Pedagogical Agency in the Age of Generative AI: A Narrative Inquiry into Teachers' Practices in Taiwan's All-Out Defense Education

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ABSTRACT

With the rapid emergence of generative artificial intelligence (AI) tools such as ChatGPT, teachers must critically adopt and interpret these tools within value-oriented curricula—an area that remains underexplored [1, 2]. In Taiwan, All-Out Defense Education combines policy mandates with civic and ethical instruction, positioning teachers as both knowledge facilitators and moral stewards [3]. Previous research has primarily focused on language learning and general curriculum contexts, lacking empirical evidence regarding AI use and teacher agency in policy-driven courses [4].

This study employed a mixed-methods design, integrating narrative inquiry with a supplementary survey. Five qualified high school and college teachers were purposefully sampled for in-depth interviews, and 36 valid questionnaires were collected to triangulate and support the qualitative findings. Thematic narrative analysis and descriptive statistics were used.

The findings reveal a clear continuum in teachers' AI adoption, ranging from cautious observation to systematic integration, with a consistent principle of "use without overreliance." Teachers demonstrated iterative, practical-evaluative, and projective agency [5]. A lack of institutional support and clear ethical guidelines remains a significant constraint.

This study contributes by bridging an empirical gap on generative AI within value-oriented curricula, enriching agency theory in educational technology, and offering actionable policy and practice recommendations for the ethical integration of AI in policy-sensitive education.

Keywords: All-Out defense education; Generative artificial intelligence; ChatGPT; Pedagogical agency; Narrative inquiry; Mixed-methods approach

1. Introduction

1.1 Research Background and Motivation

In recent years, the rapid development of generative artificial intelligence (Generative AI) [1, 6] has brought both opportunities and challenges to education. While AI enhances lesson preparation and learning efficiency, it also raises concerns about overreliance, ethical issues, and ambiguous assessment standards. Taiwan’s All-Out Defense Education integrates theoretical knowledge and

policy mandates, requiring teachers to not only impart content but also interpret national defense and civic responsibilities, which demands high levels of professional judgment when using AI tools. However, previous studies have primarily focused on language learning or general subjects, with limited empirical evidence addressing teachers' agency and institutional responses in policy-oriented courses. To address this gap, this study employs a mixed-methods design and narrative inquiry to explore five teachers' decision-making and experiences amid the AI surge, providing empirical insights and concrete policy recommendations.

Recent years have witnessed the rapid development of generative artificial intelligence (Generative AI), bringing both convenience and challenges to education. While AI improves lesson preparation and learning efficiency, it also raises concerns about over-reliance, ethics, and blurred assessment standards. Taiwan's All-Out Defense Education integrates theory and policy, requiring teachers not only to impart knowledge but also to interpret national defense and civic responsibilities, demanding high levels of professional judgment in the face of AI. Previous studies have mainly focused on language or general subjects, with limited attention to teachers' agency and institutional responses in policy-oriented courses. Therefore, this study adopts a mixed-methods and narrative inquiry approach, focusing on five teachers' choices and experiences amid the AI wave, filling this research gap and providing concrete policy recommendations.

1.2 The Purpose of the Study

As generative artificial intelligence (Generative AI) continues to permeate educational contexts, teachers are no longer mere transmitters of knowledge; instead, they must act as pedagogical agents capable of making professional judgments and ethical interpretations that balance technological potential with educational values. In Taiwan's All-Out Defense Education, which encompasses both policy mandates and value-driven objectives, how teachers respond to technological shifts and exercise pedagogical agency has become critical for curriculum development and teacher training.

This study aims to investigate how All-Out Defense Education teachers employ ChatGPT and other generative AI tools in their instructional design and practice, and to analyze how their agency is influenced by intertwined factors such as institutional support, educational beliefs, and digital literacy. The specific objectives are as follows:

(1)To explore teachers' current uses, attitudes, and experiences regarding ChatGPT in the context of All-Out Defense Education.

(2)To analyze the types and underlying logic of pedagogical agency demonstrated during the integration of generative AI.

(3)To examine teachers' coping strategies and professional decision-making in contexts with limited institutional support.

(4)To identify teachers' needs and challenges and to propose targeted AI instructional support and institutional recommendations for All-Out Defense Education.

1.3 Research Questions

To achieve the above research objectives and address practical and policy needs in the field, this

study focuses on the following research questions:

(1)How do All-Out Defense Education teachers perceive and apply ChatGPT and similar Generative AI tools in their teaching?

(2)What types of pedagogical agency do teachers exhibit during the integration of Generative AI, and how does this agency influence curriculum design and instructional practice?

(3)How do teachers make professional judgments and instructional adjustments when institutional support is insufficient?

(4)What are teachers' expectations and recommendations for future integration of Generative AI into All-Out Defense Education?

While recent studies have explored the potential of generative AI in language learning, knowledge construction, and curriculum design—highlighting its value in enhancing learning efficiency and reducing teachers' workloads [1, 7]—empirical research focusing on value-laden and policy-oriented courses, such as All-Out Defense Education, remains scarce. Few studies examine how teachers, within structural and ethical constraints, exercise critical interpretation, instructional transformation, and professional agency in local contexts. Existing research predominantly investigates teachers' acceptance and intention to use AI tools [4, 8], but rarely applies agency theory as an analytical lens to reveal how educators negotiate structural tensions, innovate, and safeguard core educational values under AI's expanding influence. Accordingly, this study targets Taiwanese secondary and tertiary All-Out Defense Education teachers, employing narrative inquiry complemented by a survey for cross-analysis to illustrate their usage patterns and agentic behaviors with ChatGPT and similar AI tools. The main contributions are as follows: (1) filling the empirical gap regarding generative AI in value-oriented curricula; (2) extending the interpretive scope of Emirbayer and Mische's [5] agency framework in AI pedagogy; (3) uncovering teachers' strategic practice of "use without dependency"; and (4) providing practical curriculum modules, ethical guidelines, and teacher training recommendations to address pressing educational and policy demands.

1.4 Definition of Terms

To clarify the core concepts of this study, the primary terms are defined as follows:

(1) Generative Artificial Intelligence (Generative AI): AI systems developed using large language models (e.g., ChatGPT) that can autonomously generate text, images, and audio, and are applicable to various educational, writing, translation, and interactive learning contexts [9].

(2) ChatGPT: A generative AI tool developed by OpenAI, based on the GPT architecture, capable of natural language conversation, text generation, writing assistance, and information retrieval; it serves as the primary AI teaching aid examined in this research [2, 10].

(3) All-Out Defense Education: A policy-driven curriculum promoted by Taiwan's Ministry of Education, designed to enhance students' knowledge and literacy in national security, defense technology, democratic systems, and disaster response, with an emphasis on civic responsibility and localized practice [3].

(4) Pedagogical Agency: The capacity of teachers to make professional choices, interpret curricula, and innovate in response to institutional, technological, and environmental constraints. The theoretical foundation draws on Emirbayer and Mische's [5] three-dimensional agency model, encompassing the iterational, practical-evaluative, and projective dimensions.

2. Literature Discussion

2.1 All-Out Defense Education: Curriculum Content and Development Context

Taiwan's All-Out Defense Education is a policy-driven curriculum established under the National Defense Education Act. It aims to enhance citizens' security awareness, deepen knowledge of national defense, and foster identification with democratic systems and civic responsibilities [11]. The curriculum encompasses diverse topics such as defense policy, mobilization readiness, military technology, international security, and disaster response, integrating knowledge transmission with value-based education. With rapid technological advancements, effectively leveraging digital tools for curriculum innovation and student engagement has become an urgent challenge for educators and policymakers alike.

2.2 Teacher Agency Theory: Conceptual Foundation and Practical Implications

In social theory, agency refers to an individual's capacity to make deliberate choices and act reflectively within structural constraints [5]. Emirbayer and Mische conceptualize agency as comprising three interrelated dimensions: (1) Iterational, which emphasizes continuity with past experiences and established teaching routines; (2) Practical-Evaluative, which involves adaptive decision-making in response to present circumstances; and (3) Projective, which envisions and initiates innovative future actions. Biesta [12] underscores that teachers are not merely technical implementers but are value interpreters whose agentic actions are deeply grounded in educational aims and ethical beliefs. Li and Ruppar [13] further argue that enacting teacher agency requires attending to belief systems, community engagement, and institutional contexts to address uncertainty and multicultural complexity in educational settings. Building on this theoretical foundation, this study applies the three-dimensional agency framework to examine how teachers adjust, innovate, and safeguard core educational values when integrating Generative AI into classroom practice.

2.3 Generative AI in Education: Applications and Debates

Generative AI tools, such as ChatGPT, have advanced capabilities for natural language generation and real-time interaction and are increasingly employed in language learning, writing assistance, content creation, and formative feedback provision [1]. Their advantages include improving learning efficiency, supporting multilingual education, and facilitating personalized learning processes, particularly in information retrieval and content structuring. However, recent studies highlight significant ethical concerns and risks to academic integrity, including students' overreliance on AI, ambiguous assessment standards, unverifiable content accuracy, and the potential spread of misinformation [6]. In value-laden curricula such as All-Out Defense Education, teachers

must demonstrate robust digital literacy and critical interpretive skills to maintain instructional quality and protect core educational values from being diluted or overshadowed by AI technologies.

2.4 Teacher Technology Integration and Professional Development

Teachers' effective integration of Generative AI hinges on the interplay among digital literacy, pedagogical beliefs, institutional support, and sustained professional development. The TPACK framework (Technological Pedagogical Content Knowledge) emphasizes the dynamic combination of technological knowledge, pedagogical approaches, and subject content as critical for the flexible and context-appropriate use of digital tools [14]. In this study, teachers' use of ChatGPT primarily for lesson preparation illustrates an early-stage application within the TPACK paradigm. Additionally, the Technology Acceptance Model (TAM) and its extended version, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), have been widely used to examine key factors influencing technology adoption, including performance expectancy, effort expectancy, social influence, facilitating conditions, and habitual usage [4, 8, 15-20]. For instance, while some teachers recognize ChatGPT's potential to streamline lesson planning, they remain hesitant to implement it fully due to insufficient institutional policies and lack of clear ethical guidelines, highlighting a gap between perceived usefulness and actual classroom integration. Ouyang and Jiao [21]conceptualize a three-stage continuum of teacher technology roles—receiver, co-designer, and leader—to illustrate how educators progressively build professional agency and develop transformative strategies during the integration process, a view further supported by subsequent empirical studies [21-23]. Ultimately, whether teachers can evolve into creative and ethically responsible "instructional leaders" when employing Generative AI depends on the synergistic support of personal convictions, professional learning communities, institutional infrastructure, and curriculum culture.

2.5 Synthesis and Research Positioning

Based on the foregoing literature review, this study is positioned as follows:

(1) Although Generative AI holds significant potential for transforming educational practices, empirical research remains limited for value-oriented curricula such as All-Out Defense Education, particularly in understanding how teachers adapt and reshape their pedagogical approaches.

(2) Agency theory serves as a core analytical perspective to examine how teachers navigate technological and institutional challenges by adjusting strategies, exercising critical judgment, and fostering pedagogical innovation—an aspect that requires deeper empirical exploration.

(3) Teachers' integration of AI is influenced not only by technical proficiency but also by their educational beliefs, disciplinary cultures, and the broader policy environment. Therefore, examining teachers' concrete choices and enactments provides richer insights than merely measuring acceptance levels.

(4) To address this gap, this study employs narrative inquiry to capture the lived experiences of five All-Out Defense Education teachers, analyzing how they utilize ChatGPT, develop

coping strategies, and respond to institutional limitations. The goal is to bridge the current empirical gap concerning the practical integration of Generative AI into value-laden curricula and to provide a robust foundation for future curriculum development, teacher preparation, and policy design.

A review of recent scholarship indicates that while Generative AI tools such as ChatGPT have become a central topic in educational research—widely applied for language acquisition, content generation, and instructional support [1, 7]—most empirical studies continue to focus on functional benefits and user acceptance [4, 22]. There remains a dearth of research exploring how teachers in policy-mandated, value-sensitive contexts reconcile technological affordances with ethical, civic, and democratic educational objectives [2, 6].

Emirbayer and Mische's [5] [5] three-dimensional agency framework, along with the extensions provided by Biesta [12] and Li and Ruppar [13], offers a theoretically sound lens for examining how teachers exercise professional discretion and drive innovation amidst complex technological and institutional constraints. However, the empirical application of this framework in the context of Generative AI integration is still nascent, particularly for courses like All-Out Defense Education that inherently intertwine policy directives with civic education.

Accordingly, this study situates itself within this empirical gap by integrating theory and field-based data to analyze how teachers exhibit iterational, practical-evaluative, and projective agency while incorporating Generative AI into their teaching, and how these agentic actions are shaped by institutional and ethical contexts. This research thus responds to recent calls for more robust AI risk management frameworks in education (Kasneci et al. [1]) and aligns with Ooi et al. [2], who emphasize the necessity for teachers to develop sustained digital interpretive competence.

Based on this positioning, the study articulates clear research objectives and questions to advance localized empirical understanding and to inform future teacher professional development programs and AI-related policy frameworks.

3. References and Research Methods

3.1 Research design

This study adopts a mixed-methods design that combines qualitative narrative inquiry with a complementary quantitative survey to comprehensively investigate how All-Out Defense Education teachers demonstrate pedagogical agency and respond to institutional challenges amid the rapid development of Generative Artificial Intelligence. Following Creswell and Plano Clark [24] and Teddlie and Tashakkori [26], this design integrates in-depth contextual understanding with broader trend validation, making it well-suited for examining complex educational issues involving value-oriented curricula, teacher agency, and technology integration.

The qualitative component employs narrative inquiry to capture how teachers use ChatGPT in concrete instructional contexts and to reconstruct their professional decision-making processes and interactions with institutional structures. The quantitative component uses a self-developed questionnaire to collect data on teachers' familiarity with Generative AI tools, usage patterns, and

expectations for institutional support. Descriptive statistics and cross-tabulations are then applied to supplement and triangulate the qualitative insights with broader, more generalizable trends.

Overall, this mixed-methods approach seeks to balance the depth of individual teacher narratives with the breadth of group-level trends, producing a practice-oriented and theoretically robust understanding of pedagogical agency in AI-integrated education. By linking rich narrative accounts with quantitative validation, this design offers a multi-dimensional understanding and enhances the practical transferability of the findings (Creswell & Plano Clark, 2017) [24].

3.2 Research Objectives and Sampling Methods

In line with the mixed-methods design, this study incorporated both qualitative and quantitative components. For the qualitative narrative inquiry, five teachers certified to teach All-Out Defense Education were purposively selected for in-depth interviews. The participants represented diverse school levels (high school and university), geographic regions, years of teaching experience, and educational backgrounds. Purposive sampling prioritized teachers with practical experience integrating ChatGPT into their instruction, ensuring the collection of rich insights on technology adoption and pedagogical agency transformation. This sample size is consistent with the recommendations of Creswell and Plano Clark [24] and Patton [27] for narrative inquiry and in-depth qualitative studies, ensuring data saturation and variation across institutional and disciplinary contexts. All participants provided informed consent, and full anonymity was maintained throughout the research process.

For the quantitative component, 36 valid questionnaires were collected from teachers in high schools and universities located in the northern region of Taiwan, with more than 70% holding certifications in All-Out Defense Education. The survey examined teachers' digital literacy, actual experiences with Generative AI, instructional attitudes, and expectations for institutional support, thereby providing trend data and triangulation to reinforce the qualitative findings.

3.3 Data Collection Procedures

(1) Qualitative Data: Using a semi-structured interview guide, in-depth interviews were conducted to explore teachers' experiences with ChatGPT, instructional contexts, observations of student interactions, course adaptation strategies, and institutional responses. Each teacher participated in a 45–60 minute interview, which was audio-recorded and transcribed verbatim. After transcription, participants were invited to conduct member checks to confirm data accuracy and ensure interpretive credibility [28, 29].

(2) Quantitative Data: The self-developed questionnaire consisted of both closed-ended and semi-open-ended items, addressing teaching experience, familiarity with Generative AI, application contexts, self-assessed competence, and perspectives on institutional support. The survey was distributed via Google Forms, and responses were analyzed using Excel and SPSS to generate descriptive statistics and perform cross-tabulations. To broaden the scope and strengthen the validation of the qualitative findings, a structured questionnaire was used to capture All-Out Defense Education teachers' attitudes, behavioral intentions, and

perceived institutional challenges related to Generative AI. In total, 36 valid responses were collected. The quantitative data were analyzed with descriptive statistics and cross-tabulations and triangulated with the qualitative narratives to enhance the trustworthiness and transferability of the study's conclusions [25].

3.4 Data Analysis Methods

(1) Qualitative Data Analysis: For the qualitative component, Thematic Narrative Analysis was conducted following Riessman [30] and Clandinin & Connelly [31]. The analysis was carried out in two stages:

A. Within-case analysis: Each teacher's narrative was reconstructed to illustrate their action choices, value judgments, and observations of institutional contexts during ChatGPT integration, thereby highlighting unique experiences and manifestations of pedagogical agency.

B. Cross-case analysis: Common themes and variations across the individual narratives were identified to develop typologies and to map a continuum of pedagogical agency patterns.

(2) Quantitative Data Analysis: The quantitative data were analyzed using descriptive statistics and cross-tabulations to capture key indicators such as teachers' familiarity with Generative AI, contexts of use, levels of implementation, and expectations for institutional support. These quantitative findings were used to complement and validate the qualitative results.

3.5 Research Ethics

This study strictly adhered to established ethical guidelines for educational research. Prior to data collection, the study's objectives and intended use of the data were clearly explained to all participating teachers, and written informed consent was obtained. Throughout the research process, pseudonyms and de-identification procedures were employed to safeguard participants' privacy and ensure data security. All collected data were used solely for analysis and academic publication related to this research, in full compliance with the principles of confidentiality, respect for persons, and voluntary participation.

4. Research Results and Analysis

4.1 Overview of Basic Information Regarding the Research Subject

As summarized in Table A, this study conducted in-depth interviews with five certified All-Out Defense Education teachers. Their institutions are located in New Taipei City, Taoyuan City, Hsinchu City, and Hsinchu County, encompassing municipal and national high schools as well as a private university of technology. This diversity reflects varied educational attributes and institutional contexts. The participants' ages ranged from 30 to 56 years, with teaching experience spanning 6 to 10 years. Their professional roles included high school chief military instructors, university military training officers, high school counseling section heads, classroom teachers, and part-time lecturers, illustrating substantial heterogeneity and multiple professional identities.

Regarding Generative AI integration, the teachers' familiarity and depth of ChatGPT use ranged

along a continuum—from information retrieval and lesson preparation support to comprehensive lesson plan design and classroom implementation. This variation highlights differences in pedagogical beliefs, digital literacy, and institutional support. This sampling configuration adheres to the qualitative research principle of "information saturation" [27] and provides a robust basis for presenting variations in practice and patterns of pedagogical agency amid educational transformation.

Appendix A: Basic Information of Research Subjects

teacher code name	Serving the school district	School attributes	age	Years of Teaching	Background	Experience in AI applications
A	New Taipei City	Municipal High School	43	10 years	Instructors who teach the course Merchant borrowers Senior High School Chief Instructor	Integrate into lesson plans and classroom activities
B	New Taipei City	Municipal High School	43	10 years	Instructors who teach the course Merchant borrowers Head of the Student Support Group University instructors	Lesson preparation and textbook generation assistance
C	Hsinchu County	National High School	38	9 years	Instructors High School Student Auxiliary Team Leader	The purpose of data search is mainly used
D	Taoyuan City	National High School	30	6 years	Instructors	For lesson preparation inquiries only
E	Hsinchu City	He is also a member of the National High School and a private university of technology	56	10 years	Instructors who teach the course Director of the Military Training Office Adjunct lecturer	Self-learning and knowledge supplementation

Note: The demographic data presented here are based on four key dimensions of the teachers' professional backgrounds—service locations, institutional attributes, teaching experience, and levels of AI application. These data were synthesized from interview transcripts, teachers' instructional narratives, and relevant supporting documents.

Based on the teachers' familiarity with ChatGPT and their actual usage patterns, preliminary observations indicate a continuum of acceptance levels—ranging from cautious exploration and lesson preparation support to full curriculum application and integrated practice. Each stage reflects distinct contextual factors and strategies, highlighting the dynamic interplay between pedagogical agency and institutional conditions [32-36]. The following sections present the narrative analyses for each of the five teachers.

4.2 Narrative Analysis of Individual Cases

This study adopts a narrative inquiry with an interpretive approach to reconstruct teachers' lived experiences and professional decision-making as they navigate and co-shape their instructional environments with Generative AI. Through detailed accounts of five teachers' instructional actions,

course adaptations, and evolving pedagogical beliefs during the integration of Generative AI, this section illustrates how teachers enact pedagogical agency and assert their professional subjectivity within the constraints of institutional structures and technological transitions [30, 31].

Following the order of interviews, pseudonyms A to E are used to present each individual case, focusing on the following key aspects:

(1) The initial encounter with ChatGPT and the motivation for its adoption

(2) Specific approaches and contexts for actual classroom implementation

(3) Observations of student interactions and feedback

(4) Critical evaluation and revision of AI-generated content

(5) In-depth reflections on institutional support, instructional autonomy, and educational ethics

(6) Teachers' professional positioning and agentic enactment in balancing technological affordances and value judgments

These narratives reveal how teachers transform personal experiences into professional practice strategies and demonstrate how they reconstruct their curriculum design perspectives and sense of educational responsibility in response to the growing influence of Generative AI [12, 37].

(1) Case 1：A Proactive Innovator of Exploration and Systematic Transformation

Teacher A is currently teaching at a municipal high school in New Taipei City and has accumulated ten years of experience in both All-Out Defense Education and administrative duties. He began exploring ChatGPT independently in late 2024 after observing that students increasingly used AI tools for assignments and research. He noted, *"I never attended any workshops; I just learned by doing and exploring."* This statement reflects his strong digital adaptability and demonstrates his pedagogical agency [5].

In practice, Teacher A primarily uses ChatGPT for lesson preparation, information retrieval, and designing materials related to legal and mobilization education. He explained, *"When covering the mobilization unit, I first ask ChatGPT, then verify whether it aligns with current policies."* This illustrates his workflow of *"AI inquiry → teacher validation → content revision,"* which not only reduces preparation time but also ensures materials remain current and diverse, underscoring his commitment to professional instructional responsibility.

Regarding the accuracy of AI-generated content, he maintains a critical stance: *"Some answers look plausible, but I must cross-check with actual policies to avoid misleading students."* This habit of reinterpretation and correction embodies the *"critical awareness"* and *"ethical judgment"* dimensions of his pedagogical agency [12].

Teacher A supports students' use of AI but emphasizes the importance of verification skills and information literacy: *"It's very helpful, but we must consider whether it might limit critical thinking or foster dependency."* He requires students to cite sources and clarify how they use AI, highlighting his dedication to upholding academic integrity.

Institutionally, he observed that school administrators have begun advocating for AI tool adoption: *"AI is not a threat but a resource that educators should guide and integrate."* The IT team has started assisting teachers in becoming familiar with these tools. He believes that

building reliable infrastructure, developing digital lesson repositories, and establishing collaborative platforms for teachers will further enhance the scale and quality of AI-integrated teaching.

Overall, his practice can be summarized in three progressive levels: *"tool exploration," "content transformation,"* and *"ethical instructional guidance."* He responds to the rise of Generative AI with both proactiveness and caution, striving to balance technological efficiency with core educational values. He insightfully remarked, *"Today's students face information overload. Our job is to teach them how to categorize and ask better questions, not just to provide answers for them."* This observation encapsulates the evolving role of teachers and the enduring mission of education in the AI era.

(2) Case 2：A Rational Practitioner Balancing Practical Use and Pedagogical Integrity

Teacher B teaches at a municipal high school in New Taipei City and has ten years of experience teaching All-Out Defense Education, complemented by a military background. He has also served as a seconded instructor for the education bureau and as a student affairs section head. His approach to AI tools is conservative yet pragmatic, emphasizing that *"AI is an auxiliary tool, not the core of teaching,"* reflecting a rational, cautious, and student-centered pedagogical philosophy.

Since late 2024, he has proactively explored ChatGPT, primarily using it for lesson preparation, generating teaching materials, and designing presentations, but not yet for direct classroom interaction. He finds ChatGPT most helpful for *"saving information-gathering time,"* enabling him to quickly produce draft outlines and resource ideas. He elaborated, *"I use it to design defense shooting games, such as challenge levels and scoring rules, but I always adjust and verify the content myself,"* illustrating his insistence on teacher-led adaptation and curriculum decision-making, avoiding blind dependence on AI.

From an ethical standpoint, Teacher B expresses concerns about potential content duplication and risks to academic integrity: *"Materials must be reviewed to avoid plagiarism."* He has observed instances of students submitting similar assignments with superficial understanding, noting, *"Saving time does not mean truly absorbing knowledge."* This underscores his emphasis on meaningful knowledge internalization and high learning quality, exemplifying both moral and cognitive facets of his pedagogical agency. This view aligns with broader concerns about Generative AI's potential to diminish students' deep learning and cognitive engagement.

Regarding student use, he insists that AI should be employed under explicit teacher supervision rather than left unregulated: *"We must set boundaries and rules so students have space to think."* This statement highlights his unwavering commitment to value-based guidance and the educational essence, positioning himself firmly as both a *"learning guardian"* and a *"gatekeeper of standards."*

On the institutional side, he observed that briefings about AI tools have been held during lesson preparation and administrative meetings. However, *"there has not yet been extensive*

peer exchange of related teaching experiences," leaving the current system at an *"individual experimentation, systemic gap"* stage. He recommends future improvements such as building shared lesson plan repositories, implementing student AI ethics training, and creating robust mechanisms to prevent content duplication, thereby strengthening institutional support.

In summary, Teacher B can be characterized as a *"basic preparation–oriented"* teacher whose pedagogical agency is marked by cautious pragmatism. While he recognizes the instrumental value of AI, he firmly upholds the teacher's professional authority in instructional design and value guidance. As he aptly concluded, *"AI cannot replace teachers, nor should students be left to learn solely through AI; we must set boundaries and rules so students have space to think."* This perspective reflects his profound awareness of and commitment to the enduring role of educators.

(3) Case 3：A Pragmatic Observer and Curriculum Adjuster

Teacher C teaches at a national high school and currently holds an administrative position, with nine years of experience covering national defense promotion, international affairs, mobilization, and disaster response topics. He first engaged with ChatGPT in 2023, driven by administrative needs and curiosity about new technologies. At present, he uses ChatGPT solely for information searching and has not yet incorporated it into classroom activities or curriculum design.

When discussing AI, his tone is cautious yet reflective: *"AI is powerful, but I remain skeptical about some information."* Although he has not fully integrated AI into teaching, he describes its potential as an *"exploratory and feedback aid"* that must be complemented by teacher judgment and revision: *"It's useful for preparation and searching but shouldn't be fully relied upon."* This demonstrates his disposition as a *"curriculum adjuster"*—experimenting and observing while proceeding prudently [38].

Regarding student use, he acknowledges that ChatGPT *"can be helpful but requires proper guidance"* and notes that students show high curiosity yet face risks of misuse and overreliance: *"Student engagement might increase, but teaching quality doesn't automatically improve."* This reflects his realistic appraisal of AI's educational potential and his unwavering commitment to maintaining teaching quality [37].

Although he has not yet developed a personal AI integration model or classroom practice, his remarks indicate openness to future adoption: *"Technology always comes from humanity, but humanity cannot be replaced by technology."* This succinctly conveys his ethical sensitivity toward AI and reaffirms his belief that *"education is fundamentally a human practice"* [12]. His caution should not be interpreted as rejection but rather as a careful balancing of technological opportunities and educational principles, while awaiting more mature systemic conditions and personal readiness for practice transformation.

From an institutional perspective, he recognizes that the school has provided presentations and resource guidance but highlights a lack of concrete application and shared

frontline teaching examples: *"People must remain the main actors."* He expresses a need for more practical case sharing and ethical dialogue to support responsible implementation.

Overall, Teacher C can be classified as an *"observational trial–oriented"* teacher who accepts Generative AI cautiously, without yet implementing it but maintaining high awareness and interest. He represents a group of educators who are attuned to technological trends, expect robust institutional support, and place a premium on clear ethical frameworks—practitioners with strong educational convictions and professional responsibility, well-positioned to become key contributors in the formative stage of AI-driven educational transformation.

(4) Case 4：A Steady Guardian and Value Interpreter

Teacher D teaches at a national high school and has six years of teaching experience, including three years dedicated to All-Out Defense Education covering topics such as defense policy, mobilization, international affairs, disaster prevention, and civic safety. Recognized for his calm and rational teaching style, he prioritizes cultivating students' critical thinking and ethical reasoning, encouraging them to explore diverse perspectives and exercise sound value judgment.

In response to the rapid rise of AI, he adopts a *"cautious observation and selective adoption"* approach. Since the summer of 2023, driven by the need to develop bilingual teaching materials, he has begun using ChatGPT primarily as a tool for information searching and organization but has not yet integrated it into classroom interactions or lesson design. He explains: *"I only use it for preparation so far. It's a good option that can slightly enhance teaching quality."* This demonstrates an openness to experimentation, balanced by prudent restraint.

Although he has not systematically guided students in using Generative AI, he remains vigilant: *"If I see students using it, I remind them to verify sources."* While he has yet to conduct deep analyses of AI-generated content or redesign lessons around it, exposure to peer experiences in professional workshops has prompted him to consider possible classroom integration.

Regarding AI's role in All-Out Defense Education, he maintains a neutral yet cautious stance. He recognizes ChatGPT's potential as a *"collaborative teaching assistant"* that can support student exploration and research on global or defense-related topics. However, he candidly admits: *"I don't have concrete implementation plans yet; more institutional support and clear guidance are needed."* This indicates that his pedagogical agency is evolving from passive observation toward reflective planning, pending greater systemic readiness and personal confidence [33, 36].

At the institutional level, he notes that his school has not actively promoted AI-integrated teaching practices or provided concrete resources. Although he has attended multiple AI-related workshops, most were conceptual briefings lacking practical examples of lesson plans or step-by-step teaching processes. He expresses a strong desire for more shared

teaching experiences and peer support networks to lower the barriers to adoption and foster cross-subject collaboration.

In summary, Teacher D represents a *"steady guardian"* who acts as a *"value gatekeeper."* He neither rejects nor uncritically embraces Generative AI but consistently prioritizes alignment with the educational core and curriculum values. He firmly believes that teachers are not mere conduits of information but vital interpreters and meaning-makers. As he succinctly put it: *"ChatGPT is not unusable, but we must think clearly about how and why to use it."* This remark encapsulates his unwavering professional stance—anchoring instructional choices in pedagogical values while navigating the complexities of technological advancement [33, 36].

(5) Case 5：A Goal-Oriented, Hands-On Practitioner

Teacher E currently teaches at both a national high school and a private university of technology, where he serves as an instructor for All-Out Defense Education. With ten years of teaching experience and a military background, he is adept at integrating curriculum content with policy discussions, mobilization strategies, and defense history, favoring a pragmatic, application-oriented teaching style. He approaches Generative AI with a mindset that is both open and circumspect, viewing it as a valuable tool that must be carefully managed to avoid misuse.

Over a year ago, he began experimenting with ChatGPT primarily to *"fill knowledge gaps,"* particularly in domains less familiar to him, such as defense policy updates and strategic historical contexts. As he notes: *"The biggest help is accessing a large amount of information."* Accordingly, his use of ChatGPT focuses on lesson preparation and expanding his own subject knowledge, rather than on systematic classroom integration at this stage.

In practice, he openly acknowledges: *"Currently, I rarely use ChatGPT during teaching,"* and has yet to design AI-integrated learning activities. Nonetheless, he observes that some students proactively utilize AI for assignments, commenting: *"When students actively use it, they're already engaging in reading, which supports knowledge acquisition."* This reflects his pragmatic, balanced stance toward AI's supplementary role in fostering student engagement.

While recognizing the benefits of AI-enhanced information access, he remains vigilant about its reliability: *"One must have principles because AI sources aren't always reliable."* He worries that students might become overly dependent, *"losing the effort and joy in learning,"* or misinterpreting inaccurate content—demonstrating his agentic awareness of the intersection between technological convenience and learning ethics [33, 36].

He clarifies his current practice: *"I don't adjust or critique ChatGPT's content; it's just a reference."* However, he adds that if AI were to be formally integrated into his courses, he would verify and revise its output as needed. Looking ahead, he envisions potential applications such as AI-supported simulations for battlefield first aid, CPR, self-defense

training, and even *"AI robot teaching,"* which he believes would *"increase efficiency and align with students' learning pace."*

Institutionally, he notes a lack of clear guidelines, training workshops, or peer-sharing opportunities related to AI pedagogy, yet he remains eager to continue exploring. He expresses a clear need for actionable guidelines, curated lesson resources, and collaborative teacher communities to enhance his mastery of AI integration logic and pedagogical techniques.

In summary, Teacher E exemplifies a *"goal-oriented, hands-on practitioner."* Although he has not yet embedded Generative AI deeply into classroom practice, he demonstrates strong skills in information integration and reflective preparation. He consciously avoids blind adoption, outright rejection, or over-idealization of AI, instead focusing on aligning its use precisely with teaching objectives. As he succinctly concludes: *"AI is a tool, not a replacement. How to use it and to what extent—that's for teachers to control."* This statement encapsulates his steady pedagogical agency and professional judgment amidst the accelerating influence of AI in education.

4.3 Thematic Integration and Cross-Case Analysis

Synthesizing insights from the five teacher narratives, this study identifies four core themes that illustrate how educators exercise pedagogical agency and navigate institutional challenges during the integration of Generative AI into value-oriented instruction:

(1) A Developmental Spectrum of AI Application: From Observers to Integrators

Teachers' use of ChatGPT follows an evolutionary trajectory, ranging from cautious observation and preliminary trial to initial stages of systematic integration. This progression reflects not only individual differences in digital literacy and educational philosophy but also the broader influence of institutional resources, curriculum mandates, and classroom interaction dynamics.

(2) Three Dimensions of Pedagogical Agency: Iterational, Practical-Evaluative, and Projective

Aligned with Emirbayer and Mische's (1998) three-dimensional agency framework [5], teachers demonstrated distinctive agency profiles:

A.Iterational Agency: Teachers B and D rely heavily on prior experience to maintain course stability and continuity.

B.Practical-Evaluative Agency: Teachers C and E adapt teaching strategies dynamically in response to immediate classroom contexts.

C.Projective Agency: Teacher A actively envisions and implements innovative teaching models, positioning himself as a forward-thinking agent of change.

(3) A Use-But-Not-Rely Strategy: AI as an Interpretive Aid

Most teachers emphasized a "use but do not over-rely" approach, viewing Generative AI as a supportive tool rather than a replacement for professional judgment [33, 36]. They filter, critique, and redesign AI-generated content to maintain pedagogical autonomy and ethical rigor. While acknowledging that AI can significantly enhance lesson preparation efficiency,

teachers warn that excessive reliance may erode critical instructional discernment. Accordingly, ChatGPT is commonly used for initial drafts, but teachers verify factual accuracy, contextualize information, and supplement with relevant local examples to align with student needs.

(4) Exploration Challenges Amid Institutional Gaps and Calls for Action

Teachers unanimously pointed out systemic shortfalls, such as the lack of AI-integrated curriculum modules, clear ethical usage guidelines, and structured cross-school collaboration channels. These gaps often force teachers to experiment individually, resulting in inconsistent practices and ethical uncertainties [38]. To address this, teachers call for explicit policy frameworks, curated resource platforms, and sustained professional development to foster a supportive and innovative ecosystem. Some suggested that schools develop vetted AI lesson banks and implement continuous teacher training to keep pace with rapid technological advancements.

To illustrate these agentic patterns and contextual challenges, this study includes Appendix B: Comparative Matrix of Teachers' AI Application and Pedagogical Agency, which details each teacher's strategies across different stages of AI adoption and supports clear cross-case comparisons and role categorization.

Overall, teachers' stances toward Generative AI are dynamic and evolving, progressing from passive observation to early integration. Their agency manifests iteratively, evaluatively, and projectively, shaped by personal convictions, institutional conditions, and student-centered considerations. As shown in Appendix C, the study triangulates these qualitative themes with representative narrative excerpts and descriptive survey data, ensuring robust thematic validation and analytical depth. The comprehensive tabulation and narrative synthesis affirm that each theme is equally emphasized and thoroughly elaborated, underscoring the study's methodological rigor and empirical credibility.

Appendix B: Comparison Table of Teachers' AI Applications and Teaching Initiatives

teacher code name	AI application stage	Teaching initiative	Key features:	Institutional response
A	Integrate practices	Forward-looking	Actively integrate ChatGPT into the design of lesson plans, with innovative intentions	Call for the establishment of an AI resource library and a common platform
B	Basic lesson preparation	Retrospective	Rational and conservative, emphasizing ethics and teaching	It is recommended to set limits and norms to strengthen academic integrity
C	Observe temptation	Immediacy	Prudent observation, not yet implemented but willing	We look forward to more practical examples and ethical dialogues
D	Lesson preparation assistance	Retrospective	Focus on value alignment, which has not yet been introduced into the classroom	It was pointed out that there was a lack of specific lesson plans and experience exchanges
E	Data enrichment	Immediacy	Focus on self-preparation, focusing on the fit of	We look forward to building guidance and technical training

			technology and teaching	

Note: The data sources for this synthesis are based on four core aspects from the teachers' instructional trajectories: AI application stage, dimension of pedagogical agency, curricular practice characteristics, and institutional response perspectives. All insights were compiled from teacher interviews, classroom practice narratives, and supporting literature references.

AppendixC: Teacher Narrative and Survey Trend Matrix

Theme	Teachers	Key Narrative Excerpts	Corresponding Survey Findings
1. Development Spectrum	A, B, C, D, E	"Teachers progressed from initial observation to tentative integration for lesson preparation."	61% reported using ChatGPT for lesson preparation
2. Agency Dimensions	A, B, C, D, E	"A and C show projective agency; B and D emphasize practical-evaluative actions; E reflects iterational reflection."	Case comparison shows multi-dimensional agency patterns
3. Use Without Dependence	B, C, D	"Teachers stress AI is an aid, not a substitute, requiring validation and adaptation."	22% reported editing AI-generated content
4. Institutional Challenges	A, B, C, D, E	"Multiple teachers noted the lack of co-preparation platforms and clear assessment guidelines."	75% expressed need for institutional guidelines and resources

Note: A–E represent pseudonyms for the interviewed teachers. The survey results are descriptive statistics based on valid responses (n=36).

4.4 Quantitative Data to Support the Analysis

To complement the narrative inquiry, a concurrent survey was conducted, yielding 36 valid responses. The key descriptive findings are as follows:

(1) Familiarity with ChatGPT:44.4% of respondents indicated having "some understanding" of ChatGPT, while 27.8% reported having "only heard of it," highlighting varying levels of awareness across the sample.

(2) Actual Use:61.1% of teachers reported using ChatGPT "frequently" or "occasionally," primarily for lesson preparation and information gathering, indicating its emerging role as a supplementary tool in instructional workflows.

(3) Teaching Attitude:A substantial majority (88.9%) agreed that ChatGPT is applicable to All-Out Defense Education, demonstrating high acceptance of its potential to support value-oriented courses.

(4) Student Guidance:Only 17% of teachers had explicitly guided students in using AI tools, reflecting that student-facing integration remains in a nascent stage and is an area for further instructional development.

(5) Content Critique and Transformation:22.2% of respondents stated that they actively adjusted or transformed AI-generated content for classroom use, evidencing an emerging capacity for digital critique and contextual adaptation.

(6) Institutional Support:75% of respondents expressed an "urgent need for structured AI teaching support and resource provision," while the remaining respondents acknowledged such support as necessary, though less immediately pressing.

Taken together, these quantitative findings triangulate with the qualitative narratives presented

in Sections 4.1 to 4.3. They substantiate that teachers are transitioning from initial acceptance to more critical and transformative use of Generative AI tools. Despite the limited systemic support, educators demonstrate multiple dimensions of pedagogical agency, including self-initiated exploration, professional integrity, and ongoing innovation. This underscores the necessity for clear institutional frameworks and sustained professional development to harness AI's potential responsibly and effectively in value-oriented education.

5. Conclusions and Recommendations of the Study

5.1 Conclusions of the Study

This study employed narrative inquiry complemented by survey data to examine how five certified All-Out Defense Education teachers in Taiwan integrate ChatGPT and other Generative AI tools into their instructional practice. The key conclusions are as follows:

(1) Teachers demonstrate a diverse and dynamically evolving spectrum of Generative AI application, shaped by their individual pedagogical beliefs, levels of digital literacy, and the varying degrees of institutional support within their teaching contexts.

(2) The teachers' agentic behaviors align closely with Emirbayer and Mische's three-dimensional agency framework [5]:

A. Teachers B and D primarily exhibit iterational agency, drawing on past routines to maintain course stability.

B. Teachers C and E exemplify practical-evaluative agency, making adaptive instructional decisions based on immediate classroom circumstances.

C. Teacher A illustrates projective agency, actively envisioning and implementing innovative teaching strategies for future curriculum development.

(3) Across cases, teachers adhere to a guiding principle of "use without dependence," exercising critical judgment to verify and adapt AI-generated content, thus safeguarding pedagogical integrity and curricular values.

(4) Insufficient institutional frameworks and lack of structured resources hinder systematic and sustainable AI innovation, placing a disproportionate burden on individual teachers to self-navigate implementation and ethical considerations.

(5) Participants unanimously call for the establishment of comprehensive institutional support systems, including clear ethical guidelines, collaborative lesson-preparation platforms, and ongoing professional development initiatives to enable responsible and effective AI integration in policy-sensitive, value-oriented curricula.

5.2 Limitations of the Research

Despite its contributions, this study has several limitations that should be acknowledged when interpreting the findings and applying them to other contexts:

(1) Scope and Representativeness of the Sample:The qualitative component involved only five teachers from high schools and technical colleges in northern Taiwan. While the participants varied in years of experience, institutional roles, and disciplinary backgrounds, the relatively

small, localized sample limits the representativeness of the findings. Caution should be exercised when generalizing results to other regions, cultural contexts, or educational levels.

(2) Time and Contextual Constraints:This research employed a cross-sectional design, capturing teachers' narratives and survey responses at a single point in time. As Generative AI technology and related institutional policies continue to evolve rapidly, the study does not account for potential shifts in teachers' perceptions and practices over time. Longitudinal studies or multi-phase interviews could address this limitation by tracking dynamic changes in teacher agency and AI integration.

(3) Narrative Interpretation and Researcher Bias:Qualitative narrative analysis inherently relies on the researcher's interpretive judgment, which may introduce subjectivity and theoretical bias. Although member checks and triangulation were employed to enhance trustworthiness, complete neutrality cannot be guaranteed. Future research may benefit from involving multiple coders and independent auditors to further strengthen analytic rigor.

(4) Inherent Limitations of Mixed Methods Integration:The quantitative component was based on a self-developed questionnaire with a limited number of items and a modest sample size. As a result, the statistical analyses were descriptive rather than inferential, providing trend-based triangulation rather than robust generalizability. Subsequent studies could develop validated instruments and adopt more rigorous statistical methods with larger samples to substantiate and expand on these preliminary findings.

5.3 Research Recommendations

(1) Practical Recommendations for Education

A. Strengthen Teachers' AI Literacy and Ethical Competence:Schools should offer regular in-house workshops, inter-school communities of practice, and case-based training focusing on prompt engineering, content verification, and pedagogical redesign. For example, schools could host hands-on ChatGPT workshops each semester to demonstrate how to collect information, draft lesson plans, and critically evaluate AI-generated content for factual accuracy and ethical appropriateness.

B. Promote Exploratory, Problem-Based Course Designs:Curricula should embed activities that cultivate students' media literacy, questioning skills, and active engagement. Teachers may design tasks such as "AI vs. manual search" assignments, enabling students to compare AI outputs with traditional sources and critically assess credibility and relevance.

C. Establish AI Lesson Repositories and Teacher Co-Preparation Communities:Education bureaus or individual schools should build centralized lesson banks and co-preparation platforms for collecting, curating, and continuously updating high-quality AI-integrated instructional materials. This would reduce individual teachers' trial-and-error costs and promote collaborative expertise sharing.

D. Foster Responsible Student Use of AI:Teachers should incorporate explicit classroom rules for AI-assisted work, require students to annotate sources when using AI, and facilitate discussions on academic integrity and responsible information use.

(2) Policy and System-Level Recommendations

A. Develop Tailored Guidelines for All-Out Defense Education:Educational authorities should create clear policy guidelines for AI application, ensuring alignment with the curriculum's civic and ethical objectives while clarifying acceptable practices.

B. Institutionalize AI Literacy and Ethics Training:Pre-service and in-service teacher education should integrate AI literacy and ethics modules, equipping teachers to critically and creatively engage with emerging tools while safeguarding pedagogical values.

C. Establish an Official AI Teaching and Ethics Support Platform:A centralized digital platform should provide standardized training modules, practical tutorials, and peer-contributed lesson examples, supporting balanced technology adoption and value-driven teaching innovation.

(3) Suggestions for Future Research

A. Conduct Longitudinal Studies:Future studies should track teachers' evolving use of Generative AI and shifts in pedagogical beliefs over time, connecting these changes to teaching strategies and student learning outcomes.

B. Incorporate Student Perspectives and Interaction Analyses:Future research should examine how students engage with AI in practice, investigating its effects on learner agency, critical thinking, and the co-construction of knowledge.

C. Broaden Cross-Disciplinary and Cross-Cultural Comparisons:Comparative studies across disciplines, educational levels, and cultural settings can reveal how institutional contexts and cultural norms shape teachers' agency and instructional choices in the era of Generative AI.

5.4 Study Highlights and Future Directions

(1) Study Highlights

A. This study addresses a critical research gap by providing empirical evidence of Generative AI application in value-laden and policy-driven courses, using Taiwan's All-Out Defense Education as a representative case.

B. By integrating Emirbayer and Mische's agency theory with narrative analysis, it systematically maps how teachers demonstrate iterational, practical-evaluative, and projective agency when incorporating AI into their instructional practices.

C. The study demonstrates that teachers predominantly view Generative AI as a supportive tool rather than a substitute for human judgment, emphasizing the importance of critical adaptation, verification, and ethical stewardship.

D. Practical and policy-relevant frameworks are proposed, including the development of AI-integrated lesson banks, clear ethical guidelines, teacher co-preparation communities, and ongoing professional development pathways to support sustainable innovation.

(2) Future Directions

A. Expand future sampling to include a wider range of geographic regions, school types, and subject areas to assess the generalizability and contextual variation of teachers' AI practices.

B. Conduct longitudinal research to track changes in teachers' beliefs, agency enactment, and classroom practices as Generative AI technologies and educational policies evolve over

time.

C. Integrate student and parent perspectives to explore how AI tools influence learner agency, family expectations, and the broader educational community's trust in AI-assisted learning.

D. Strengthen cross-cultural and international comparative studies to generate globally relevant insights and inform the design of adaptable AI education policies that respect diverse local contexts.

5.5 Conclusion

The emergence of generative artificial intelligence presents unprecedented technological challenges and transformative opportunities for contemporary education. In this evolving landscape, teachers are no longer mere conveyors of information but must serve as interpreters of educational values and adaptive designers of pedagogical practices.

This study demonstrates that, amidst the rise of AI, teachers do not passively adopt technological tools; rather, they actively exercise agency by foregrounding their pedagogical beliefs, upholding curriculum integrity, and prioritizing student development. Through their iterative, practical-evaluative, and projective actions, teachers exemplify critical reflection, professional adaptability, and innovative practice.

Looking forward, achieving meaningful integration of AI and education requires concerted efforts to strengthen teachers' digital literacy, instructional design skills, and capacity to guide students in the ethical use of AI. Equally important is the development of robust theoretical frameworks and institutionally supportive structures that enable sustainable innovation and uphold the core mission of value-driven education.

By doing so, All-Out Defense Education can continue to foster democratic literacy and national consciousness in the digital era, positioning teachers as pivotal guides who empower students to navigate information abundance thoughtfully and to cultivate critical thinking for an uncertain future.

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Conflicts of Interest

The author confirms that there are no conflicts of interest.

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