eynon, R., & Potter, J. (2022). Pandemic politics, pedagogies, and technologies: Educational technology during times of crisis. *Learning, Media and Technology*, *47*(2), 111–125. https://doi.org/10.1080/17439884.2022.2036813

Yan, S., Sha, L., Zhang, Y., Wang, M., & Hu, Q. (2024). Generative AI in higher education: A global perspective of learning, teaching, and assessment. *Discover Education*, *2*(1), 1–18. https://doi.org/10.1016/j.dsedu.2024.100016

Winner, L. (1993). Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science, Technology, & Human Values*, *18*(3), 362–378. https://doi.org/10.1177/016224399301800306