

How International School Teachers Use Technology to Support Active Learning

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ABSTRACT.....	5
CHAPTER 1: INTRODUCTION.....	6
1.1. BACKGROUND AND CONTEXT.....	6
1.2. PROBLEM STATEMENT.....	7
1.3. RESEARCH AIM AND OBJECTIVES.....	9
CHAPTER 2: LITERATURE REVIEW.....	10
2.1. CURRICULUM PLANNING AS A NEGLECTED SITE OF ANALYSIS.....	10
2.2. TECHNOLOGY INTEGRATION IN CURRICULUM PLANNING.....	11
2.3. ACTIVE LEARNING AS AN ORIENTING CONSTRUCT.....	13
2.4. FRAMEWORKS GUIDING TECHNOLOGY INTEGRATION IN PLANNING.....	14
2.5. TEACHER BELIEFS, CONFIDENCE AND AGENCY IN PLANNING.....	16
2.6. INSTITUTIONAL AND ORGANISATIONAL CONDITIONS SHAPING PLANNING.....	17
2.7. INTERNATIONAL SCHOOLS CULTURE AND CONTEXT.....	18
2.8. SYNTHESIS AND CONCEPTUAL FRAMEWORK.....	20
2.9. CONCLUSION: IDENTIFYING GAPS AND POSITIONING THE STUDY.....	22
CHAPTER 3: METHODOLOGY.....	24
3.1. OVERVIEW AND METHODOLOGICAL RATIONALE.....	24
3.2. RESEARCH PARADIGM.....	25
3.3. RESEARCH DESIGN.....	26
3.4. PHASE 1: QUESTIONNAIRE DESIGN AND RATIONALE.....	27
3.5. PHASE 2: INTERVIEW DESIGN AND RATIONALE.....	28
3.6. INTEGRATION STRATEGY.....	29
3.7. PARTICIPANTS AND SAMPLING.....	30
3.7.1. <i>Data collection instruments and justification.....</i>	32
3.7.2. <i>Questionnaire.....</i>	32
3.7.3. <i>Semi-structured interview guide.....</i>	33
3.8. DATA ANALYSIS.....	34
3.8.1. <i>Quantitative data analysis.....</i>	34
3.8.2. <i>Qualitative data analysis.....</i>	34
3.9. ETHICAL CONSIDERATIONS.....	35
3.10. LIMITATIONS AND TRUSTWORTHINESS.....	36
3.11. CHAPTER SUMMARY.....	37
CHAPTER 4: FINDINGS.....	38
4.1. CHAPTER OVERVIEW.....	38
4.2. QUESTIONNAIRE FINDINGS.....	38
4.2.1. <i>Where technology enters planning.....</i>	38
4.2.2. <i>Purposes technology use.....</i>	39
4.2.3. <i>Benefits and constraints.....</i>	39
4.2.4. <i>Active learning: definitions and enacted strategies.....</i>	40
4.3. INTERVIEW FINDINGS.....	40
4.3.1. <i>Planning as structured and adaptive.....</i>	40
4.3.2. <i>Where technology entered planning and why.....</i>	41
4.3.3. <i>Tools, platforms, and criteria for ‘usefulness’.....</i>	41
4.3.4. <i>Working meanings of active learning.....</i>	41
4.3.5. <i>Instances when technology supported or hindered active learning.....</i>	42
4.3.6. <i>Adaptation and modification as routine.....</i>	42
4.3.7. <i>Benefits, constraints, and support conditions.....</i>	43

4.3.8.	<i>Future-oriented aspirations</i>	43
4.4.	MIXED-METHODS INTEGRATION.....	43
4.4.1.	<i>Convergence</i>	43
4.4.2.	<i>Expansion</i>	44
4.4.3.	<i>Boundary conditions and nuance</i>	44
4.5.	CHAPTER SUMMARY.....	45
CHAPTER 5: DISCUSSION		46
5.1.	CHAPTER OVERVIEW.....	46
5.2.	DISCUSSION ORGANISED BY THE RESEARCH QUESTION.....	47
5.3.	STRAND 1: CURRICULUM PLANNING AS A BOUNDED BUT ADAPTIVE PRACTICE.....	47
5.4.	STRAND 2: PLANNING STAGES WHERE TECHNOLOGY IS INCORPORATED.....	48
5.5.	STRAND 3: ACTIVE LEARNING CONCEPTIONS AND ‘MEANINGFUL’ USE.....	48
5.6.	STRAND 4: ORGANISATIONAL CONDITIONS SHAPING FEASIBILITY AND SUSTAINABILITY.....	49
5.7.	INTERPRETING THE FINDINGS THROUGH ANALYTICAL LENSES.....	50
5.7.1.	<i>TPACK as an explanatory lens for planning-stage technology use</i>	50
5.7.2.	<i>The SAMR model serves as a descriptive lens to explain why successful examples tend to cluster beyond the substitution level</i>	50
5.7.3.	<i>Active learning as an interpretive anchor: participation, cognition, and design quality</i>	51
5.8.	MIXED-METHODS META-INFERENCES.....	51
5.8.1.	<i>Meta-inference 1: Integration as Pragmatic Planning Support</i>	51
5.8.2.	<i>Meta-inference 2: Active Learning Gains Are Conditional</i>	52
5.8.3.	<i>Meta-inference 3: Organisational Coherence as the Key Mediator</i>	52
5.8.4.	<i>Summary of meta-inferences</i>	52
5.9.	IMPLICATIONS.....	53
5.9.1.	<i>Implications for teachers’ curriculum planning practice</i>	53
5.9.2.	<i>Implications for school leadership and organisational decision-making</i>	53
5.9.3.	<i>Implications for professional development design</i>	54
5.10.	CHAPTER SUMMARY AND TRANSITION.....	54
CHAPTER 6: CONCLUSION		56
6.1.	CHAPTER OVERVIEW.....	56
6.2.	ADDRESSING THE RESEARCH QUESTION.....	56
6.2.1.	<i>Integrated answer to the main research question</i>	56
6.2.2.	<i>Where technology enters the planning process and why</i>	57
6.2.3.	<i>Digital tools most commonly used to promote active learning</i>	58
6.2.4.	<i>Conditions under which integration supports active learning</i>	58
6.3.	KEY CONCLUSIONS.....	59
6.3.1.	<i>Conclusion 1: Lesson-level, feasibility-oriented active-learning integration</i>	59
6.3.2.	<i>Conclusion 2: Pedagogy-led, conditional endorsement</i>	59
6.3.3.	<i>Conclusion 3: Organisational coherence as mediator</i>	59
6.3.4.	<i>Conclusion 4: Meaningful integration as alignment</i>	60
6.3.5.	<i>Conclusion 5: Design quality and lesson flow</i>	60
6.4.	CONTRIBUTION OF THE STUDY.....	60
6.4.1.	<i>Empirical contribution</i>	60
6.4.2.	<i>Conceptual contribution</i>	61
6.4.3.	<i>Methodological contribution</i>	61
6.5.	PRACTICAL RECOMMENDATIONS.....	62
6.5.1.	<i>Recommendations for teachers’ planning practice</i>	62
6.5.2.	<i>Recommendations for school leadership</i>	62
6.5.3.	<i>Recommendations for professional development</i>	62

6.6.	LIMITATIONS.....	63
6.7.	SUGGESTIONS FOR FUTURE RESEARCH.....	63
6.8.	FINAL SYNTHESIS AND CLOSING STATEMENT.....	64
REFERENCES:.....		65
APPENDICES:.....		69
APPENDIX A. QUESTIONNAIRE INSTRUMENT (FINAL VERSION USED).....		69
APPENDIX B. QUESTIONNAIRE ITEM MAPPING.....		71
APPENDIX C. ANALYTICAL LENSES SUMMARY.....		74
APPENDIX D. SEMI-STRUCTURED INTERVIEW GUIDE (FINAL VERSION USED).....		75
APPENDIX E. INTERVIEW QUESTION MAPPING.....		77
APPENDIX F. QUALITATIVE CODING FRAMEWORK / CODEBOOK.....		79
APPENDIX G. ETHICS MATERIALS.....		82
Table 1 - Research Design Overview.....		27
Table 2 - Participant Profiles.....		31
Table 3 - Where tech enters planning.....		39
Table 4 - Constraints and enabling conditions.....		42
Table 5 - Integrated synthesis across strands.....		47

Abstract

After my personal experience with the COVID-19 pandemic, I investigated how teachers working in Thai international schools use digital tools to plan lessons and units, especially to make learning more engaging. Just like many teachers, I was suddenly forced to teach online with little time to prepare. Even after schools resumed normal operations, I faced challenges like unstable systems, unequal access, time constraints, and the constant need to adapt. These challenges changed my perspective on planning, what I consider achievable, and how I define meaningful' technology use.

For this study, I used a sequential explanatory mixed-methods approach. I started this study by I asking twenty teachers to fill out a questionnaire to understand their technology use in curriculum planning, preferred tools, and challenges and benefits. Afterwards, I interviewed seven teachers to explore the reasons behind these patterns and get real-life examples of technology's impact on active learning.

Using technology for planning is more relaxing than having big dreams. Teachers use digital tools to brainstorm, tweak resources, and create materials. Tools that save time, work well, and integrate with the school's systems are useful. And by focusing on active learning, it encourages students to participate by thinking, chatting, and making decisions. Technology greatly supports these activities. However, when technology hinders or disrupts the lesson atmosphere or fails, teachers adapt and create alternative methods. The study found that getting into technology is more than having gadgets – it's about creating the right environment, such as providing time, easy access, dependable tools, clear goals, and hands-on training.

Chapter 1: Introduction

1.1. Background and context

Over the past two decades, digital technologies have become embedded in everyday classroom practice, reshaping lesson planning, assessment, and classroom management (Selwyn, 2016). Schools increasingly use digital platforms and online learning spaces to support communication, resource access, and collaborative learning. This trend aligns with policy and curriculum agendas that emphasise digital literacy, creativity, and critical thinking as part of 21st-century competence (Oecd, 2023). However, the educational value of technology depends less on availability than on how it is selected and designed into learning activities, requiring alignment between pedagogy, subject content, and technological affordances (Mishra & Koehler, 2006).

The COVID-19 pandemic has accelerated these developments by necessitating remote and blended teaching. Now, with international feedback available, it can be assumed that this period identified unequal levels of digital readiness but that it also stimulated experimentation with learning management systems, virtual classrooms and new methods of teacher collaboration (Tondeur et al., 2021). And for schools that follows international oriented curricula, this interruption increased attention on continuity, assessments and student engagement, highlighting both the opportunities as well as the practical limitations of technology-assisted instruction.

As international schools expanded with globalisation, and an increasing demand for bilingual, globally orientated education among Thai and expatriate families became rather popular (Hayden & Thompson, 2013), this paper will examine these issues using Thailand as the setting. The teaching staff at these institutions are usually culturally diverse and operate with a degree of curricular autonomy, often using programmes such as International Baccalaureate or Cambridge pathways. Additionally, technology integration are not similar across institutions – some schools develop clear platforms for planning, communication and assessment, while others still depend on paper-based planning or offline tools, resulting in inconsistent experiences for teachers (Phonphitak & Teo, 2024).

Teachers at Thai international schools usually have a high degree of collaboration with their peers during lesson preparations. And even in these contexts, technology use/implementation differs greatly. Some uses focus on digitising existing practices, whereas

others support more substantial changes to the learning design, such as inquiry tasks, collaborative projects, and multimedia production (Puentedura, 2010). To understand these diverse levels of technology use, it's vital to examine teachers' viewpoints, professional knowledge, and cultural/organizational aspects that affect planning (Hallinger & Lee, 2020; Vygotsky, 1978).

Thailand has pushed for educational reform in recent times, which places strong emphasis on ICT implementation. But the implementation of ICT systems remains patchy, mostly because of inadequate resources, poor professional development, and hierarchical organisational structures (Nguyen & Pham, 2022). International schools are not exempt from these issues; they navigate them in parallel with institutional expectations, leadership structures and accountability pressures. Other factors that influence how digital tools are used during planning includes how norms around authority, communication and collaboration are perceived, especially in culturally diverse teams (Kessels & Zander, 2022).

Teachers are also required to balance competing expectations: meeting international standards, communication priorities and ensuring classroom practice meets the school's values and learning goals. Introducing technology frequently involves some trade-offs between innovation, reliability, and time, and observing how teachers achieve these pressures during planning can help explain how technology becomes embedded—or remains mostly benched—in everyday practice (Hammond & Manfra, 2020). As curricular goals, pedagogical approaches and available tools are brought together during planning, it must be acknowledged that it involves anticipating the knowledge, skills, and experiences that will be most beneficial for learners (Bruner, 1996). It can therefore be argued that meaningful integration is more likely when it is intentional and aligned to instructional objectives, instead of it being added as an afterthought (Kirsh, 2010). With that, this study considers curriculum planning as a critical stage where technology is selected, adapted, and justified—and where limitations and priorities become obvious in the design of learning activities.

1.2. Problem statement

Despite substantial investments in digital infrastructure were made in schools worldwide, the utilization of technology in classrooms frequently prioritizes efficiency improvements above substantive changes to teaching and learning methodologies. A prevalent trend noted is

the digitization of existing practices—such as substituting paper worksheets with digital counterparts—rather than reimagining learning tasks to effectively integrate technology (Puentedura, 2010). This behaviour indicates that the core issue is not access to devices, but rather the pedagogical decisions made by educators concerning technology, coupled with their confidence and support in its effective integration to achieve educational objectives (Ertmer & Ottenbreit-Leftwich, 2019).

Another concern is that conversations about technology integration often take place during class, while the planning phase—marked by goal setting, task development, and tool selection—tends to receive inadequate attention. Planning is the phase in which teachers convert curriculum requirements into effective learning experiences. If technology is not meaningfully considered during planning, it is likely to be added later as an “extra” rather than functioning as a deliberate component of the learning design. This gap is particularly relevant in multilingual and culturally diverse school contexts, where planning decisions may be shaped by differing professional assumptions, collaborative norms, and organisational expectations.

International schools in Thailand provide a significant framework for examining these issues. These institutions often implement international curricula alongside local standards and engage a culturally diverse staff (Hayden & Thompson, 2013). Although these schools possess substantial access to digital resources, evidence from Thailand reveals that integration is inconsistent, affected by disparities in planning practices, teacher motivation, and local institutional conditions (Phonphitak & Teo, 2024). This would suggest that variation in technology usage cannot be assumed to reflect resources alone; it may instead reflect how planning is organised and how teachers interpret the role of technology within the curriculum.

The incorporation of technology in planning is influenced by circumstances at the school level. Leadership expectations, collaborative opportunities, and established routines can either foster continuous experimentation or encourage cautious, compliance-orientated practices (Chiu et al., 2022; Hallinger & Lee, 2020). At the individual level, educators' sense of efficacy and professional agency is essential in determining whether they perceive digital tools as integral to instruction or merely supplementary (Hammond & Manfra, 2020). In addition, planning decisions require teachers to bring together content knowledge, pedagogical knowledge, and technological knowledge in ways that are responsive to the learning context (Mishra & Koehler, 2006). Finally, considering the dynamics of culturally diverse teams, assumptions about authority, communication, and collaboration may shape how teachers

negotiate planning decisions and the extent to which innovation is encouraged or constrained (Kessels & Zander, 2022).

1.3. Research aim and objectives

The aim of this study is to examine how teachers in international schools in Thailand integrate digital technology into curriculum planning, and to identify the factors that shape these decisions.

Research objectives.

1. To describe how teachers incorporate digital tools during curriculum planning in international school settings.
2. To identify individual factors (e.g., beliefs, confidence, professional knowledge) that influence planning decisions about technology integration.
3. The aim of this study is to examine organisational and cultural factors (e.g., leadership expectations, collaboration practices, school norms) that shape technology-related planning.
4. The aim of this study is to explore how teachers perceive the relationship between curriculum aims, pedagogy, and digital tools during planning.

To address the above objectives, a mixed-methods approach will be used to capture both broad patterns and teachers' experiences in context (Creswell & Plano Clark, 2018).

Chapter 2: Literature Review

2.1. Curriculum planning as a neglected site of analysis

This chapter reviews the literature relevant to understanding how teachers integrate digital technology into curriculum planning, with a focus on international school contexts. There is extensive research done on educational technology, but much of it focuses on classroom implementation, learner outcomes or the effectiveness of specific tools. In comparison, less attention has been given to the planning phase of teaching, despite its central role in shaping pedagogical implementation, learning design and the conditions under which technological tools are ultimately used. Because planning is the stage at which decisions about content, pedagogy, and tools are first considered, it represents a critical but neglected area for understanding technology integration (Bruner, 1996; Kirsh, 2010).

The emphasis on planning is supported by prior research that frames teachers' planning as a complex decision-making process rather than a preparation routine. Shared work on teacher decision process highlights that planning involves anticipating learner responses, weighing instructional trade-offs and selecting resources under constraints (Borko et al., 1981; Shavelson & Borko, 1979). And from this perspective, curriculum planning becomes a meaningful analysis tool, because it unveils the thinking that precedes classroom activity, including how teachers understand curriculum aims and the kind of learning they intend to make possible.

Additionally, planning can be understood as a form of distributed cognition, by which teachers 'think with' external elements, such as lesson templates, shared drives, curriculum maps and digital platforms. These elements do more than simply save information; they structure attention; coordinate collaboration and shape what is considered possible within a planning roadmap (Kirsh, 2010). For technology integration, this is especially relevant as digital tools may be adopted first as planning infrastructure - supporting organisation communication and resource collection - before they remodel classroom learning tasks.

This gap will be addressed by examining the literature through 4 interconnected strands of research that together capture the complexity of teachers' planning habits; (1) how technology integration is conceptualised in education; (2) the frameworks and models used to guide integration; (3) teacher beliefs, agency and professional judgement and (4) the institutional and

cultural contexts in which planning takes place. These strands are understood help shape bigger dimensions of practice, rather than being treated as separate categories.

The first strand addresses the conceptualizations of technology integration, as this research consistently shows that how teachers understand the role of technology strongly influences how it is rooted in planning and pedagogy (Ertmer & Ottenbreit-Leftwich, 2019; Selwyn, 2016). The second strand explores the theoretical and analytical frameworks, such as TPACK and SAMR, which are widely used to guide teachers' thinking about technology use, but are often unevenly applied in practice (Mishra & Koehler, 2006; Puentedura, 2010). The third strand examines teacher beliefs and agency, by recognising planning as an area of professional judgement with pedagogical values, confidence and perceived autonomy shape integration decisions (Hammond & Manfra, 2020). The fourth and final strand positions these processes within institutional and cultural contexts, acknowledging that planning practises are influenced by leadership, organisational norms and broader socio-cultural expectations, particularly in international school settings (Hallinger & Lee, 2020; Hayden & Thompson, 2013).

When considering these ideas together, they illustrate how teaching is currently perceived as a social activity guided by professionals (Selwyn, 2016; Vygotsky, 1978). By putting the review together this way, it can combine what is known about technology use, moving away from just seeing it as a set of tools and towards a clearer picture of how and why it's used in curriculum planning. The next section of this paper will examine the prevailing perceptions of technology in education, allowing us the opportunity to the various organisational structures, the roles of teachers and the influence of their surroundings.

2.2. Technology Integration in Curriculum Planning

To understand how teachers integrate technology into curriculum planning first requires examining how technology integration itself is conceptualised within educational research. Integration conceptualisations not only shapes how technology is discussed in policy and professional discourse, but also how teachers interpret its purpose and role during planning. Time after time, research has identified that teachers' underlying understandings of technology affects whether it is treated as an instructional add-on, an efficiency tool or a means of reshaping learning design (Ertmer & Ottenbreit-Leftwich, 2019; Selwyn, 2016).

Early educational technology research mostly conceptualised integration in technical or infrastructural terms, with a focus on access to hardware, connectivity and teacher training. Within this scope, technology integration was framed as a problem of provision: once schools were sufficiently equipped and teachers trained, effective use was expected to follow. While this work spotlighted important structural inequalities, it has been criticised for promoting a technologically determined assumption that tools themselves are the driving force behind pedagogical change (Selwyn, 2016). Such conceptualisations limit how much attention is paid to how teachers interpret and repurpose technology during curriculum planning.

More recently, a shift towards pedagogical and socio-cultural conceptualisations of technology integration have been observed. This suggests that integration is not only related to the availability of digital resources, but rather the level at which technology is effectively integrated with learning objectives, pedagogical approaches, and student involvement. This is a big change for curriculum planning because it makes planning the place where pedagogical intent is expressed and where decisions about how to employ technology are initially made (Bruner, 1996).

Additional emphasis is placed on socio-cultural perspectives, and how technology use is shaped by context, norms and professional practice rather than by tools alone. Drawing on Vygotsky's socio-cultural theory, learning is understood as mediated by cultural tools and social interaction, with technology functioning as one such mediational means (Vygotsky, 1978). From this point of view, technology integration during planning involves anticipating how tools will mediate learning activity, participation and interaction, rather than simply selecting digital tools.

Further reinforcing this reconceptualization is research emerging from large scale technology initiatives and more recently from the COVID-19 pandemic. Studies examining emergency remote teaching found that widespread technology implementations did not automatically result in pedagogical transformation. In fact, many teachers used traditional instructional practises in digital formats such as online lectures or digital worksheets (Tondeur et al., 2021). This suggest that access and necessity alone are not enough to change practice. What does play a decisive role is how teachers conceptualise technology during planning.

It must be noted that conceptualizations of technology integration are not formed in isolation. Teachers' understandings are formed by professional discourse, school requirements

and dominant narratives about innovation and effectiveness. (Selwyn, 2016) suggests that non-critical or instrumental narratives of technology can lead to unclear questions of purpose and pedagogy, resulting in superficial technology integration. By exploring these conceptualizations allows researchers to move past questions of whether technology is used to interrogate ‘why’ and ‘how’ it is rooted in planning.

Because of this, examining conceptualizations is particularly relevant in International School contexts where global discourses of innovation, digital know-how and 21st century skills often intertwine with local expectancies and institutional constraints. Teachers in these environments may encounter competing messages about the purpose of technology, shaping their planning decisions in turn. And by improving our understanding of these conceptualizations, a vital foundation is formed for clarifying active learning as an orienting pedagogical aim, and for exploring how teachers interact with specific frameworks and models of integration during planning.

2.3. Active learning as an orienting construct

As this study focuses on how technology integration in planning is used to support active learning, it is important to provide a clear description on what is meant by active learning and why it matters as a planning aim. Active learning is usually defined in contrast to passive reception, i.e. students are expected to do more than listen or follow instructions, and rather engage in activities and dialogue designed to support meaning-making (Prince, 2004). Evidence from STEM and related fields suggest that active learning approaches are associated with increased academic achievements and decreased failure rates when compared with traditional lecture-based instruction (Freeman et al., 2014).

It must be emphasised that ‘active’ does not simply mean ‘busy’. Accounts from ongoing observations distinguish between different levels of cognitive engagement, suggesting that learning outcomes improve as students move from passive participation towards active, constructive and interactive engagement with ideas (Chi & Wylie, 2014). This is an important distinction for curriculum planning because teachers may plan technology use that is highly visible (e.g. digital worksheets) without automatically increasing cognitive engagement. And by viewing active learning as an orienting construct, it allows teachers to not only analyse which tools are used in planning, but how they can anticipate learner activity, interaction and understanding when technology is involved.

2.4. Frameworks Guiding Technology Integration in Planning

While teachers' understandings of technology integration are shaped by conceptualisations, frameworks, and models, they also offer concrete structures for operationalising these ideas during curriculum planning. Widely used in professional development, school policy and planning documentation, frameworks like TPACK and SAMR support teachers' queries regarding technology use. It's then safe to assume that exploring these frameworks is crucial for understanding how abstract integration concepts translate into practical planning decisions.

Koehler's (Mishra & Koehler, 2006) Technological Pedagogical Content Knowledge (TPACK) framework conceptualises effective technology integration as the intersection of technological, pedagogical, and content knowledge (See - Reproduced by permission of the publisher, © 2012 by tpack.org). Rather than viewing technology as an add-on, TPACK emphasises that meaningful integration involves teachers considering how digital tools interact with subjects and teaching approaches. This perspective is particularly important for curriculum planning, as it shifts the focus from technical selection to pedagogical reasoning.

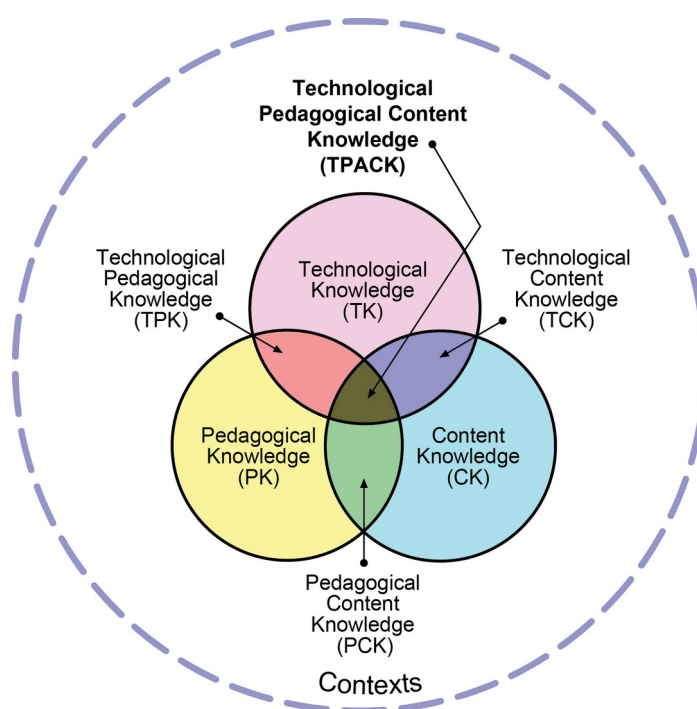


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Further studies on the TPACK framework shows that teachers who proficiently mix these knowledge domains are more likely to foster learning experiences that promote inquiry, collaboration, and higher-order thinking (Ertmer & Ottenbreit-Leftwich, 2019). It also

suggests that TPACK is usually understood in different ways when it is practised. Furthermore, professional development often focuses on improving teachers' technological knowledge on its own, rather than helping them plan how to use technology with content and education methods. This could possibly result in planning that uses technology without changing the way people learn.

Instead of requiring specific methods, TPACK provides educators with a conceptual framework through which they can evaluate their planning. Teachers' beliefs, self-assurance, and the environment in which they operate all influence how effective it is. The integrative potential of TPACK might go mostly unrealised in the absence of sufficient time, autonomy, or institutional support. It is therefore a good idea that teachers should not only consider the framework, but also how they will apply it in practical planning scenarios.

The SAMR model developed by (Puentedura, 2010) offers a unique but complementary viewpoint. It sorts the use of technology into four categories: (1) substitution, (2) augmentation, (3) modification and (4) substitution. This sequence frequently signifies a shift from improvement to transformation. SAMR is a reflective tool used in curriculum planning to evaluate how technology changes the nature of learning tasks.

The SAMR model

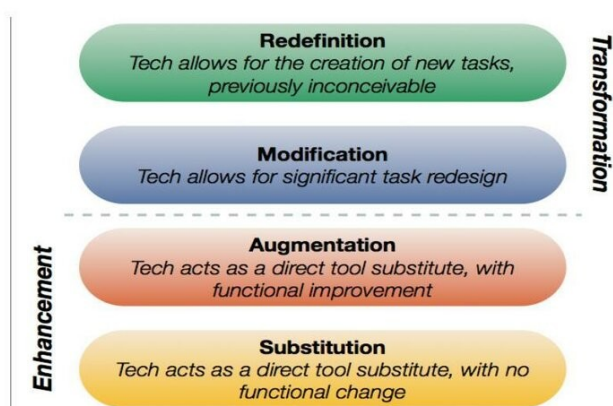


Figure 2 - SAMR Model (Puentedura, 2010)

The accessibility and simplicity of SAMR makes it appealing, resulting in a popular school framework (Puentedura, 2010). But research on SAMR pointed out that teachers' planning rarely progresses beyond the substitution or augmentation levels, digitising existing tasks rather than nurturing new learning (Phonphitak & Teo, 2024). This should not be assumed

to be a lack of pedagogical awareness, but rather limitations like curriculum coverage assessment requirements and available planning time.

The SAMR model also received some critiques, implying that its hierarchical structure oversimplifies complex pedagogical decision-making while promoting a linear view of ‘better’ integration (Hamilton et al., 2016). When considered from a planning perspective, this is an important critique, as teachers may feel pressure to pursue transformation for its own sake rather than focusing on pedagogical alignment. As with TPACK, SAMR’s effectiveness as a planning tool depends on how it is interpreted and enacted within specific institutional contexts.

Although frameworks like TPACK and SAMR improve understandings of technology integration in education, it is essential to recognise that these models are not without flaws; they depend on educators’ personal values, professional judgement, and the distinct attributes of their educational contexts. While frameworks encourage reflective planning, they may regress into simple checklists or compliance instruments due to institutional pressures.

So, to understand how teachers use these frameworks when planning curricula, it becomes crucial to look beyond the frameworks themselves and consider the professional judgements and contextual factors that influence their use. This serves as justification for the next section, which looks at how teacher agency, beliefs, and confidence affect technology integration during planning.

2.5. Teacher Beliefs, Confidence and Agency in Planning

Although frameworks such as TPACK and SAMR offer ways to conceptualise technology integration, research consistently shows that teachers’ beliefs and sense of professional agency strongly influence how such frameworks are interpreted and enacted in curriculum planning. Planning is a site of professional judgement in which teachers weigh pedagogical values, learner needs, and contextual constraints, meaning technology decisions cannot be explained by access to tools alone.

Teachers’ beliefs about teaching and learning influence whether technology is planned for as a means of supporting more profound learning or primarily as a tool for delivery and efficiency. Teachers whose beliefs are more rooted in constructivist, student-centred approaches are more likely to plan inquiry-based, collaborative, and technology-enhanced learning experiences, whereas those with more transmissive beliefs tend to align with more

limited uses of technology (Ertmer & Ottenbreit-Leftwich, 2019). These beliefs tend to be implicit and can result in diverse planning decisions, even among teachers with similar resources.

Agency is closely connected to these beliefs. When teachers experience autonomy and professional trust, they are more likely to experiment and integrate technology thoughtfully during planning; if autonomy is limited by prescriptive curricula or rigid assessment expectations, planning may favour safer and more familiar approaches (Hammond & Manfra, 2020). In addition, it must be noted that confidence also matters, but not simply as a function of experience. Even experienced teachers may resist technology integration if it conflicts with deeply held beliefs or if they consider that the support they receive from their institutions is less than ideal (Ertmer & Ottenbreit-Leftwich, 2019). Therefore, agency is best understood as contextual and enacted within the structural conditions that shape what is feasible in planning.

This perspective is especially relevant in international schools, where teachers may negotiate unfamiliar curricula and culturally diverse expectations. Emphasising beliefs, agency, and judgement avoids deficit explanations and instead frames technology integration as a situated professional practice. It also provides a bridge to the next strand of the review, which examines how institutional and cultural contexts further shape the conditions under which teachers plan for technology integration.

2.6. Institutional and Organisational Conditions Shaping Planning

While overall technology integration during curriculum planning is shaped by teacher beliefs and agency, these decisions are highly influenced by institutional conditions that allows, limits or redirects professional judgement. Therefore, it's safe to say that technology integration isn't solely influenced at the level of individual teachers, but also by school structures leadership practises and organisational cultures that affects how planning is organised and valued (Hallinger & Lee, 2020)

Institutional expectations around curriculum coverage, assessment and accountability plays a big role in how planning takes place, especially when the curriculum is tightly prescribed or assessment driven. Teachers in these settings often find they have limited flexibility to integrate technology creatively, regardless of their individual pedagogical beliefs, and simply prioritise compliance and efficiency over experimentation (Hallinger & Lee, 2020).

Internal leadership practices are another influencing factor on planning. Unsurprisingly, supportive leadership has been linked directly to stronger collaborative planning cultures and more sustained technology integration. However, this support must be backed by encouraging other aides, such as protected planning time, relevant professional development and alignment between technology initiatives and curricular priorities (Chiu et al., 2022).

Additionally, organisational culture also implicates how technology integration becomes normalised in planning routines. Schools that tend to value collaboration, learning and shared reflection usually results in conditions in where teachers are more willing to experiment with digital tools and pedagogical approaches. In contrast, cultures with isolation and performance driven characteristics may discourage risk-taking and reinforce sticking to familiar routines (Tondeur et al., 2021). Another influencing factor is professional development, as one-off training that only focus on tool functionality is less likely to lead to meaningful change. In contrast, ongoing and collaborative learning, aligned with teachers' curriculum responsibilities is more likely to support meaningful integration (Ertmer & Ottenbreit-Leftwich, 2019).

Within International School context, these factors are particularly noticeable as schools often operate within hybrid governance arrangements and rely on global pedagogical discourses. And although innovation and digital competence is usually associated with the identity of international schools, teachers often experience pushback on their autonomy, usually linked to curriculum mandates, parental expectations and accountability pressures, demanding ongoing negotiation between global ideals and local realities (Hayden & Thompson, 2013). In conclusion, it becomes clear that planning decisions about technology are shaped not only by teacher intent, but by what is institutionally possible and professionally sustainable (Ertmer & Ottenbreit-Leftwich, 2019; Hallinger & Lee, 2020).

2.7. International Schools Culture and context

International schools can be placed into a unique educational context, as curriculum planning and technology integration are usually shaped by cultural, organisational and pedagogical influences. Instead of operating within a single national policy and cultural framework, many international schools draw on global curricula, teachers that are culturally diverse and multinational discourses of innovation and excellence. As a result, teachers planning practises are shaped by overlapping expectations that deserve specific attention (Hayden & Thompson, 2013).

One of the key features of international schools is how they engage with global curricular frameworks, including International Baccalaureate (IB), British and American programmes, placing strong emphasis on inquiry, learner-centred pedagogy and international-mindedness. These orientations are often considered advantageous, conceptually aligning with technology-enhanced learning, increasing the importance of digital tools as vital supports for collaboration, inquiry and personalisation (Hayden & Thompson, 2013). However, how many of these orientations translates into everyday planning varies significantly across schools (Hayden & Thompson, 2013).

Because international schools often employ teachers and supporting staff from multiple countries, they are branded as culturally diverse teaching communities. And while this diversity can be highly beneficial, it can also result in differing assumptions about planning routines, teacher autonomy and appropriate technology use being generated. The prior experiences and culturally shaped expectations that these teachers contribute can also influence how they assess curricular demands and planning styles within these settings, leading to planning that may reflect ongoing negotiation instead of shared pedagogical consensus (Kessels & Zander, 2022).

Additionally, language and communication are also considered to be factors that shape planning. Even when English is used as the main language of instruction, staff may draw on their own linguistic repertoires and culturally shaped ways of communicating, which can influence how planning documents, digital platforms, and professional learning messages are interpreted and enacted (Dearden, 2014; Taguchi, 2014; Tang, 2020). Although shared digital systems and templates can support coherence across diverse staff groups, they can also add complexity to planning expectations when terminology, assumptions, and norms are not mutually understood or consistently supported (Dearden, 2014; Tang, 2020).

Furthermore, international schools are often linked to discourses of innovation and technological advancement, particularly in competitive education markets. Digital technologies may be presented as signs of quality, modernity, and future readiness, which can encourage investment in platforms and infrastructure. However, these narratives can also lead to pressures for teachers to show visible technology use, even if the educational benefit is not clear (Selwyn, 2016). For this reason, it is important to examine how stories about new ideas and progress influence professional judgement during curriculum planning (Selwyn, 2016).

Other factors that shape planning contexts include governance and leadership structures. Most of the time, international schools are private or semi-autonomous institutions, which means they must balance educational values with what parents want and what the market wants. These factors can affect decisions about the curriculum, how students are tested, and how teachers see the risks of trying new teaching methods. This, in turn, affects how teachers plan and how they use technology (Hallinger & Lee, 2020).

Lastly, note that international schools differ in ownership, accreditation, student types, and location. This makes planning very different. All these factors can have a big influence on the planning methods that these groups use. Still, (Hayden & Thompson, 2013) argue that international schools are often considered cultural hybrid spaces that use and interact with global pedagogical ideals while also changing them to fit the needs of local institutions. Recognising the hybrid nature of international schools helps to justify the current study's focus on international schools in Thailand, where global curricula meet local cultural norms and organisational conditions. The current study's focus on international schools in Thailand, where global curricula meet local cultural norms and organisational conditions. It's important to know how different cultures and ways of doing things affect each other.

2.8. Synthesis and Conceptual Framework

The literature reviewed in this chapter suggests that technology integration in curriculum planning is neither singular nor linear. Rather, it can be understood as a professionally mediated practice shaped by multiple, interacting influences. Across the six preceding sections, four interrelated strands emerge that are especially significant for explaining how teachers integrate digital technology during planning: (1) conceptualisations of technology integration, (2) the use of guiding frameworks, (3) teacher beliefs and agency, and (4) institutional and cultural conditions. In addition, the discussion of international school culture adds another layer of contextualisation by indicating how these strands may intersect and intensify within a distinctive educational environment (Hayden & Thompson, 2013; Selwyn, 2016).

Taken together, the literature suggests that teachers' conceptualisations of technology integration form an important foundation for planning decisions. How technology is understood—whether primarily as a means of efficiency, engagement, or pedagogical transformation—appears to shape the intentions that underpin planning and the criteria by which choices are evaluated. In this respect, integration may be better understood as beginning with meaning-making rather than with tool selection, since teachers' interpretations of both

curricular expectations and wider professional discourse are likely to be filtered through these conceptual orientations (Ertmer & Ottenbreit-Leftwich, 2019; Selwyn, 2016).

Within these conceptualisations, frameworks such as TPACK and SAMR are commonly presented as heuristics that can support teachers' thinking, rather than as prescriptive solutions. The literature implies, however, that the practical influence of such frameworks depends on how they are interpreted and enacted in situated contexts. On the one hand, they may provide useful language and structure for reflective planning; on the other hand, they may be reduced to mechanisms of compliance when institutional pressures become dominant, thereby narrowing rather than expanding pedagogical deliberation (Hamilton et al., 2016; Mishra & Koehler, 2006).

Teacher beliefs, agency, and professional judgement can be understood as central mediating influences between teachers' conceptual understandings and the practical demands of everyday planning. In practice, teachers rarely enact technology integration as a simple or purely technical task; rather, they appear to weigh pedagogical commitments, learners' needs, and constraints of time, resources, and feasibility, exercising agency within the affordances and limits of their institutional settings. On this basis, the literature suggests that technology integration is unlikely to be explained adequately through access or competence alone and is more plausibly framed as a form of professional decision-making shaped by confidence, autonomy, and accumulated experience (Hammond & Manfra, 2020).

At the same time, institutional and organisational conditions help determine what is possible—and what is prioritised—during curriculum planning. Leadership practices, planning structures, professional development models, and assessment regimes may variously encourage, constrain, or normalise forms of technology use. Importantly, these conditions do not operate independently of teachers' professional judgement; rather, they appear to interact dynamically with agency, reinforcing the view that planning practices are situated within systems of expectation and accountability, rather than enacted in isolation (Chiu et al., 2022; Hallinger & Lee, 2020).

Finally, the literature addressing international school culture suggests that these dynamics may be intensified in transnational settings. International schools can be understood as culturally hybrid organisations in which global curricular ideals intersect with local expectations, market pressures, and diverse professional backgrounds (Hayden & Thompson, 2013). Consequently, technology integration during planning in such contexts may reflect

ongoing negotiation between innovation narratives and practical realities, including the performative demands associated with being seen to be ‘modern’ or ‘future-ready’.

Drawing on this synthesis, the conceptual framework guiding the present study positions curriculum planning as the central site of analysis and understands technology integration as shaped by the interaction of four interrelated dimensions: teachers’ conceptualisations of integration, their competence and engagement with integration frameworks, their beliefs and agency, and the professional judgement along with the institutional and cultural contexts in which planning occurs. Rather than treating these dimensions as discrete variables, the framework conceptualises them as mutually influencing forces that condition how technology is selected, justified, and enacted in support of active learning. In this way, the framework provides the analytical lens through which the study’s data are interpreted, while also informing the design of the research instruments and the overall analysis strategy.

2.9. Conclusion: identifying gaps and positioning the study

This literature review has examined research relevant to understanding technology integration in curriculum planning, with particular attention to teacher agency, guiding frameworks, and contextual influences. While the existing literature provides helpful details about technology use in education, several gaps remain, particularly when planning is treated as a meaningful site of professional judgement rather than a preparatory step (Hammond & Manfra, 2020; Selwyn, 2016).

First, the literature continues to privilege what happens in the classroom and what learners achieve, with comparatively less attention paid to curriculum planning as a distinct phase of pedagogical decision-making. Yet planning is the point at which teachers formulate intentions, anticipate constraints, and interpret expectations in ways that shape what later becomes possible in enactment. In this context, planning serves as a crucial platform for converting curricular objectives into practical designs, while also allowing for professional judgement regarding feasibility and learner requirements (Ertmer & Ottenbreit-Leftwich, 2019; Hammond & Manfra, 2020). The relative lack of sustained empirical focus on this phase therefore represents an important limitation within the current evidence base (Selwyn, 2016).

Second, while integration frameworks such as TPACK and SAMR are frequently mentioned, there is little empirical research into how teachers use these models during planning, particularly when designing for active learning. Although these frameworks may

offer a shared lexicon and an intuitive framework for reflection, their efficacy cannot be presumed. Rather, the literature suggests that teachers should investigate how they interpret, adapt, selectively apply, or resist frameworks in the context of curriculum design and institutional expectations (Hamilton et al., 2016; Mishra & Koehler, 2006)

Third, while teacher beliefs and agency are well established within the literature as influential factors in technology integration, fewer studies examine how these factors interact with institutional and cultural conditions specifically during curriculum planning. Where context is addressed, it is often treated as background rather than as a dynamic set of pressures and affordances that shape what teachers perceive as legitimate, feasible, or worth pursuing. This factor is significant because organisational routines, leadership expectations, and accountability structures may amplify or constrain professional agencies in ways that directly affect planning decisions (Chiu et al., 2022; Ertmer & Ottenbreit-Leftwich, 2019; Hallinger & Lee, 2020). Such interactions appear particularly underexplored in international school settings, where hybrid governance arrangements and global pedagogical discourses may intensify expectations for innovation and visible technology use (Hayden & Thompson, 2013; Selwyn, 2016).

Finally, research focusing specifically on international schools in Southeast Asia, and Thailand in particular, remains relatively limited. Given the continued expansion of international schooling across the region and the prominence of digital innovation narratives in these settings, there is a clear need for contextually grounded research that examines how teachers plan to use technology within the organisational and cultural realities of such schools (Hallinger & Lee, 2020; Hayden & Thompson, 2013)

To address these needs, this study explores how teachers in Thai international schools choose to incorporate digital technology into their curriculum planning to meaningfully support active learning. By selecting a pragmatic mixed-methods approach and concentrating on curriculum planning as a site of professional judgement, the study seeks to contribute empirically and conceptually to ongoing debates about technology integration, teacher agency, and contextually situated pedagogy (Hallinger & Lee, 2020; Hammond & Manfra, 2020). The following chapter will offer a comprehensive account of the methodologies employed to achieve these objectives, encompassing data collection protocols and analytical strategies.

Chapter 3: Methodology

3.1. Overview and methodological rationale

This chapter sets out the methodological approach used to investigate how teachers in international schools in Thailand integrate digital technology into curriculum planning in support of active learning. The focus is twofold: first, to describe patterns in teachers' reported planning practices; and second, to examine the pedagogical reasoning, contextual constraints, and professional judgements through which those practices are shaped. Because curriculum planning is influenced by interacting beliefs, institutional structures, and cultural expectations, it is unlikely that any single method could capture the phenomenon adequately (Hallinger & Lee, 2020; Hammond & Manfra, 2020).

A mixed-methods approach was chosen to capture both the breadth and depth needed to understand the phenomenon. Mixed-methods designs are widely used in educational research because teaching and learning involve intertwined cognitive, social, and organisational factors, and different types of evidence can shed light on complementary aspects of the same issue (Johnson & Onwuegbuzie, 2004). In this study, the quantitative data helped identify broad patterns in planning practices and perceived constraints, while the qualitative data offered a closer look at how teachers interpreted and enacted technology integration within their specific contexts (Creswell, 2014).

The study is guided by a pragmatic research paradigm, which prioritises the practical value of research outcomes over adhering to a single epistemological position (Morgan, 2007). From this perspective, methods are chosen on the basis of what best addresses the research questions, an orientation frequently presented as appropriate for applied educational research seeking findings that are both theoretically informed and professionally relevant (Creswell, 2014; Morgan, 2007).

A sequential explanatory mixed-methods design was employed, comprising an online questionnaire followed by semi-structured interviews. This design supports the transition from description to explanation by using qualitative accounts to elaborate and contextualise the patterns identified in the survey (Creswell, 2014; Ivankova et al., 2006 2006). In total, 20 teachers completed the questionnaire, and seven volunteers participated in follow-up interviews. Using multiple sources also supported methodological triangulation by enabling

convergence and divergence to be examined across survey and interview accounts (Denzin, 2012; Greene et al., 1989 1989). This fact is particularly relevant given the study's reliance on self-reported accounts and its focus on professional decision-making processes that are not directly observable (Denzin, 2012).

The chapter proceeds by detailing the research paradigm and design, followed by participant selection and sampling, data collection instruments, and analytical procedures. Ethical considerations and methodological limitations are then addressed to support transparency and trustworthiness (Creswell, 2014).

3.2. Research paradigm

This study is situated within a pragmatic research paradigm, which provides a coherent rationale for adopting a mixed-methods approach. Pragmatism primarily focuses on the practical implications of inquiry and the utility of research findings, rather than on settling theoretical disputes regarding the essence of reality or knowledge (Morgan, 2007). In educational research, where inquiry frequently seeks to enhance and inform practice, this orientation is often regarded as especially suitable (Creswell, 2014; Creswell & Plano Clark, 2018).

Curriculum planning can be understood as shaped by multiple interacting influences, including teachers' pedagogical beliefs, institutional expectations, policy constraints, and cultural norms. Such complexity is difficult to capture through a single epistemological stance. A strongly positivist approach may prioritise measurable variables and risk overlooking the meanings teachers attach to planning decisions, whereas a purely interpretivist approach may offer rich accounts of experience while providing more limited insight into broader patterns across contexts. Pragmatism supports drawing selectively on both perspectives by encouraging methods that are driven by the research questions rather than by strict allegiance to a single philosophical position (Johnson & Onwuegbuzie, 2004; Morgan, 2007).

Adopting pragmatism also aligns with the study's emphasis on what works in practice. Rather than seeking universal truths about technology integration, the research aims to generate contextually grounded insights into how teachers in international schools in Thailand plan for digital technology in ways intended to support active learning. From this perspective,

knowledge is treated as provisional and situated, valued for its capacity to inform professional understanding and action rather than claims of objective generalisation (Creswell & Plano Clark, 2018; Morgan, 2007).

Pragmatism therefore provides a clear rationale for combining quantitative and qualitative data. Quantitative methods were employed to discern patterns in reported planning practices, perceived constraints, and types of support, whereas qualitative methods facilitated a more profound examination of the reasoning, interpretations, and contextual factors that generated those patterns. Within a pragmatic approach, these forms of evidence are treated as complementary rather than competing (Creswell, 2014; Johnson & Onwuegbuzie, 2004).

3.3. Research design

This study adopted a sequential explanatory mixed-methods design comprising two connected phases: an online questionnaire followed by semi-structured interviews. The design was selected to support a progression from identifying broad patterns in teachers' curriculum planning practices to developing a deeper, more contextualised understanding of the reasoning and conditions that appeared to underlie those patterns (Creswell & Plano Clark, 2018; Ivankova et al., 2006). Sequential explanatory designs are widely used where the research aim extends beyond description to explanation and where the phenomenon under investigation is shaped by contextual variation that cannot be captured fully through a single method (Creswell & Plano Clark, 2018).

The study begins with the idea that curriculum planning unfolds both through collaborative practices and personal ways teachers make sense of their work. The questionnaire phase provided a broad picture of how teachers across international schools in Thailand conceptualised and reported the integration of digital technology, while the interview phase allowed a closer look at how teachers understood and justified their planning decisions within their own institutional and cultural contexts (See Table 1 - Research Design Overview). This approach is in parallel with the pragmatic paradigm guiding the study, in which methodological choices are selected for their practical value in addressing the research questions effectively (Johnson & Onwuegbuzie, 2004; Morgan, 2007).

Strand / phase	Data and	Analysis and connection to next phase
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	participants	
Phase 1: Questionnaire (quantitative)	Online questionnaire; n = 20 teachers	Descriptive statistics (frequencies/percentages). Outputs identify priority areas for qualitative follow-up and inform the interview focus.
Phase 2: Interviews (qualitative)	Semi-structured interviews; n = 7 teachers	Thematic analysis (coding → themes). Themes explain and contextualise Phase 1 patterns.
Integration (mixed- methods inference)	Joint interpretation of both datasets	Side-by-side comparison and explanation building to generate integrated claims addressing the research question.

Table 1 - Research Design Overview

3.4. Phase 1: Questionnaire design and rationale

The first step of the data-collecting process was to send an online survey to teachers that work in international schools within Thailand. The questionnaire was designed to serve two complementary purposes: first, to map reported patterns of technology integration during curriculum planning; and second, to capture teachers' interpretations of active learning and planning practices. This combination reflects mixed-methods survey approaches in which closed items support comparability across participants and open-ended prompts provide interpretive detail (Creswell, 2014; Johnson & Onwuegbuzie, 2004).

The questionnaire was organised into six sections, aligning with the research goals and conceptual threads developed in the literature review. The opening section collected contextual information on participants' teaching roles, curriculum frameworks, and professional experience. This information was included to situate responses and enable descriptive comparisons across contexts, without placing these variables as causal predictors.

A section on understandings of active learning was included to capture teachers' working definitions and pedagogical orientations. Rather than assume a shared theoretical definition, this section proceeds with the view that planning decisions are shaped by how teachers conceptualise learning and what they consider legitimate indicators of active learning. Combining open-ended prompts with strategy-based checklists enabled participants to

articulate their views while also indicating common practices, supporting both qualitative insight and descriptive comparison (Creswell, 2014).

The curriculum planning practices section focused on perceived autonomy, stages of planning at which technology was considered, and institutional expectations. This section was included to maintain the study's focus on planning as a design phase and to examine when and where technology entered teachers' decision-making, rather than simply whether it was used. Structured options facilitated pattern recognition among participants, whereas open-ended prompts enabled participants to elaborate on contextual subtleties and limitations (Ivankova et al., 2006).

The digital technology use section examined the tools and platforms teachers reported using during planning and the purposes these served in relation to active learning. This section was informed by the integration frameworks discussed in the literature review, supporting conceptual alignment between theory and data collection. Items were framed to elicit pedagogical purpose and planning intent rather than technical proficiency, consistent with the study's emphasis on deliberate design choices rather than tool adoption (Hamilton et al., 2016; Mishra & Koehler, 2006).

The benefits and challenges section addressed perceived affordances and constraints associated with integrating digital technology during planning. Including this section enabled analysis of enabling and limiting conditions at both individual and institutional levels, which is central to explaining variation across contexts (Chiu et al., 2022; Hallinger & Lee, 2020). The closing section invited broader reflection on conditions that might support effective integration and offered participants the opportunity to volunteer for a follow-up interview, providing continuity between phases.

Administering the questionnaire online was methodologically appropriate given the geographical dispersion of international schools across Thailand and the time constraints associated with teachers' professional roles. An online format also supported accessibility and consistency of delivery, while planning enabled participation across multiple sites (Creswell, 2014).

3.5. Phase 2: Interview design and rationale

The second phase of data collection consisted of semi-structured interviews that questionnaire respondents could volunteer to participate in. This phase was designed to build

on the questionnaire findings by examining curriculum planning practices in greater depth, with particular attention to decision-making processes, contextual constraints, and professional judgement. Semi-structured interviews were selected because they offer a balance between comparability across participants and flexibility to pursue context-specific detail, which is valuable when investigating professional reasoning and situated practice (Creswell, 2014).

The interview guide was divided into three sections. First, warm-up questions established context and rapport, enabling participants to describe their roles and prior experiences with technology in ways that supported interpretive framing. Second, core questions addressed planning processes, points at which technology was considered, conceptualisations of active learning, and concrete examples of technology-related planning decisions. Questions were structured to obtain detailed accounts of practice instead of general assessments, minimising dependence on idealised narratives and enhancing analytical rigour (Ivankova et al., 2006). Third, a closing section invited reflection on constraints, unmet aspirations, and suggestions for schools or colleagues, aligning with the pragmatic orientation of the study and its interest in practice-relevant implications (Morgan, 2007).

Interviews were conducted online to accommodate participants' locations and schedules and to reflect the digital emphasis of the study. Each interview lasted about 30 to 45 minutes, which was thought to be enough time to go into detail about planning practices without taking up too much of the participants' time. Interviews were audio-recorded with consent and transcribed verbatim to support systematic qualitative analysis (Creswell, 2014).

3.6. Integration Strategy

Integration took place during both design and analytical stages. During the design phase, the results of the questionnaire were used to determine common themes, tensions, and areas of variation. It also helped shape the focus and depth of the interviews. For instance, patterns concerning planning autonomy, institutional expectations, and perceived support were further examined during interviews to elucidate how these factors influenced decision-making in practice (Creswell & Plano Clark, 2018; Ivankova et al., 2006).

During analysis, a strong focus was placed on using a shared conceptual framework to bring the two strands together and make sense of them in a coherent way. The same themes were used to simplify the process of comparing the survey data and interview transcripts and finding patterns where they supported or challenged each other. By following this approach, it

made sure that qualitative insights were not treated as standalone anecdotes but understood within the broader scope of this study (Creswell & Plano Clark, 2018).

Integration was made explicit through the development of mixed-methods meta-inferences, with patterns and explanations compared for convergence, expansion, and divergence. In line with mixed-methods guidance, joint displays were used to make the basis of interpretation transparent and to link descriptive results with explanatory accounts (Fetters et al., 2013 2013; Guetterman et al., 2015 2015). And when discrepancies appeared, the interview data was used to clarify the contextual factors—such as infrastructure reliability or school-wide expectations for platform use—that shaped what was feasible, rather than treating the inconsistencies as errors (Fetters et al., 2013).

Overall, the sequential explanatory design supports methodological coherence by aligning paradigm, instruments, and analytical strategy. It allows the study to look at both the breadth and depth of technology integration during planning and provides the findings in the next chapters a solid base (Creswell & Plano Clark, 2018; Ivankova et al., 2006).

3.7. Participants and sampling

This study focused on teachers working in international schools across Thailand, as this context provides a relevant setting for examining technology integration during curriculum planning. International schools are more often than not described as organisationally and culturally hybrid spaces, where global curricular frameworks are used in practice alongside local expectations and institutional priorities (Hayden & Thompson, 2013). These environments may also involve distinctive governance and accountability pressures that shape professional practice, including planning routines and the perceived legitimacy of innovation (Hallinger & Lee, 2020).

The individuals who participated practiced in a wide range of curricula, including British, American, International Baccalaureate, and other international systems, and represented early years, primary, and secondary phases across multiple subject areas (See Table 2 - Participant Profiles). This breadth was intentional: the study conceptualises curriculum planning as a professional practice that can be examined across subjects and phases while remaining sensitive to contextual variation (Creswell, 2014). In this sense, participant diversity was used to support analytical comparison across differing planning conditions rather than to isolate curriculum type as a causal factor.

Profile dimension	Category	n (%)
Curriculum followed	American Curriculum	13 (65%)
	British Curriculum	5 (25%)
	IB	2 (10%)
Primary teaching level	Primary / Elementary	8 (40%)
	Early Years / Kindergarten	7 (35%)
	Mixed levels	4 (20%)
	Secondary / High School	1 (5%)
Years teaching in international schools	Less than 2 years	2 (10%)
	2–5 years	8 (40%)
	6–10 years	5 (25%)
	More than 10 years	5 (25%)
Subjects taught	Mathematics	9 (45%)
	English / Literacy	8 (40%)
	Social Studies / Inquiry	7 (35%)
	Science	6 (30%)
	Specialist (PE/Music/Art)	4 (20%)
	Other / Not specified	4 (20%)
	Homeroom / Generalist	3 (15%)
	ESL / EAL	2 (10%)

Table 2 - Participant Profiles

In total, 20 teachers completed the questionnaire, providing breadth across school contexts. Seven teachers subsequently participated in follow-up interviews, enabling more detailed exploration of planning routines, pedagogical rationales, and perceived constraints. This combination of breadth and depth is consistent with sequential explanatory mixed-method designs, in which qualitative follow-up is used to contextualise and explain quantitative patterns (Creswell & Plano Clark, 2018).

A non-probability sampling strategy was employed based on its practical and methodological nature, combining convenience and snowball sampling. And as there is no comprehensive, publicly accessible sampling frame of teachers at international schools within Thailand, probability sampling was impossible. Recruitment therefore relied on professional networks and participant referrals (Creswell, 2014; Goodman, 1961). Convenience sampling supported initial access to eligible participants, while snowball sampling extended reach across schools and regions through referral pathways (Noy, 2008).

This sampling strategy is in line with the study's goals of being exploratory and practice focused. The main goal was to access an information-rich sample capable of supporting an analytical explanation of how teachers conceptualise and enact technology integration during planning, rather than generate statistically representative estimates (Creswell & Plano Clark, 2018; Patton, 2015). And even if the approach limits statistical generalisability, it can support analytical transferability when adequate contextual detail is provided to enable readers to judge the likely relevance of findings to other settings (Lincoln, 1985).

The researcher's professional background as a teacher at an international school also shaped recruitment and data generation. This likely removed some roadblocks related to gaining access to networks and supported rapport, but it also required reflexive attention to avoid making assumptions or over-identifying with participants' perspectives (Berger, 2015; Finlay, 2002). Therefore, reflexive practices were employed throughout the study to support transparent interpretations and maintain analytical rigour.

In summary, participant selection and sampling were designed to balance practical constraints with methodological coherence. By limiting the focus to international school teachers across Thailand and employing convenience and snowball sampling methods, the study obtained a diverse and information-rich sample that aligned with its aims while also making explicit the limitations inherent in nonprobability recruitment (Creswell, 2014; Patton, 2015).

3.7.1. Data collection instruments and justification

To collect data for this study, two collection instruments were chosen: an online questionnaire and a semi-structured interview guide. Using multiple instruments helps to reflect the logic of sequential explanatory mixed-methods research, where quantitative data are used to map patterns and qualitative data are used to explain how those patterns are produced and interpreted in context (Creswell & Plano Clark, 2018; Johnson & Onwuegbuzie, 2004). Taken together, the instruments were designed to support a comprehensive and context-sensitive account of curriculum planning practices while remaining coherent with the study's pragmatic orientation (Morgan, 2007).

3.7.2. Questionnaire

For Phase 1: Questionnaire design and rationale of the data collection process, the questionnaire was used due to its suitability for reaching a geographically dispersed group of teachers, as well as for maintaining consistency in question administration across contexts

(Creswell, 2014). The questionnaire used a combination of closed-ended items (multiple-choice and Likert-type questions, with the goal to identify patterns relating to autonomy, stages of planning where technology was considered, perceived institutional support, and commonly reported constraints) with open-ended prompts allowing participants to articulate meanings, examples, and context-specific (Creswell, 2014; Johnson & Onwuegbuzie, 2004).

The questionnaire was structured to align with the research aims and conceptual framework. Background items were included to contextualise responses rather than serve as explanatory variables. Items concerning active learning and planning revolved around pedagogical orientation and decision-making, while questions about digital tools were framed to elicit pedagogical purposes and plan intent rather than technical proficiency, consistent with literature emphasising integration as professional reasoning rather than tool adoption (Ertmer & Ottenbreit-Leftwich, 2019; Selwyn, 2016).

The conceptual frameworks discussed in the literature review informed item development. The purpose for including TPACK and SAMR was to use them as sensitising concepts to support coverage of relevant domains and not as measurement tools (Hamilton et al., 2016; Mishra & Koehler, 2006). Online distribution was both practical and methodologically appropriate given participants' location and time constraints, and the invitation to volunteer for interviews supported continuity between phases (Creswell, 2014; Ivankova et al., 2006).

3.7.3. Semi-structured interview guide

The semi-structured interview guide was used in Phase 2 to explore curriculum planning practices in greater depth. Interviews were intended to examine how teachers made sense of planning decisions within institutional and cultural contexts and how they reasoned about technology integration in practice (Creswell & Plano Clark, 2018; Ivankova et al., 2006). By choosing the semi-structured format, it helped to make the interviews consistent while at the same time being flexible to explore context-specific examples and explanations (Creswell, 2014).

As in Section 3.2.2, the guide progressed from contextual warm-up questions to core prompts on planning processes, entry points for technology, conceptualisations of active learning, and concrete planning examples before concluding with reflections on constraints and practical recommendations. As with the questionnaires, interviews were conducted online

using Microsoft Teams, and audio was recorded with consent from the participants and transcribed verbatim to support systematic analysis (Creswell, 2014).

3.8. Data analysis

The data analysis was guided by the research aims, the pragmatic mixed-methods paradigm, and the self-explanatory design. Different but complementary analytic approaches were employed, selected for their suitability in addressing the research questions transparently rather than for methodological novelty (Creswell & Plano Clark, 2018; Morgan, 2007). Analysis proceeded in three stages: descriptive analysis of questionnaire data; thematic analysis of qualitative data from open-ended responses and interviews; and an integrative step producing meta-inferences linking reported practices to the reasoning and conditions shaping them (Creswell & Plano Clark, 2018; Fetters et al., 2013 2013).

3.8.1. Quantitative data analysis

The quantitative questionnaire data were analysed using descriptive statistics, including frequencies and percentages. Given the questionnaire's exploratory rather than predictive purpose, as well as the use of non-probability sampling, this approach was deemed the most methodologically appropriate, as any claims to statistical representativeness would be limited (Creswell, 2014; Creswell & Plano Clark, 2018). The planning stages were the focus of the analysis, which also looked at reported institutional support, perceived autonomy, frequently used tools and platforms, perceived benefits and challenges, and the integration of technology. Following completion of this analysis, it was then used to guide the interview phase by focusing on areas of convergence, variation, and tension that needed more investigation (Ivankova et al., 2006).

3.8.2. Qualitative data analysis

Qualitative data from open-ended questionnaire responses and interview transcripts was analysed using thematic analysis, following the staging approach outlined by Braun and Clarke (2006). This method was selected for its flexibility and its capacity to identify patterns of meaning across diverse qualitative data without imposing rigid assumptions (Braun & Clarke, 2006). The analysis involved familiarisation with the data, the generation of initial codes, the review and refinement of themes, and cross-source comparisons between questionnaires and interview accounts to examine consistency and differences (Braun & Clarke, 2006).

The inductive themes that emerged from participant accounts were incorporated into the coding process along with a framework that was in line with the conceptual strands and research questions. This helped the theoretical framework in this study to maintain a level of consistency throughout while also allowing for the discovery and analysis of unexpected problems (Braun & Clarke, 2006; Creswell, 2014). Integration took place at the interpretation stage, where quantitative patterns were elaborated using qualitative themes and descriptive results, and explanatory accounts were transparently linked through joint displays (Fetters et al., 2013; Guetterman et al., 2015).

To reduce the risks associated with insider positionality and strengthen transparency, I used reflexive memos throughout the analysis to record analytic choices and track how interpretations developed over time (Berger, 2015; Finlay, 2002).

3.9. Ethical considerations

Ethical approval was obtained through the University of Nottingham ethics process prior to data collection. Participation was voluntary. Participants received an information sheet outlining the purpose of the study, what participation would involve, how data would be used, and the steps taken to protect confidentiality. Informed consent was obtained for both the questionnaire and the analysis interview phases, and participants were reminded of their right to withdraw at any point without penalty, in accordance with established ethical guidance in educational research (British Educational Research, 2018).

Anonymity and confidentiality were key concerns given how small and interconnected international school communities can be. To ensure that the chances of any participant being identified are as low as possible, I removed all personal and institutional details from the datasets and used pseudonyms in transcripts and reporting. This aspect was especially important because participants often spoke about organisational practices and constraints that could be sensitive. In small professional communities, where people tend to know one another's roles and contexts, it isn't always simple to guarantee complete anonymity, even with careful masking (Hammersley & Traianou, 2012).

Data were stored securely using password protection and encryption, with access restricted to the researcher. Audio recordings were retained only for transcription and deleted once transcription accuracy had been confirmed, in line with data minimisation principles (British Educational Research, 2018). Given the researcher's professional role as a teacher at an

international school, recruitment materials emphasised the voluntariness of participation, and interviews were conducted in a non-evaluative manner to minimise any perceived pressure to participate. This approach reflects relational approaches to ethical practice, which emphasise that participation is experienced in context rather than focusing solely on formal consent procedures (Guillemin & Gillam, 2004).

3.10. Limitations and trustworthiness

As with all empirical research, this study has limitations that should be considered when interpreting the findings. Focusing on international schools in Thailand limits transfer to other national and sectoral contexts; however, this specificity was deliberate, given the study's aim to generate contextually grounded insight rather than universal claims (Lincoln, 1985).

By using non-probability sampling and relying on self-reported data, limitations are inevitably introduced. Teachers may recall their planning practices inaccurately or shape their accounts to align with professionally valued narratives, particularly in contexts where technology use signals quality and innovation (Fisher, 1993; Selwyn, 2016). For this reason, the study does not treat self-reports as direct evidence of practice. Instead, it views participants' responses as situated narratives that reveal how teachers interpret, justify, and position their planning decisions within the everyday conditions of their work (Creswell, 2014).

Trustworthiness was strengthened through methodological triangulation, drawing on both questionnaire and interview data, and through the use of a sequential explanatory design that allowed the qualitative accounts to contextualise and deepen the quantitative patterns (Creswell & Plano Clark, 2018; Denzin, 2012; Greene et al., 1989). Analytical transparency was supported by systematic coding, the use of a shared analytic framework, and reflexive memo-writing that documented key interpretive decisions. Because the researcher occupied an insider position, reflexivity played a central role in the process; this position made it easier to build rapport but also carried the risk of making assumptions or becoming overly aligned with participants (Berger, 2015; Finlay, 2002). Finally, rich contextual detail and voluntary participation strengthened the study's transferability by enabling readers to judge the relevance of the findings to comparable settings (Geertz, 1973; Lincoln, 1985).

3.11. Chapter summary

Overall, this chapter has given a comprehensive outline of the methodological approach used to investigate how teachers in international schools in Thailand integrate digital technology into curriculum planning to support active learning. And due to the pragmatic paradigm which this study is grounded in, it was decided that adopting a self-explanatory, mixed-methods design by combining an online questionnaire with follow-up semi-structured interviews would be preferred (Creswell & Plano Clark, 2018; Morgan, 2007). The chapter detailed the research design, sampling, instruments, and analysis and addressed ethical considerations, limitations, and strategies for ensuring trustworthiness while supporting transparency and rigour (British Educational Research, 2018; Lincoln, 1985). The following chapter presents the study's findings, organised in alignment with the analytical framework and themes established earlier.

Chapter 4: Findings

4.1. Chapter overview

This chapter presents the findings from the questionnaire (n = 20) and the follow-up semi-structured interviews (n = 7). The chapter moves from a broad description to a more contextual explanation. It begins by outlining questionnaire patterns related to where technology featured in teachers' planning, the purposes it served, and the constraints they reported. It then switches to interview themes that shed light on how planning was organised in practice and how teachers reasoned through their decisions around technology integration. The chapter closes with an integrative section that brings the two strands together, highlighting areas of convergence as well as the boundary conditions that shaped practice across different contexts.

4.2. Questionnaire findings

The questionnaire combined structured items with short open-ended prompts. Open-ended responses were coded using the study's analytic framework, allowing patterns to be compared consistently across participants. Overall, the results suggest that digital technology formed part of teachers' routine planning infrastructure at the lesson level but appeared less consistently in longer-term planning or assessment design.

4.2.1. Where technology enters planning

All participants reported using digital technology during lesson planning (20/20; 100%), indicating that digital tools were firmly embedded in everyday preparation (Table 3 - Where tech enters planning). In contrast, far fewer teachers described using technology as part of unit planning (4/20; 20%) or during resource and materials preparation as a distinct stage (6/20; 30%). Only one participant reported technology use within the assessment design (1/20; 5%), and long-term planning at the term or year level was rarely identified as a site of digital integration (1/20; 5%). Together, these patterns point to a concentration of technology use in short-cycle, lesson-specific planning, with limited extension into higher-level curriculum structures.

Planning stage	n	%
Long-term planning (term/year overview)	3	15%
Unit planning	7	35%
Lesson planning	7	35%
Assessment design	2	10%
I rarely use technology at any stage	1	5%

Table 3 - Where tech enters planning

4.2.2. Purposes technology use

Participants most often described technology as supporting the organization and structuring of planned work (10/20; 50%), such as coordinating materials, sequencing content, or storing resources. Collaboration and visualisation were also frequently cited (9/20; 45% each). A smaller group framed technology primarily in terms of efficiency or time-saving (5/20; 25%).

When asked specifically about planning for active learning, scaffolding and structure again emerged as the most frequently selected function (10/20; 50%). Collaboration (9/20; 45%), visualisation (8/20; 40%), and engagement (6/20; 30%) followed, with fewer references to differentiation (4/20; 20%) or efficiency (4/20; 20%). These patterns suggest that teachers tended to perceive technology as most valuable when it helped organise, provide support, or make learning processes visible.

4.2.3. Benefits and constraints

Responses regarding benefits were sometimes general or broad (8/20; 40%). When teachers were asked to describe specific mechanisms, they most often referenced improved efficiency or time savings (4/20; 20%), better organization (4/20; 20%), or increased confidence when using familiar tools (4/20; 20%). Only 2 out of 20 (10%) of the participants mentioned engagement, differentiation, or flexibility.

The constraints, by contrast, were described with a high level of detail and precision. Time and workload pressures were the most reported challenges (6/20; 30%), followed by cost or subscription barriers (5/20; 25%). Smaller proportions highlighted infrastructure limitations (2/20; 10%), pressure to integrate technology (2/20; 10%), limited training or support (2/20; 10%), reliability issues (2/20; 10%), access to devices (2/20; 10%), and constraints linked to school policy (1/20; 5%). In these responses, worries about feasibility came up more often and more clearly than benefits.

4.2.4. Active learning: definitions and enacted strategies

In their open-ended definitions, participants most often associated active learning with engagement and motivation (20/20; 100%). References to participation or “doing” were less common (7/20; 35%), and collaboration (3/20; 15%) and inquiry/problem-solving (1/20; 5%) were rare. Notably, no definitions included autonomy or student ownership (0/20; 0%).

When describing how they promoted active learning, participants most frequently pointed to collaborative tasks (14/20; 70%), followed by hands-on activities (11/20; 55%), discussion (8/20; 40%), inquiry activities (5/20; 25%), and student choice (3/20; 15%). Beliefs about whether technology supported active learning were broadly positive: most participants endorsed moderate (9/20; 45%) or strong (8/20; 40%) support, with only a small number reporting neutral (2/20; 10%) or limited support (1/20; 5%).

When asked to describe a technology-enhanced activity that worked well, teachers most often highlighted tasks involving student creation (8/20; 40%) and collaboration (6/20; 30%), with fewer referencing inquiry-based work (4/20; 20%). Importantly, none of these examples were coded as simple substitution (0/20; 0%). Instead, teachers typically described technology as adding functionality that would have been difficult to achieve otherwise—for example, supporting collaborative digital workspaces or enabling multimodal production.

4.3. Interview findings

The interviews were conducted to deepen and contextualise the questionnaire patterns. For clarity, the findings are presented as themes that capture recurring patterns in how participants described their curriculum planning processes, their technology use, and their approaches to designing for active learning. Across these themes, emphasis is placed on the conditions that enabled or constrained practice, rather than on treating technology integration as fixed or uniform.

4.3.1. Planning as structured and adaptive

Across interviews, teachers rarely described planning as an isolated or strictly linear process. Instead, they consistently portrayed it as structured by curriculum expectations, school routines, and shared planning practices such as year-level meetings, co-teaching arrangements, or the development of common resources. At the same time, they emphasised the need to remain responsive to learners’ needs, pacing, and classroom realities. This responsiveness

meant that planning decisions were often revisited and adjusted, suggesting that planning operated less as a one-off design task and more as an iterative, context-sensitive process.

4.3.2. Where technology entered planning and why

Teachers most commonly use technology during practical, construction-oriented stages of planning: sourcing materials, adapting resources, building visual supports, or preparing classroom artefacts. For some people, the way they used technology was mostly determined by the routines of their institutions. For example, the expectation to use shared drives or platform-based templates made digital tools a part of their daily work. For others, technology played a more strategic role, particularly when time pressure demanded rapid adaptation or when differentiation required quick adjustments to materials or task sequences. Across accounts, digital tools were described as most valuable when they helped teachers keep planning feasible within the constraints of daily work.

4.3.3. Tools, platforms, and criteria for ‘usefulness’

Participants mentioned a wide range of tools and platforms, but their descriptions tended to cluster around a small set of core functions: creating instructional materials, organising and retrieving resources, and communicating or collaborating with colleagues. Their criteria for determining whether a tool was “useful” were pragmatic and consistent. Tools were valued when they were time-efficient, adaptable, reliable, and compatible with existing school systems and classroom devices. In this sense, usefulness was defined less by technological sophistication and more by how well a tool fit into established routines and supported teachers’ workflow demands.

4.3.4. Working meanings of active learning

Across interviews, teachers tended to describe active learning in terms of meaningful student participation—doing, thinking, discussing, and making sense of content. This conception was often positioned against prolonged teacher-led talk. At the same time, teachers noted that active learning could look different across subject areas or year levels, suggesting that it functioned as a shared but flexible construct rather than a rigid method. In practice, they associated active learning with opportunities for interaction, exploration, and sense-making rather than with any single pedagogical technique.

4.3.5. Instances when technology supported or hindered active learning.

In general, the participants mostly viewed technology as beneficial for active learning when it enabled them to articulate ideas more vividly, engage students in interactive activities, or provide clearer explanations that aided learners in understanding complex concepts. However, they also shared instances where technology impeded active learning, particularly when tools caused distractions, disrupted the lesson's pace, or malfunctioned, thereby interrupting the flow of instruction. These experiences highlight a conditional view of technology's value: it was considered advantageous only when it was reliable, easily accessible, and used in ways that genuinely fostered meaningful participation rather than lead to passive involvement or off-task behaviour (See Table 4 - Constraints and enabling conditions).

Factor	Questionnaire: cited as a challenge (n=20)	Questionnaire: cited as an important condition (n=20)
Time / workload	8 (40%)	5 (25%)
Infrastructure / device access	6 (30%)	8 (40%)
Reliability / technical issues	6 (30%)	5 (25%)
Training / professional development	3 (15%)	12 (60%)
Pedagogical alignment (“fit for purpose”)	3 (15%)	6 (30%)
Budget / subscriptions	2 (10%)	1 (5%)
Policy / screen-time restrictions	2 (10%)	0 (0%)
Other (e.g., AI-quality concerns, distraction)	4 (20%) AI/quality; 1 (5%) distraction	0 (0%) AI/quality; 1 (5%) distraction

Table 4 - Constraints and enabling conditions

4.3.6. Adaptation and modification as routine

When participants responded to queries on routine modification, teachers frequently described technology-enhanced lessons as requiring real-time modification. Lesson adjustments were often caused by reliability issues, limited device availability, or unexpected time constraints. During these situations, teachers adapted by simplifying tasks, switching modalities, or resequencing activities to maintain lesson feasibility. Responses like this strongly reinforced the importance of practical conditions, suggesting that even when teachers valued technology, its sustained use depended on what could realistically be managed within a standard lesson period.

4.3.7. Benefits, constraints, and support conditions

When teachers talked about the benefits of technology, they were most sure of themselves when they could describe specific ways it helped, like how it increased student participation, how it improved understanding through multimodal representations, or how it made preparation and delivery easier for teachers. The challenges teachers described closely echoed those identified in the questionnaire. These included heavy workloads and limited time, unreliable infrastructure, high subscription costs, and inconsistent access to devices or technical support across classrooms. Views on professional development varied, but participants were clear that simply providing tools was not sufficient. Effective use, they argued, required timely technical assistance, clear and shared expectations, and opportunities to build confidence through sustained practice.

4.3.8. Future-oriented aspirations

When looking ahead, participants primarily hoped for smoother practical conditions—more reliable devices, better access, and fewer bottlenecks that disrupted or limited interactive or station-based work. Their reflections typically positioned technology as a supportive medium rather than a replacement for core instructional practices. Recommendations focused on improving the enabling conditions that would make technology-rich activities more feasible, rather than advocating for technology use for its own sake.

4.4. Mixed-methods integration

This section brings together the questionnaire and interview findings by identifying how the two strands converged, where the interviews added explanatory depth, and what boundary conditions shaped the patterns observed across the dataset. Taken together, the integrated findings provide a more complete picture of how teachers positioned technology within their planning and how contextual conditions influenced what was feasible in practice.

4.4.1. Convergence

Across both datasets, technology integration appeared most firmly rooted in lesson-level planning. Teachers consistently described using digital tools as part of day-to-day preparation while reporting far less integration in longer-term planning or assessment designs. The two strands also aligned in their portrayal of technology as generally supportive of active learning in principle, although this support varied depending on the context.

Constraints also showed strong convergence both ways. The main problems that came up in both the questionnaire and the interviews were not having enough time and work. People disliked the tools' reliability, the cost of licenses/subscriptions, and unequal device access. There was a lot of time when people didn't use technology the way it was meant to be used for teaching. Instead, they used it because they could.

4.4.2. Expansion

The interviews extended the questionnaire findings by illuminating how teachers navigated the practical demands of planning. The interviews revealed the mechanisms behind the broad patterns captured by the questionnaire, particularly the concentration of technology use at the lesson level. Teachers described lesson planning as the key site where they assembled resources, managed pacing, and made trade-offs in real time. These observations helped explain why technology use was most visible in short-cycle planning: this was the level where teachers had the most flexibility and the most immediate need for adaptable tools.

Interviews also expanded on reported constraints by showing how organisational coherence influenced confidence and uptake. Platform expectations, shared routines, and access to responsive support were described as shaping teachers' sense of what was possible. This study nuanced the questionnaire results by highlighting that individual competence alone did not determine technology use—collective structures and school-level conditions were equally influential.

4.4.3. Boundary conditions and nuance

Across both strands, teachers expressed generally positive beliefs about technology, but these views were consistently accompanied by important caveats. While they felt that technology had clear potential to support active learning, the interview accounts showed that this potential depended on a set of practical conditions—most notably reliability, access to devices, and alignment with purposeful forms of participation. These factors acted as boundary conditions, shaping the situations in which technology could genuinely enhance learning and those in which it was more likely to introduce distraction or disruption.

A further nuance emerged when comparing participants' definitions of active learning with their explanations of how technology supported it. While questionnaire definitions foregrounded engagement, the mechanisms described in interviews—such as improved representation, clearer explanation, or enhanced interaction—were more closely tied to

sense-making and pacing. This suggests that perceptions of active learning were sometimes broader than the specific pedagogical functions teachers attributed to technology.

4.5. Chapter summary

Overall, the findings suggest that, for this sample, technology integration was most firmly embedded in short-cycle lesson planning rather than in longer-term curriculum design or assessment development. Teachers tended to value digital tools for how they supported the practical work of lesson preparation—particularly organising resources, visualising ideas, facilitating collaboration, and enabling quick adaptation when plans needed to shift.

Participants generally held positive views about how technology could support active learning, but they consistently emphasised that this potential is conditional. Time pressures, access to devices, tool reliability, and the availability of coherent institutional support all shaped whether technology could genuinely enhance participation and understanding. When these enabling conditions were in place, technology was considered supporting richer representations, more interactive learning, and more efficient preparation. When they were not, technology could just as easily slow the pace of lessons or introduce new obstacles.

The interview findings further highlighted that planning was usually a complex process. Instead, teachers said it was iterative and responsive, based on what the curriculum said, how they worked together, and the real-life situations in their classrooms. Across accounts, technology integration emerged as something negotiated in context—guided by intent but ultimately constrained or enabled by feasibility.

Together, the questionnaire and interview findings indicate that teachers' use of digital technology was not simply a matter of preference or skill but a reflection of the broader organisational, temporal, and infrastructural conditions under which planning occurred.

Chapter 5: Discussion

5.1. Chapter overview

This chapter interprets the Chapter 4 findings in relation to the research question and conceptual framework. Rather than restating results, it explains what convergent patterns across the questionnaire and interviews imply about how teachers in international schools across Thailand integrate digital technology into curriculum planning for active learning and why such patterns may occur. Consistent with a pragmatic mixed-methods approach, the discussion draws on survey breadth and interview depth, using the integrated analysis (4.5 Chapter summary) to advance the most warranted claims (Creswell & Plano Clark, 2018).

The discussion is organised around four connected strands derived from the integrated findings: (1) curriculum planning as a bounded yet adaptive practice; (2) the planning stages at which technology is most often incorporated; (3) how teachers' conceptions of active learning shape judgements about 'meaningful' use; and (4) organisational conditions that influence feasibility and sustainability. These strands are then interpreted through the study's analytical lenses before implications are drawn for planning practice, leadership, and professional learning.

Issue (discussion focus)	Questionnaire suggests...	Interviews explain/extend...	Integrated takeaway
Where technology enters planning	Technology use concentrates in routine planning stages rather than long-range design.	Teachers describe using tools mainly for sourcing ideas, adapting materials, and building resources once a topic/unit is set.	Technology integration in planning is primarily pragmatic and preparation-focused.
What makes tools 'useful'	Reported barriers and support needs emphasise feasibility factors (e.g., time, access, reliability).	"Useful" tools are described as time-efficient, adaptable, reliable, and compatible with school systems and devices.	Workflow fit and reliability shape tool selection and sustained use.
Active learning and 'meaningful' use	Active learning is positioned as a desirable aim of technology use.	Active learning is framed as doing, thinking, discussing, and sensemaking; technology is meaningful when it supports participation rather than passive use.	"Meaningful" use is defined by learner participation and sensemaking, not tool presence.

Issue (discussion focus)	Questionnaire suggests...	Interviews explain/extend...	Integrated takeaway
Constraints and enabling conditions	Constraints and support needs recur as a major influence on planning and enactment.	Technology supports active learning when it enables clarity/interaction, but hinders when it distracts, disrupts pacing, or fails; teachers frequently adapt in real time when constraints arise.	Technology integration is conditional and depends on enabling conditions, with adaptation as a normal feature of practice.
Implications for practice	Respondents identify support and training needs alongside material constraints.	Participants emphasise that providing tools alone is insufficient; they prioritise reliable access, usable training, and shared expectations.	Improving enabling conditions and support structures is likely to have more impact than introducing additional tools.

Table 5 - Integrated synthesis across strands

5.2. Discussion organised by the research question

The overarching research question asks how teachers in international schools across Thailand integrate digital technology into curriculum planning in ways that support active learning. Using a pragmatic mixed-methods lens, technology integration is treated here as a situated, purpose-driven practice shaped by teachers' aims, available tools, and organisational conditions (Creswell & Plano Clark, 2018). Integration across datasets supports meta-inferences grounded in convergence and identifies where interview accounts add explanatory depth (Fetters et al., 2013; Guetterman et al., 2015).

Across the integrated findings, planning and technology use appeared less as isolated individual choices and more as practices enacted through routines, cultural tools, and institutional arrangements (Hutchins, 1995; Orlikowski, 2000; Vygotsky, 1978). The sections below interpret each strand and clarify what the study teaches about technology-supported planning for active learning in international school contexts.

5.3. Strand 1: Curriculum planning as a bounded but adaptive practice

The findings suggest that curriculum planning in these contexts is best understood as bounded yet adaptive. Planning was commonly shaped by curriculum maps, leadership expectations, collaborative routines, and time constraints while still requiring professional judgement and responsiveness from learners. This is in line with socio-cultural views of teaching as a mediated activity, where professional thinking is shared among people, routines, and tools (Hutchins, 1995; Vygotsky, 1978). On this view, technology integration is unlikely to appear as an ‘add-on’; instead, it becomes visible where digital tools fit existing planning routines and solve immediate problems.

This framing also helps explain the prominence of short-cycle, lesson-level planning. In highly structured organisations, teachers may perceive planning less as an open-ended curriculum design and more as a local enactment within given parameters. A practice lens likewise suggests that tool use is shaped by both agencies and institutional arrangements that stabilise routines (Orlikowski, 2000). Technology integration is therefore better interpreted as embedded within planning practice than as a discrete set of individual innovations.

5.4. Strand 2: Planning stages where technology is incorporated

Across both datasets, technology was most visible when teachers translated curriculum intentions into lesson-ready materials—searching for content, adapting it, designing representations, and preparing resources. This pattern suggests a pragmatic logic of use: teachers deploy technology where it offers immediate instructional payoff and reduces friction in the planning-to-teaching cycle. Such feasibility-driven adoption is consistent with research highlighting time, access, and reliability as central conditions shaping integration in practice (Hew & Brush, 2007a).

Interview accounts further indicate that planning decisions were guided by ‘what will work tomorrow’ as well as what is pedagogically desirable, particularly where device access is uneven or infrastructure is unreliable. Reliability problems, platform fragmentation, and the need for contingency plans increase the perceived costs of use and shape tool selection (Hew & Brush, 2007a). Taken together, the evidence supports the view that teachers most often integrate technology for immediate instructional feasibility, even when their longer-term aspirations are more ambitious.

5.5. Strand 3: Active learning conceptions and ‘meaningful’ use

Teachers generally viewed digital tools as capable of supporting active learning, but in a conditional way. Benefits were described when tools strengthened interaction, representation, participation, and creation; however, participants also noted boundary conditions where technology distracted learners, disrupted lesson flow, or encouraged dependence on pre-made materials. This pattern is broadly consistent with active learning research, which links active approaches to improved outcomes while recognising that their effects depend on task design and implementation (Freeman et al., 2014; Prince, 2004).

A key insight is that teachers treated technology use as a pedagogical judgement rather than a purely technical decision. Participants often distinguish workflow benefits (e.g., organization and efficiency) from learning benefits (e.g., participation and interaction), suggesting that tools serve different functions across planning and enactment. The findings also highlight a common concern: ‘active learning’ might be seen as just being involved on the surface, which emphasises the need to create tasks that promote thinking and understanding, not just doing things (Prince, 2004).

5.6. Strand 4: Organisational conditions shaping feasibility and sustainability

What ultimately surfaced in teachers’ stories was the central influence of organisational conditions on their ability to integrate technology. Participants described a wide range of challenges—heavy workloads, limited time, curriculum and assessment demands, unreliable infrastructure, inconsistent access to devices or subscriptions, and unclear systems of support across the school. These accounts closely align with research distinguishing first-order barriers (i.e., access, time, resources, and training) from second-order barriers (i.e., beliefs and pedagogical orientations), with both levels shaping teachers’ capacity to design and sustain technology-enhanced instruction (Ertmer, 1999; Hew & Brush, 2007a). Across the data, organisational conditions repeatedly appeared as forces that determined what teachers could realistically plan, adapt, and carry forward in their classrooms.

Interviews illustrate how these constraints operate in practice: slow transitions, limited devices, and unclear support pathways increase friction and can reduce interactivity. From a practice perspective, the same tool can enable different outcomes depending on how it is embedded in routines and supported institutionally (Orlikowski, 2000). Accordingly, the study positions

organisational coherence—aligned platforms, resourcing, professional learning, and responsive support—as a key mediator in determining whether technology-supported active learning can be enacted reliably.

5.7. Interpreting the findings through analytical lenses

This section interprets the findings through the study’s analytical lenses, using TPACK and SAMR (and the active learning literature) as interpretive tools rather than rigid classification schemes. The aim is to clarify what teachers’ accounts reveal about planning-stage technology use and the conditions under which it becomes pedagogically meaningful (Mishra & Koehler, 2006; Puentedura, 2006).

5.7.1. TPACK as an explanatory lens for planning-stage technology use

TPACK conceptualises meaningful integration as emerging at the intersection of content, pedagogy, and technology, including the combined knowledge domains produced through these intersections (Mishra & Koehler, 2006). Interpreting the findings through this lens helps explain why technology integration clustered at the lesson-planning stage and why tools were often framed in pragmatic terms, such as organization, and learning) and visualisation, and efficiency.

Participants frequently evaluated tools in pedagogical terms—for example, whether they supported clearer representations, sustained engagement, or enabled participation—suggesting that technological pedagogical knowledge and technological content knowledge were salient in everyday planning. At the same time, the predominantly ‘gap-filling’ orientation implies that TPACK may be enacted in bounded ways, shaped by curriculum demands and the feasibility of aligning tool affordances with pedagogical intent under time and reliability constraints (Hew & Brush, 2007a; Mishra & Koehler, 2006).

5.7.2. The SAMR model serves as a descriptive lens to explain why successful examples tend to cluster beyond the substitution level.

SAMR is widely used as a heuristic for describing how technology alters learning tasks across substitution, augmentation, modification, and redefinition (Puentedura, 2010). In this study, teachers’ ‘successful examples’ tended to involve interaction, student creation, and collaboration, aligning more readily with augmentation/modification and, in some cases, redefinition.

One interpretation is that substitution-level uses are routine and therefore less likely to be reported as exemplary, even if they occur frequently. However, interview accounts also suggest that higher complexity uses can be fragile: infrastructure limitations, device constraints, and time pressures may lead teachers to simplify tasks to protect lesson flow. The data indicates that movement across categories is mediated by feasibility and organisational coherence, and that SAMR provides a descriptive language for task change rather than a guarantee of pedagogical improvement (Hamilton et al., 2016).

5.7.3. Active learning as an interpretive anchor: participation, cognition, and design quality

While TPACK and SAMR help interpret integration, the study's focus on active learning requires attention to the relationship between visible activity and meaningful learning. Active learning scholarship associates learning gains with cognitive engagement through explaining, applying, discussing, and problem-solving rather than passive reception (Freeman et al., 2014; Prince, 2004).

The fact that participants often frame active learning in terms of engagement and participation helps explain why they gave special weight to tools that promoted interaction or provided multimodal means of representing concepts. However, digital tasks that appear engaging may increase participation without deepening understanding if not designed to promote reasoning and sense-making (Prince, 2004). Taken together, the evidence suggests that technology can best support active learning when it allows for cognitively demanding forms of participation in classroom settings that make such work possible.

5.8. Mixed-methods meta-inferences

This section synthesises the integrated findings into meta-inferences—higher-level conclusions warranted when quantitative and qualitative strands are considered together (Creswell & Plano Clark, 2018). Following mixed-methods guidance, convergence, expansion, and divergence are made explicit to strengthen the coherence of interpretation (Fetters et al., 2013; Guetterman et al., 2015).

5.8.1. Meta-inference 1: Integration as Pragmatic Planning Support

The most consistent use of technology integration was during lesson-level planning, especially when it came to finding, changing, and making resources. Interviews help explain this pattern by showing how planning is structured by curriculum expectations and routines, with

technology entering when teachers need to make requirements teachable, accessible, and engaging. Taken together, the evidence supports an interpretation of integration as pragmatic planning support rather than a discrete innovation agenda.

This refines how ‘integration’ is conceptualised in the study: rather than beginning primarily at the unit-design routines. At the routines (orientations) level, technology is integrated where it reduces friction and increases feasibility in the short cycle of everyday planning. This concurs with research indicating that time, workload, and organisational constraints strongly shape adoption in practice(Ertmer, 1999; Hew & Brush, 2007a).

5.8.2. Meta-inference 2: Active Learning Gains Are Conditional

Teachers generally perceived technology as supportive of active learning, particularly when it enabled participation and improved representations of content. However, this support was not unconditional. Participants also talked about times when technology made it harder to learn by making it harder to focus, breaking the flow, or creating too much work.

Read alongside active learning scholarship, this study reinforces a distinction between technology as a medium and active learning as a pedagogical approach: tools can enable cognitively engaging participation only when tasks are designed and scaffolded appropriately(Freeman et al., 2014; Prince, 2004). The integrated evidence therefore supports a nuanced conclusion: teachers held a pragmatically positive stance toward technology while actively managing risks and trade-offs in context.

5.8.3. Meta-inference 3: Organisational Coherence as the Key Mediator

Sustained and more complex integration depended strongly on organisational conditions—especially time, infrastructure reliability, device/subscription access, and support systems. Survey data foregrounded time/workload and curriculum pressures, while interviews extended these barriers by showing how inconsistent provision and unclear support pathways raise the hidden costs of use and reduce interactivity.

From a practice lens, outcomes depend on how tools are embedded within routines and structures(Orlikowski, 2000). The study therefore positions organisational coherence—the alignment of platforms, budgets, professional learning, and responsive technical support—as a key mediator, shaping whether technology-supported active learning can be enacted consistently and whether tasks can move beyond low-risk enhancements.

5.8.4. Summary of meta-inferences

Overall, three claims are most strongly supported: technology is commonly integrated as pragmatic lesson-planning support; it can support active learning when tasks are well designed and feasible; and organisational coherence mediates sustainability and task complexity. These meta-inferences underpin the implications below.

5.9. Implications

The following implications are based on the combined findings, emphasising the conditions and practices that help make technology-supported active learning easier and more sustainable than just promoting technology for its own sake (Creswell & Plano Clark, 2018).

5.9.1. Implications for teachers' curriculum planning practice

Teachers may benefit from treating technology integration during planning as design for feasibility. Given the concentration of technology use in lesson-level resource work, strengthening routines for resource curation, reuse, and workflow organisation complexity may reduce repeated effort and save time for task design (Hew & Brush, 2007a).

Teachers may also benefit from separating the planning value of their tools (e.g., efficiency and organization) from their pedagogical value (e.g., participation and interaction). Where reliability is uncertain, contingency-aware planning—low-friction alternatives and clear fallback routines—may protect active learning goals when tools fail or access is constrained (Orlikowski, 2000). Finally, simple design checks may help ensure that participation is linked to reasoning and sense-making rather than engagement alone (Prince, 2004).

5.9.2. Implications for school leadership and organisational decision-making

For school leaders, the findings imply that technology integration is a systems issue rather than an individual responsibility. Even where teacher willingness is high, sustainability depends on time, infrastructure, consistent access, and clear support pathways—often conceptualised as first-order barriers (Ertmer, 1999; Hew & Brush, 2007a).

Prioritising organisational cohesion—consistent platforms, predictable routines, aligned budgets, subscriptions, and responsive support—reduces friction and makes interactive designs more feasible (Orlikowski, 2000). Leaders may also consider whether curriculum and

assessment expectations are aligned with available planning time and the kinds of active learning practices schools seek to promote.

5.9.3. Implications for professional development design

Professional development appears most useful when it is sustained, practical, and aligned with the tools teachers are expected and resourced to use. Barrier research indicates that one-off training is unlikely to change practices without time, support, and organisational alignment(Ertmer, 1999; Hew & Brush, 2007a).

Professional learning may therefore be more effective when it focuses on planning routines and artefacts (e.g., shared templates and resource banks) and is pedagogy-led rather than tool-led, supporting staff to design tasks where participation promotes meaningful thinking(Prince, 2004). Aligning professional learning with platform standardisation and supportive pathways can further reduce the practical costs and risks of enactment.

5.10. Chapter summary and transition

This chapter has argued that technology integration is most often enacted as pragmatic, lesson-level support: a set of purposeful choices threaded through the routines, constraints, and time pressures that structure teachers' everyday planning. According to the interpretive lenses of TPACK and SAMR, teachers' use of technology was frequently aligned with pedagogical intentions; however, these intentions were consistently mediated by feasibility and the degree of organisational coherence within schools(Mishra & Koehler, 2006; Puentedura, 2006). In this sense, technology did not operate as a neutral toolset waiting to be deployed. It functioned as situated practice—continuously shaped by institutional conditions, material infrastructures, and the practical demands of enactment(Orlikowski, 2000).

One key metric by which these methods were assessed was active learning. Educators valued resources that promoted participatory, visible, and cognitively challenging learning; however, the effectiveness of technology was dependent on meticulous task design, appropriate scaffolding, and consistent implementation conditions(Freeman et al., 2014; Prince, 2004). Persistent constraints—time, curriculum requirements, infrastructure dependability, accessibility, and support availability—surfaced not as minor inconveniences but as fundamental mediators of what teachers could feasibly plan and maintain. These constraints influenced the efforts made, the simplifications made, and the postponements enacted, highlighting the ongoing conflict between educational ambition and practical application.

Taken together, the study positions feasibility as a central analytic lens for understanding technology-supported pedagogy. Integration, in this account, is not best explained by the presence of devices, platforms, or formal frameworks alone; it is better understood as an adaptive professional practice in which teachers continually calibrate what is educationally desirable against what is institutionally workable. Planning therefore emerges as a site of judgement under pressure: a space where teachers translate abstract commitments—such as active learning—into designs that must survive timetable constraints, assessment demands, infrastructural unevenness, and the everyday variability of classroom life.

This final chapter draws these insights into a coherent response to the research question and clarifies what the study contributes—conceptually, empirically, and practically. It also marks the limits of what can be claimed, acknowledging the methodological and contextual boundaries that shape interpretation. From there, it turns outward: towards the conditions schools can build, the forms of support leaders can legitimise, and the practical strategies teachers can use to make technology more than performative compliance. Finally, it identifies directions for future research, not as an afterthought, but as a deliberate extension of the tensions surfaced here.

Because the central issue is not whether technology can be integrated. It is what becomes possible when technology, pedagogy, and the lived realities of teachers' work are brought into closer alignment—and what remains out of reach when they are not. What might become possible when this alignment is achieved, not as aspiration, but as practice?

Chapter 6: Conclusion

6.1. Chapter overview

This final chapter synthesises the dissertation and sets out the overall conclusions drawn from the integrated mixed-methods evidence. Whereas Chapter 4 presented the questionnaire and interview findings and Chapter 5 interpreted those findings in relation to the literature and analytical lenses, Chapter 6 consolidates the study's contribution by answering the research question directly and clarifying what the results imply for practice and future research.

The chapter opens by offering an integrated answer to the research question, drawing together the points of convergence across the quantitative and qualitative strands and the insights generated through the mixed-methods integration process (Creswell & Plano Clark, 2018; Fetters et al., 2013; Guetterman et al., 2015). It then moves beyond this synthesis to set out the study's key conclusions and to articulate its empirical, conceptual, and methodological contributions. Then practical recommendations for teachers, school leaders, and professional development providers follow, grounded in the realities highlighted throughout the findings. The chapter also reflects on the study's limitations and outlines priorities for future research before closing with a final synthesis that brings the dissertation's central argument into sharp focus.

6.2. Addressing the Research Question

Section 6.2 provides an integrated answer to the main research question and its sub-question by bringing together evidence from the questionnaire and interviews. In keeping with a pragmatic mixed-methods stance, the emphasis is on a single coherent account of the phenomenon rather than separate strand-specific conclusions (Creswell & Plano Clark, 2018). The statements that follow are framed as meta-inferences, supported through explicit integration and comparison across data sources (Fetters et al., 2013; Guetterman et al., 2015).

6.2.1. Integrated answer to the main research question

Main research question: How do teachers in international (and private English-medium) schools in Thailand integrate digital technology into curriculum planning to support active learning?

Across the integrated dataset, teachers most integrated digital technology as feasibility-oriented planning support at the lesson-planning stage. Digital tools were used less to drive unit-level

curriculum redesign and more to make curriculum intentions teachable: sourcing and adapting materials, producing visuals and tasks, and organising lesson delivery. This pattern suggests that integration is embedded in bounded planning routines shaped by curriculum maps, collaborative expectations, and time constraints. From a practice perspective, technology use therefore operates within organisational routines and tool ecosystems rather than as an isolated individual choice (Orlikowski, 2000).

Within these routines, technology supported active learning most clearly when it enabled participation, interaction, and representation—for example, by structuring discussion, supporting collaborative work, enabling student creation, or making concepts more accessible through multimedia. However, teachers' endorsement was consistently conditional. Participants also described situations where technology disrupted active learning by increasing distraction, fragmenting attention, interrupting lesson flow, or adding workload through troubleshooting. This reinforces the active learning literature's central claim: learning gains depend on purposeful task design and cognitive engagement, not on activity or technology use in itself (Freeman et al., 2014; Prince, 2004).

Whether such designs were sustained depended strongly on organisational conditions. Workload pressures, curriculum and assessment demands, infrastructure reliability, device and subscription access, and the coherence of school-wide platforms and support pathways all mediated teachers' capacity to plan and enact technology-supported active learning. This aligns with research on first-order barriers, which can constrain enactment even when attitudes are positive (Ertmer, 1999; Hew & Brush, 2007b). Taken together, the findings indicate that technology integration in planning is typically pedagogy-led and pragmatically enacted, with feasibility and design quality shaped by organisational coherence.

6.2.2. Where technology enters the planning process and why

This lesson-level concentration helps clarify where technology entered teachers' planning and why. Across both strands, technology was used most intensively at the point where curriculum intentions are translated into resources and classroom enactment. Teachers reported using digital tools to locate and adapt resources for learner needs, produce classroom-ready artefacts (e.g., slides, visuals, and interactive prompts), and coordinate sharing and collaboration. Socio-cultural accounts of mediated and distributed activity help explain this emphasis: planning is enacted through tools, artefacts, and shared routines, not solely through internal cognition (Hutchins, 1995; Vygotsky, 1978).

By contrast, technology was less prominent at earlier stages such as unit design or assessment planning. Limited time and immediate instructional demands encouraged tool use where the short-cycle return was highest: making the next lesson workable and engaging. Rather than signalling an absence of strategic intent, this pattern reflects feasibility within bounded organisational and curricular routines (Ertmer, 1999; Hew & Brush, 2007b).

6.2.3. Digital tools most commonly used to promote active learning

Sub-question 1: What types of digital tools are most commonly used to promote active learning?

In both the questionnaire and interviews, tools associated with active learning clustered into three functional categories. First, resource creation and representation tools (such as presentation or visual-design platforms) supported clarity, engagement, and structured interaction. Second, interactive participation tools (for example, whole-class response systems, collaborative spaces, or platforms for student products) supported contribution, discussion, and creation. Third, planning support and ideation tools, including emerging AI tools, were used primarily to draft, brainstorm, and adapt materials—supporting feasibility and, indirectly, active learning by releasing teacher attention for facilitation.

Across these categories, teachers most often selected tools that reduced friction: they were quick to deploy, adaptable, and workable within school systems and classroom conditions. This aligns with wider findings that adoption tends to favour tools that fit constraints of time, access, and reliability (Hew & Brush, 2007b).

6.2.4. Conditions under which integration supports active learning

Overall, the study suggests that technology is most likely to support active learning when conditions enable teachers to design and sustain interactive tasks without destabilising lesson flow or imposing unmanageable preparation demands.

Reliability and access are foundational: where infrastructure is unstable, devices are inconsistent, or subscriptions are limited, teachers tended to simplify activities to protect momentum. Time and workload then shape design quality. Active learning typically requires sequencing, scaffolding, and refinement, and technology-supported tasks can increase preparation demands unless planning systems reduce repetition (Prince, 2004). Finally, organisational coherence—aligned platforms, training, budgets, and responsive support pathways—reduces the hidden costs of technology use and increases the likelihood that

teachers will sustain active, learning-oriented, and feasibility-oriented integration (Ertmer, 1999; Orlikowski, 2000).

On this basis, active-learning-supportive integration appears to depend less on maximising tool use and more on creating coherent conditions in which pedagogy-led planning is feasible and design quality can be sustained.

6.3. Key conclusions

This section distils the integrated answer in Section 6.2 into a small number of conclusions that capture what the study most robustly suggests about technology integration in curriculum planning for active learning. These conclusions are grounded in convergence across the questionnaire and interviews, with the interviews providing explanatory depth about mechanisms and boundary conditions (Creswell & Plano Clark, 2018; Feters et al., 2013).

6.3.1. Conclusion 1: Lesson-level, feasibility-oriented active-learning integration

Teachers most incorporated digital technology during lesson-level planning—resource searching, adaptation, material creation, and organisation. Technology use was less visible at long-range unit design or assessment planning, suggesting that integration is shaped by day-to-day teaching demands and bounded curriculum routines. This aligns with research indicating that time and workload pressures encourage adoption where the immediate payoff is greatest (Hew & Brush, 2007b).

6.3.2. Conclusion 2: Pedagogy-led, conditional endorsement

Teachers generally viewed technology as supportive of active learning when it strengthened participation, interactivity, and representation, but they also described clear boundaries. Technology was less effective when it increased distraction, disrupted momentum, or added workload through troubleshooting and inefficiencies. This reinforces the active learning insight that learning gains arise from purposeful cognitive and social engagement rather than technology use per se (Freeman et al., 2014; Prince, 2004).

6.3.3. Conclusion 3: Organisational coherence as mediator

Meaningful integration depended heavily on system-level conditions: time and workload, curriculum and assessment pressures, infrastructure reliability, access to devices and subscriptions, and clear support pathways. These conditions shaped whether teachers could

sustain interactive learning designs and whether technology use could move beyond simple enhancement. This is consistent with research on first-order barriers to integration (Ertmer, 1999; Hew & Brush, 2007b).

6.3.4. Conclusion 4: Meaningful integration as alignment

Meaningful integration is best understood as purposeful alignment of tools with pedagogical intent and classroom feasibility. From a practice lens, technologies do not determine outcomes; outcomes depend on how tools are embedded in routines, expectations, and local contexts (Orlikowski, 2000). Teachers in this study selected tools to support intended learning processes while remaining feasible within classroom and organisational constraints.

6.3.5. Conclusion 5: Design quality and lesson flow

Technology was most likely to support active learning when teachers could design tasks that promote both participation and cognitive engagement, and when conditions protected lesson momentum. When pacing was disrupted (e.g., slow transitions or limited access), teachers often adapted or simplified tasks to maintain flow. This highlights that active-learning-supportive integration depends on design time, scaffolding, and reliability as much as tool choice (Hew & Brush, 2007b; Prince, 2004).

6.4. Contribution of the study

This section outlines the dissertation's contribution in empirical, conceptual, and methodological terms.

6.4.1. Empirical contribution

The study contributes evidence about digital technology integration in curriculum planning within international (and private English-medium) schools in Thailand. By combining questionnaire breadth with interview depth, it offers a contextualised account of planning routines, where technology enters those routines, and how teachers judge whether technology supports active learning in practice.

It also documents the centrality of organisational conditions—workload, curriculum pressures, reliability, access, and support systems—as determinants of what teachers can realistically plan and enact, reinforcing established claims about first-order barriers with context-specific detail (Ertmer, 1999; Hew & Brush, 2007b).

6.4.2. Conceptual contribution

Conceptually, the study advances a pragmatic “gap-filling” account of integration: teachers most often used technology to make curriculum requirements teachable at the lesson level, feasibility-orientated through resource curation, adaptation, and creation. This reframes lesson-level concentration as a rational enactment of integration within bounded routines rather than an absence of strategy.

The study also clarifies the distinction between the planning value of technology (organisation, efficiency, resource creation) and its pedagogical value (participation, interaction, representation). Making this distinction explicit helps explain why technology may be heavily used in planning workflows while still supporting active learning indirectly.

Finally, the study positions organisational coherence as a mediating concept: outcomes depend on how tools are embedded in routines, expectations, and support structures (Orlikowski, 2000). This helps explain why interactive or transformational practices may be fragile when systems create friction.

6.4.3. Methodological contribution

This dissertation demonstrates the value of a pragmatic mixed-methods design for investigating curriculum planning and technology integration. The questionnaire offered breadth across multiple international school contexts, providing a structured overview of where technology was included in planning and how teachers conceptualised its purposes and constraints. The follow-up interviews provided crucial depth by elucidating the mechanisms, contingencies, and contextual conditions that influenced the quantitative patterns in practice. Integrating the two strands through explicit reasoning around convergence, expansion, and divergence further strengthened the credibility of the meta-inferences generated (Creswell & Plano Clark, 2018; Fetters et al., 2013).

The use of joint displays further enhanced analytic clarity by visually mapping how qualitative explanations aligned with, extended, or qualified the quantitative patterns. These displays made it possible to identify points of convergence, recognise where findings were conditional, and surface areas of additional nuance—thereby supporting a more integrated and transparent interpretation of the evidence (Guetterman et al., 2015).

6.5. Practical recommendations

This section presents recommendations aligned with the study's conclusion that technology integration is most sustainable when it is pedagogy-led, workable within planning routines, and enabled by organisational coherence (Ertmer, 1999; Hew & Brush, 2007b; Orlikowski, 2000).

6.5.1. Recommendations for teachers' planning practice

Reusability increases when planning draws on adaptable templates, prompt banks, and shared resource folders, reducing repetitive workload and freeing time to refine active-learning task design (Hew & Brush, 2007b). To prevent activities from becoming superficial, teachers can make intended learning processes explicit during planning—for example, by building in opportunities for explaining reasoning, comparing interpretations, or creating and justifying products—in line with evidence on effective active learning (Freeman et al., 2014; Prince, 2004). Given ongoing reliability risks, contingency-aware planning can help protect lesson flow by preparing low-tech or low-device alternatives that still preserve the core active-learning aim. Finally, distinguishing between a tool's planning value and its pedagogical value can support more purposeful and realistic decisions about when—and why—digital tools should be used.

6.5.2. Recommendations for school leadership

Leaders can prioritise organisational coherence by standardising core platforms where possible and reducing fragmentation, which lowers training and troubleshooting burdens and supports sustainable routines (Ertmer, 1999; Orlikowski, 2000). Expectations for technology-supported active learning should be aligned with protected planning time and reliable access to devices and subscriptions. Reliability and support pathways should be treated as learning conditions, with clear procedures and timely assistance to reduce disruption risk. Finally, curriculum and assessment structures can be used to enable active learning by allowing flexibility and valuing depth alongside coverage.

6.5.3. Recommendations for professional development

Professional development is likely to be more effective when organised around real planning artefacts and classroom enactment rather than tool demonstrations, using tools teachers can reliably access (Hew & Brush, 2007b). PD should remain pedagogy-led, focusing on designing for participation and cognitive engagement and then selecting tools to support those aims (Prince, 2004). Sustained support (coaching, collaboration, follow-up) can address common

barriers such as time and confidence (Ertmer, 1999). To avoid wasted effort, PD should be coordinated with platform decisions, subscriptions, and technical support (Orlikowski, 2000).

6.6. Limitations

The study is bounded to international (and private English-medium) schools in Thailand, so transferability depends on similarity of the lesson, curriculum structures, resourcing, and expectations. Both strands relied on self-report, which may favour memorable or valued practices and under-represent routine use; it also captures perceptions rather than direct observation (Creswell & Plano Clark, 2018). The questionnaire sample ($n = 20$) supports exploratory insight rather than statistical generalisation, and participation may reflect self-selection. Finally, the study did not measure student outcomes directly; conclusions therefore address teachers' practices and conditions associated with active-learning-supportive integration rather than causal impact claims. Researcher positionality also shapes interpretation; reflexive awareness and transparent integration strengthen trustworthiness but do not remove interpretation (Fetters et al., 2013).

6.7. Suggestions for future research

Future research could extend the scope of this study by broadening sampling across a wider range of school types in Thailand, enabling an examination of whether the strong lesson planning concentration identified here generalises beyond international school contexts. Triangulating teacher accounts with planning artifacts—such as unit plans, lesson documents, and LMS activity logs—alongside classroom observations would deepen our understanding of how planning decisions translate into enacted practice.

Longitudinal designs provide another promising direction for future research. Monitoring changes over time would enable the analysis of whether enhancements in platform coherence, subscription accessibility, device availability, and professional development result in enduring modifications in planning practices or the design of interactive, cognitively challenging tasks. Future studies could also explore how technology integration in the planning stage relates to student outcomes, drawing on artefacts such as work samples, engagement indicators, or assessment data.

Given the rapid uptake of artificial intelligence across schools, focused inquiry into AI-supported planning is increasingly urgent. Research could explore how AI influences

teacher workload, task quality, decision-making, and professional judgement—as well as the ethical considerations that emerge when instructional design becomes partially automated.

Finally, comparative studies in regions with similar international school ecosystems would help us understand which results are due to local conditions and which are due to larger trends. Such work would support a more nuanced and globally informed understanding of technology-supported planning.

6.8. Final synthesis and closing statement

This dissertation examined how teachers in international (and private English-medium) schools in Thailand integrate digital technology into curriculum planning to support active learning. The study shows that integration is most often enacted through pragmatic lesson-planning support—resource curation, adaptation, and the creation of teachable materials—rather than technology-led redesign of curriculum. Teachers valued technology when it strengthened participation and representation, but they also set clear boundaries where tools distracted learners, disrupted lesson flow, or increased workload.

A central conclusion is that meaningful integration is shaped as much by organisational conditions as by individual teacher choices. Time, reliability, access, subscriptions, coherent platforms, and responsive support systems mediate whether teachers can sustain interactive, active-learning-orientated similarity designs. Progress is most likely when teaching goals align with clear systems that make it easier to create high-quality tasks, using technology to support active learning instead of seeing it as the focus.

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Appendices:

Appendix A. Questionnaire instrument (final version used)

Dissertation Questionnaire – Administered via MS Forms

A. Background Information

1. 1. Which type of international school do you currently work at?
 - IB
 - British Curriculum
 - American Curriculum
 - Other (please specify)
2. 2. Which grade levels do you primarily teach?
 - Early Years / Kindergarten
 - Primary / Elementary
 - Secondary / High School
 - Other (please specify)
3. 3. How many years have you been teaching in international schools?
 - Less than 2 years
 - 2–5 years
 - 6–10 years
 - More than 10 years
4. 4. How confident do you feel in using digital technology for curriculum planning?
 - Very confident
 - Somewhat confident
 - Neutral
 - Not very confident
 - Not confident at all

B. Use of Digital Technology in Curriculum Planning

5. 5. At which stages of your planning do you typically integrate digital tools? (Select all that apply)
 - Long-term (yearly or term planning)
 - Unit planning
 - Weekly/daily lesson planning
 - Assessment planning
 - I don't typically use technology for planning
6. 6. Which digital tools/platforms do you most frequently use when planning your lessons? (Select all that apply)
 - Google Workspace (Docs, Sheets, Slides)
 - Learning Management Systems (e.g. Seesaw, Google Classroom, Canvas)
 - AI tools (e.g. ChatGPT, MagicSchool)
 - Presentation/Multimedia tools (e.g. Canva, Padlet, Genially)
 - Collaborative planning tools (e.g. Jamboard, Miro)
 - Other (please specify)
7. 7. How often do you use digital technology specifically to design activities intended to promote active learning?
 - Always

- Often
- Sometimes
- Rarely
- Never

C. Understanding and Approaches to Active Learning

8. 8. In your own words, how would you define 'active learning'?
9. 9. Which of the following practices do you associate most with 'active learning'? (Select all that apply)
- Group work / collaboration
 - Student-led inquiry or projects
 - Use of digital simulations or interactive tools
 - Peer teaching or student presentations
 - Formative assessment and real-time feedback
 - Other (please specify)
10. 10. To what extent do you feel digital tools enhance your ability to design active learning experiences?
- Strongly enhance
 - Somewhat enhance
 - No effect
 - Somewhat limit
 - Strongly limit

D. Benefits and Challenges

11. 11. What benefits have you experienced when integrating digital technology to support active learning?
12. 12. What challenges have you encountered when attempting to integrate digital tools into your curriculum planning?
13. 13. How much support does your school offer in terms of technology-related professional development?
- A great deal
 - Some support
 - Minimal support
 - No support
14. 14. Please describe an example of a digital tool or lesson approach that worked well in promoting student engagement.

E. Consent for Follow-up Interview

15. 15. Would you be willing to take part in a follow-up interview (approx. 30–45 mins via Zoom/Google Meet)?
- Yes
 - No
16. 16. If yes, please leave your name and email address:

Appendix B. Questionnaire item mapping

Item (Q#)	Item focus	Primary SQ	Secondary SQ	Data type	Planned analysis	Why is this item needed?
Q1	Curriculum followed	Sample descriptors	—	Background (categorical)	Descriptive (sample profile); optional subgroup notes	Contextualises teaching environments and supports interpretation.
Q2	Grade level(s) taught	Sample descriptors	—	Background (categorical)	Descriptive (sample profile); optional subgroup notes	Contextualises planning routines and feasibility by phase.
Q3	Years teaching in international schools	Sample descriptors	—	Background (categorical/ordinal)	Descriptive (sample profile); optional subgroup notes	Describes experience level and supports interpretation of variation.
Q4	Active learning strategies used	SQ4	—	Multiple select (multi-response)	Multi-response frequencies (% selecting each strategy)	Establishes what “active learning” looks like in reported practice. Anchors how participants conceptualise active learning (interpretive lens).
Q5	Definition/meaning of active learning	SQ4	—	Open response (multi-code permitted)	Thematic coding using AL_DEF codes; frequency summary of coded themes	Shows enacted active-learning approaches to contextualise tool use.
Q6	Strategies used to promote active learning	SQ4	—	Multiple select and/or open (multi-code permitted)	Frequency summary of AL_STRAT codes	Captures participants’ stance on tech→active learning to contextualise later claims.
Q7	Belief: extent technology can support active learning	SQ4	—	Rating judgement (single-code)	Single-code categorisation; distribution summary	

Item (Q#)	Item focus	Primary SQ	Secondary SQ	Data type	Planned analysis	Why is this item needed?
Q8	Planning autonomy	SQ3	—	Rating judgement (single-code)	Single-code categorisation; distribution summary	Indicates agency/decision latitude shaping planning and adoption.
Q9	Where technology enters planning (planning stages)	SQ2	—	Open/multi-response (multi-code permitted)	Stage-coding; multi-response frequencies by planning stage	Locates technology integration within the planning cycle.
Q10	Tool functions used in planning (purpose, not brand)	SQ1	SQ2	Open response (multi-code permitted)	Code by function (e.g., organisation/efficiency/visualisation/collaboration/differentiation/ideation); frequency summary	Identifies <i>what tools are used for</i> in planning (mechanism-level).
Q11	How tools help plan for active learning	SQ4	SQ2	Open response (multi-code permitted)	Thematic coding of TECH_PLAN codes (e.g., engagement/structure/collaboration/differentiation/feedback/creativity; “limited” when appropriate)	Connects tool use directly to active-learning intentions in planning.
Q12	A worked example that went well (with SAMR depth coding)	SQ4	SQ2	Open response (multi-code permitted + depth code)	Code example features (e.g., engagement/collaboration/creation/inquiry/authentic) + SAMR depth (substitution/enhancement/transformation) using conservative rule	Provides concrete instances to interpret “meaningful use” and depth of integration.
Q13	Perceived benefits of technology in planning/active learning	SQ4	SQ2	Open response (multi-code permitted)	Multi-theme benefit coding; “limited” code used sparingly for vague answers	Captures perceived value and mechanisms (why teachers keep using tools).
Q14	Challenges/limitations	SQ3	—	Open response (multi-code permitted)	Multi-theme challenge coding (time, curriculum pressure, reliability/access, overload, PD relevance, skills/confidence, alignment, policy)	Identifies constraints shaping feasibility and sustainability of integration.

Item (Q#)	Item focus	Primary SQ	Secondary SQ	Data type	Planned analysis	Why is this item needed?
Q15	PD support level	SQ3	—	Rating judgement (single-code)	Single-code categorisation (high/moderate/limited)	Assesses perceived enabling support from the organisation.
Q16	Enabling conditions needed for better integration	SQ3	SQ2	Open response (multi-code permitted)	Multi-theme enabling-condition coding (e.g., protected time, autonomy, embedded PD, leadership support, collaboration, infrastructure, clarity/coherence, alignment)	Converts constraints into actionable conditions to inform implications and recommendations.

Appendix C. Analytical lenses summary

Item (Q#)	Item focus	TPACK lens (broad)	SAMR relevance	Justification
Q1	Curriculum followed	TPK/TPACK (context for planning)	N/A	Locates the planning context in which technology decisions are made.
Q2	Grade level(s) taught	TPK/TPACK (context for planning)	N/A	Phase/age group shapes pedagogical choices and feasibility of tool use.
Q3	Years teaching in international schools	TPK/TPACK (context for planning)	N/A	Experience may shape confidence and routine planning approaches.
Q4	Active learning strategies used	PCK → TPK/TPACK (pedagogical approach)	N/A	Captures how pedagogy is enacted (the “P” in TPACK) and provides a baseline for interpreting tool choices.
Q5	Definition/meaning of active learning	PCK anchor for interpretation	N/A	Clarifies what “active learning” means to participants, which shapes what counts as “meaningful” use.
Q6	Active learning strategies (elaboration)	PCK → TPK/TPACK	N/A	Provides pedagogical detail needed to interpret how tools are used to plan for participation and sensemaking.
Q7	Belief: tech supports active learning	TPK/TPACK (beliefs about pedagogy–technology fit)	N/A	Positions teachers’ reasoning about whether technology aligns with intended learning activity.
Q8	Planning autonomy	TPACK enactment conditions (agency)	N/A	Autonomy shapes whether teachers can align tools with pedagogy/content or must comply with set systems.
Q9	Planning stages where tech enters	TPK/TPACK (planning-stage enactment)	N/A	Identifies where teachers are making planning-stage decisions about pedagogy and tool use.
Q10	Tool functions used in planning	TK → TPK/TPACK (tool purposes)	N/A	Codes the <i>function</i> of tools in planning (organisation, efficiency, visualisation, collaboration, differentiation, ideation).
Q11	How tools help plan active learning	TPK/TPACK (pedagogical mechanisms)	N/A	Codes how tools support planned engagement, structure, collaboration, differentiation, feedback, or creativity in learning design.

Item (Q#)	Item focus	TPACK lens (broad)	SAMR relevance	Justification
Q12	Example that worked well	TPACK (enacted integration in context)	Yes — SAMR depth code	Worked examples are coded for features of active learning and for conservative depth-of-integration (substitution vs enhancement vs transformation).
Q13	Perceived benefits	TPK/TPACK (outcomes of planned/enacted use)	N/A	Benefits reflect whether tool use supports workflow and/or learning design (e.g., organisation, efficiency, engagement support).
Q14	Challenges/limitations	TPACK enactment conditions	N/A	Captures barriers shaping whether alignment is feasible (time, curriculum pressure, reliability/access, overload, PD relevance, skill/confidence, alignment, policy).
Q15	PD support level	TK → TPK/TPACK (support for enactment)	N/A	PD/support influences teachers’ capacity to apply technology with pedagogy/content rather than as isolated skill.
Q16	Enabling conditions	TPACK enactment conditions	N/A	Identifies what would make planning-stage integration feasible and sustainable (e.g., access, time, coherent systems, usable support).

Appendix D. Semi-structured interview guide (final version used)

Interview Guide

Title: Designing for Engagement: How International School Teachers Use Technology to Support Active Learning

Interviewee: _____

Researcher: Andre Dirk Vosloo

Estimated duration: 30–45 minutes

Interview type: Semi-structured

Mode: Online (Microsoft Teams)

Introduction (to be read to participant)

Thank you for agreeing to take part in this interview. As you know, this is part of a research study exploring how teachers in international schools in Thailand use digital technology to support active learning during curriculum planning. Your insights will help to deepen understanding of current practices, benefits, and challenges related to technology integration in this context.

This interview should take around 30 to 45 minutes. Your responses will remain confidential and will be anonymised in any reporting. You may decline to answer any question or stop the interview at any time.

Warm-up / Contextual Questions

1. Can you tell me a little about your current teaching role and school context?
2. How would you describe your experience with using digital technology in general?

Main Interview Questions

1. How do you typically approach curriculum planning? Can you describe the process or steps you follow?
2. At what stage(s) of this process do you incorporate digital technology? Why at these stages?
3. Can you describe any digital tools or platforms that you regularly use in your planning? What do you find most useful about them?
4. What does 'active learning' mean to you? How do you try to promote it in your teaching?
5. How do digital tools help (or hinder) your ability to design active learning experiences? Can you give a specific example?
6. Have you ever modified a lesson or unit because of a digital tool? What prompted that change?
7. What benefits have you seen from using technology to support student engagement and active learning?
8. What challenges have you faced in integrating digital tools effectively? (e.g., time, support, technical issues)

9. How would you describe the level of support you receive from your school in terms of technology integration and professional development?
10. Are there any types of technology you would like to use more in the future, but currently don't? Why?

Wrap-up

1. Is there anything else you'd like to share about your experience with technology and active learning?
2. Do you have any recommendations for other teachers or school leaders regarding technology integration during planning?

Thank you for your time and for sharing your insights.

Appendix E. Interview question mapping

Item (#)	Interview question	Primary SQ	Secondary SQ	Data type	Planned analysis	Why is this item needed?
11	Can you briefly describe your current teaching role and the curriculum your school follows?	SQ2	SQ3	Semi-structured interview	Thematic analysis	Clarifies planning routines and contextual influences.
12	How would you describe your experience with using technology in education overall?	SQ2	SQ3	Semi-structured interview	Thematic analysis	Clarifies planning routines and contextual influences.
13	When planning your curriculum or lessons, what role does digital technology typically play?	SQ2	SQ3	Semi-structured interview	Thematic analysis	Explores the planning process and points of technology integration.
14	At what stages of planning (term, unit, lesson, assessment) do you use digital tools, and how?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.
15	Can you describe any specific tools or platforms you use regularly when planning?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.
16	What do you understand by 'active learning'? What strategies do you use to promote it?	SQ4	SQ3	Semi-structured interview	Thematic analysis	Clarifies how participants interpret and design for active learning.
17	How do digital tools help you design or support active learning activities?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.
18	Can you give an example of a lesson or unit where technology enhanced student engagement or participation?	SQ4	SQ3	Semi-structured interview	Thematic analysis	Clarifies how participants interpret and design for active learning.
19	What factors make it easier or harder to include technology in your planning?	SQ2	SQ3	Semi-structured interview	Thematic analysis	Explores the planning process and points of technology integration.
110	How supported do you feel by your school in terms of professional development, time, or resources for integrating technology?	SQ3	SQ2	Semi-structured interview	Thematic analysis	Deepens understanding of constraints/enablers shaping practice.
111	How much freedom do you have to choose your tools or approaches when planning?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.

Item (I#)	Interview question	Primary SQ	Secondary SQ	Data type	Planned analysis	Why is this item needed?
I12	Are there any tools or strategies you wish you could use more but haven't been able to? Why?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.
I13	Is there anything else you'd like to share about planning with technology or active learning in your context?	SQ2	SQ3	Semi-structured interview	Thematic analysis	Explores the planning process and points of technology integration.
I14	What advice would you give to schools or teachers looking to make better use of digital tools in curriculum planning?	SQ1	SQ2	Semi-structured interview	Thematic analysis	Elicits detailed tool choices and rationales in context.

Appendix F. Qualitative coding framework / codebook

This appendix provides a condensed summary of the coding framework used for participant-level coding of survey responses. Coding applies to Questions 5–16. Binary coding was used (1 = present; blank = absent). Questions 7, 8 and 15 are single-code items; other coded items allow multi-theme coding. For Q12, SAMR depth was coded conservatively: transformation was applied only when the task was not realistically possible without the technology.

Q5 — Definition of active learning (multi-code)

Code	Definition (condensed)
AL_DEF_PARTICIPATION	Active learning described as students doing/participating (hands-on involvement).
AL_DEF_ENGAGEMENT	Active learning described as engagement/motivation/attention.
AL_DEF_AUTONOMY	Active learning described as autonomy/choice/ownership.
AL_DEF_COLLABORATION	Active learning described as discussion/teamwork/peer learning.
AL_DEF_INQUIRY	Active learning described as inquiry/problem-solving/investigation.

Q6 — Active learning strategies used (multi-code)

Code	Definition (condensed)
AL_STRAT_COLLAB	Collaborative tasks (group/pair/cooperative learning).
AL_STRAT_INQUIRY	Inquiry/problem-based tasks (kept narrow).
AL_STRAT_INTERACTIVE_MEDIA	Interactive media (games/simulations/interactive digital activities).
AL_STRAT_PEER_TEACHING	Peer teaching, presentations, student-led explanation.
AL_STRAT_HANDS_ON	Hands-on making/design/experiments/manipulatives.
AL_STRAT_AUTHENTIC	Authentic/real-world contexts or role play.
AL_STRAT_FEEDBACK	Formative assessment/feedback to promote participation and adapt learning.

Q7 — Belief that technology supports active learning (single-code)

Code	Definition (condensed)
TECH_BELIEF_STRONG_SUPPORT	Strongly supports the view that technology can support active learning.
TECH_BELIEF_MODERATE_SUPPORT	Somewhat supports the view that technology can support active learning.
TECH_BELIEF_NEUTRAL	Neutral/uncertain about technology supporting active learning.
TECH_BELIEF_LIMITED_SUPPORT	Limited support/sceptical that technology supports active learning.

Q8 — Planning autonomy (single-code)

Code	Definition (condensed)
PLAN_AUTONOMY_HIGH	High autonomy to design curriculum/lessons and choose tools.
PLAN_AUTONOMY_MODERATE	Some autonomy within institutional constraints.
PLAN_AUTONOMY_LIMITED	Limited autonomy (fixed mandates/strict pacing/mandated tools).

Q9 — Stages of planning where technology is integrated (multi-code)

Code	Definition (condensed)
PLAN_STAGE_LONG_TERM	Year/term planning.
PLAN_STAGE_UNIT	Unit/sequence planning.

PLAN_STAGE_LESSON	Lesson-level planning and delivery design.
PLAN_STAGE_ASSESSMENT	Assessment planning (digital assessment/rubrics/feedback systems).
PLAN_STAGE_RESOURCES	Resource/material creation (slides/worksheets/media).

Q10 — Tool functions used in planning (multi-code; function not brand)

Code	Definition (condensed)
TOOL_FUNCTION_ORGANISATION	Organising/structuring planning materials.
TOOL_FUNCTION_EFFICIENCY	Saving time/increasing efficiency (templates/reuse).
TOOL_FUNCTION_VISUALISATION	Creating visual/multimodal supports.
TOOL_FUNCTION_COLLABORATION	Co-planning/sharing with colleagues.
TOOL_FUNCTION_DIFFERENTIATION	Adapting resources for different needs/levels.
TOOL_FUNCTION_IDEATION	Ideation/brainstorming support (e.g. AI).

Q11 — How tools help plan for active learning (multi-code)

Code	Definition (condensed)
TECH_PLAN_ENGAGEMENT	Planning for engagement/interaction/participation structures.
TECH_PLAN_STRUCTURE	Structuring/scaffolding learning (sequencing/step-by-step design).
TECH_PLAN_COLLABORATION	Planning for student collaboration.
TECH_PLAN_DIFFERENTIATION	Planning differentiated learning.
TECH_PLAN_FEEDBACK	Planning feedback/formative assessment/checks for understanding.
TECH_PLAN_CREATIVITY	Planning for student creation/creative outputs.
TECH_PLAN_LIMITED	Vague/non-specific planning support (use sparingly).

Q12 — Example that worked well (multi-code + SAMR depth)

Code	Definition (condensed)
EXAMPLE_ENGAGEMENT	Example emphasises engagement/participation.
EXAMPLE_COLLABORATION	Example involves collaboration.
EXAMPLE_CREATION	Example involves student creation/production.
EXAMPLE_INQUIRY	Example involves inquiry/problem solving.
EXAMPLE_AUTHENTIC	Example involves authentic/real-world task.
EXAMPLE_TECH_SUBSTITUTION	SAMR: digital replacement with no functional change.
EXAMPLE_TECH_ENHANCEMENT	SAMR: improved efficiency/quality without fundamentally changing the task.
EXAMPLE_TECH_TRANSFORMATION	SAMR: task not realistically possible without technology (apply conservatively).

Q13 — Benefits (multi-code)

Code	Definition (condensed)
BENEFIT_TIME_EFFICIENCY	Planning becomes faster/less effortful.
BENEFIT_ORGANISATION	Improved organisation/structure of planning.
BENEFIT_ENGAGEMENT_SUPPORT	Supports planning for engagement/active participation.
BENEFIT_CONFIDENCE	Increases teacher confidence/clarity in planning.
BENEFIT_FLEXIBILITY	Enables quick edits/adaptable planning.
BENEFIT_COLLABORATION	Supports sharing/co-planning among teachers.
BENEFIT_DIFFERENTIATION	Supports differentiated planning.

BENEFIT_LIMITED	Minimal/vague benefit statement (use sparingly).
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Q14 — Challenges/limitations (multi-code)

Code	Definition (condensed)
CHALLENGE_TIME	Time/workload constraints.
CHALLENGE_CURRICULUM_PRESSURE	Curriculum/assessment/pacing demands.
CHALLENGE_TECH_RELIABILITY	Access/reliability issues (devices/internet/platform failures).
CHALLENGE_TOOL_OVERLOAD	Fragmentation/too many tools/complexity.
CHALLENGE_PD_RELEVANCE	PD not aligned with planning needs.
CHALLENGE_SKILL_CONFIDENCE	Skill/confidence barriers/learning curve.
CHALLENGE_ALIGNMENT	Difficulty aligning tools with pedagogy/curriculum aims.
CHALLENGE_POLICY	Restrictions/mandates/compliance constraints.

Q15 — PD support level (single-code)

Code	Definition (condensed)
PD_SUPPORT_HIGH	High perceived PD/support for technology use in planning.
PD_SUPPORT_MODERATE	Moderate PD/support.
PD_SUPPORT_LIMITED	Limited PD/support.

Q16 — Enabling conditions (multi-code)

Code	Definition (condensed)
COND_TIME	Protected time for planning/experimentation.
COND_AUTONOMY	Autonomy/trust to decide and experiment.
COND_PD_EMBEDDED	Ongoing, embedded PD focused on planning/pedagogy.
COND_LEADERSHIP_SUPPORT	Leadership encouragement and enabling policy.
COND_COLLABORATION	Structured collaboration/shared planning opportunities.
COND_INFRASTRUCTURE	Reliable devices/internet/platforms/technical support.
COND_CLARITY	Coherent expectations and reduced platform overload.
COND_ALIGNMENT	Curriculum-technology alignment and clear pedagogical purpose.

Appendix G. Ethics materials

Participant Information Sheet

Project Title

How do teachers in international schools in Thailand integrate digital technology into curriculum planning to support active learning?

What is this project about?

This research explores how teachers in international schools in Thailand use digital technology in curriculum planning, particularly to support active learning.

Why have I been invited?

You are invited because you are a teacher working in an international school in Thailand. Your perspectives and experiences will help build a broader picture of current practices and challenges.

What will participation involve?

Completing an online questionnaire (10–15 minutes). At the end, you may volunteer for an optional follow-up interview (30–45 minutes, conducted online). You may choose the questionnaire only.

Do I have to take part?

No. Participation is completely voluntary. You may withdraw at any time up until your data is anonymised, without giving a reason and without consequence.

What are the risks and benefits?

Risks are minimal. Some participants may feel hesitant about sharing honest views. To reduce this risk, your answers will be anonymised, and no schools or individuals will be named. There is no direct benefit, but your contribution will support better understanding of technology use in curriculum planning.

How will my data be used?

Questionnaire responses will be anonymous. Interview transcripts will be anonymised, and pseudonyms will be used in any reports. Data will be stored securely on password-protected devices, accessible only to the researcher, supervisor, and examiners. Data will be destroyed after examination, unless published (retained anonymised for up to 7 years).

What if I have concerns?

This research has been reviewed and approved by the University of Nottingham's ethics procedures. If you have concerns, please contact me or my supervisor.

Researcher

Andre Vosloo, MA Education student, University of Nottingham Email: txav22@nottingham.ac.uk

Supervisor

Tony Fisher, School of Education, University of Nottingham Email: tony.fisher@nottingham.ac.uk

Participant Consent Form

Formatted to be included in the MS Forms questionnaire

Project Title: How do teachers in international schools in Thailand integrate digital technology into curriculum planning to support active learning?

- ☐ I have read and understood the information sheet provided.
- ☐ I have had the opportunity to ask questions and have received satisfactory answers.
- ☐ I understand that my participation is voluntary and that I may withdraw at any time until my data is anonymised
- ☐ I consent to the collection and anonymised use of my responses for research purposes.
- ☐ I understand that my identity and the name of my school will not be revealed in any reports or publications.
- ☐ I consent to the interview being audio-recorded (if applicable).
- ☐ I understand that anonymised data may be retained for up to 7 years if published.

Participant's Name (print): _____

Participant's Signature: _____

Date: _____

Researcher's Name: Andre Vosloo

MA Education student, University of Nottingham

ttxav22@nottingham.ac.uk

18 August 2025