Embedding AI in Lesson Planning: Evidence from a Multi-School Research Project

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Abstract
This paper reports findings from a mixed-methods study examining the use of Artificial Intelligence (AI), including Generative AI (GenAI), to support lesson planning across five primary schools in England. Situated within contemporary Networked Learning scholarship, the study conceptualises AI-supported planning as a socio-technical practice shaped by professional relationships, institutional conditions, and collaborative learning cultures, rather than as a purely technical intervention. The research was conducted within a multi-academy trust engaged in digital transformation and committed to inclusive pedagogy through Universal Design for Learning (UDL).
Fifteen teachers across Early Years Foundation Stage, Key Stage 1, and Key Stage 2 participated over two school terms, piloting a range of AI tools including ChatGPT, TeachMate AI, Aila, Olex.AI, and Magma Maths. A convergent mixed-methods design was employed, combining baseline and follow-up teacher surveys, reflective journals, structured classroom observations, and pupil voice surveys and focus groups. Quantitative data captured changes in planning time, workload perceptions, and confidence, while qualitative data explored teacher sense-making, pedagogical decision-making, and learner experience.
The findings demonstrate a substantial reduction in average weekly planning time of 52.5%, decreasing from 10 hours to 4.75 hours, alongside an increase in teacher confidence in lesson planning from 50% to 100%. Qualitative analysis revealed that AI functioned most effectively as a "co-planner", reducing the cognitive and emotional burden of planning while preserving professional judgement. Teachers reported improved curriculum alignment, greater pedagogical flexibility, and enhanced prompt literacy. AI-supported planning also enabled faster and more consistent production of differentiated materials, supporting inclusive practice for pupils with Special Educational Needs and Disabilities (SEND), English as an Additional Language (EAL), and those from disadvantaged backgrounds. Pupil voice data indicated increased engagement, independence, and enjoyment in AI-informed lessons.
The study also identified important tensions. While planning efficiency improved, time saved was often reallocated to other professional demands, highlighting a workload paradox that underscores the need for systemic policy responses. Analysis of the conditions underpinning successful adoption revealed the centrality of values-driven leadership, networked professional learning, psychological safety, reliable infrastructure, and ethical governance.
By combining quantitative workload data with rich qualitative insights, this study responds to calls within Networked Learning research for empirically grounded investigations of AI in educational practice. It demonstrates that AI's educational value lies not in automation, but in its capacity to strengthen collaborative, reflective, and inclusive professional practice when embedded within trusted networks of learning.

Keywords
Artificial Intelligence; lesson planning; workload reduction; Universal Design for Learning (UDL); inclusion; networked learning; teacher agency.

1. Introduction and Literature Context

Artificial Intelligence (AI), and more recently Generative AI (GenAI), has become a prominent feature of educational discourse, prompting both optimism and concern regarding its potential to reshape teaching and learning. Within

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compulsory schooling, much of this optimism centres on AI's capacity to increase teacher productivity by reducing time spent on repetitive or administrative tasks, thereby freeing professional capacity for pedagogical work (DfE, 2019). At the same time, concerns persist around deskilling, over-automation, and the erosion of professional judgement. These tensions are particularly acute in primary education, where teacher workload has been consistently identified as a driver of stress, attrition, and reduced wellbeing (DfE, 2019).

Lesson planning represents a significant pressure point within this landscape. Evidence suggests that many primary teachers spend between eight and twelve hours per week planning lessons, often outside contracted working time (EEF, 2021). Planning is cognitively demanding work, requiring teachers to balance curriculum intent, pupil need, inclusion, assessment, and engagement. The prospect that AI might support planning efficiency while maintaining or enhancing pedagogical quality is therefore highly significant, yet under-explored in empirical research.

To date, much of the academic literature on AI in education has focused on adaptive learning systems, intelligent tutoring, or applications in higher education (Zawacki-Richter et al., 2019). While this body of work provides important foundations, it offers limited insight into how GenAI tools are being taken up by teachers in day-to-day classroom practice, particularly in primary schools. More recent studies have begun to examine GenAI in K–12 contexts, often highlighting its potential to support lesson preparation, feedback, and differentiation, while also raising concerns about reliability, bias, and professional dependence (Seo et al., 2024; Kehoe, 2023). However, there remains a shortage of empirical studies that combine quantitative workload data with qualitative accounts of teacher experience, particularly within school-based, practice-led contexts.

This paper addresses that gap by examining AI-supported lesson planning across five primary schools in England. Rather than treating AI as a discrete technological intervention, the study conceptualises AI use as a socio-technical practice, shaped by professional cultures, institutional conditions, and collaborative learning. This framing draws explicitly on contemporary definitions of Networked Learning, which emphasise learning as relational, dialogic, and situated within networks of people, practices, and technologies (Networked Learning Editorial Collective [NLEC], 2021; Ryberg, Dohn, & de Laat, 2025).

The NLEC (2021) argues for a redefinition of networked learning that moves beyond technology-mediated connectivity to foreground issues of equity, agency, and participation within post-digital educational contexts. From this perspective, AI is not simply a tool to be adopted or rejected, but a mediating actor within professional learning networks, influencing how teachers collaborate, share knowledge, and exercise judgement. Ryberg et al. (2025) further emphasise that networked learning research must attend to both qualitative and quantitative dimensions of practice, particularly in emerging areas such as AI, where empirical evidence remains uneven.

In parallel, the study is informed by Universal Design for Learning (UDL) as a pedagogical framework for inclusion (CAST, 2018). UDL emphasises the proactive design of learning environments that accommodate learner variability through multiple means of engagement, representation, and action. AI-supported planning has the potential to operationalise UDL principles at scale, enabling teachers to generate differentiated materials and alternative representations more efficiently than traditional planning approaches. However, whether this potential is realised in practice depends on how AI is integrated into teachers' professional routines and collaborative cultures.

Bringing these strands together, this study positions AI-supported lesson planning as a site of networked professional learning, where teacher agency, collaboration, and institutional support are critical to meaningful adoption. The research is guided by the following questions:

1. To what extent can AI reduce teacher workload and improve lesson planning efficiency?
2. How does AI-supported planning influence pupil engagement and learning experiences?
3. In what ways can AI contribute to inclusive practice within primary classrooms?
4. What cultural and systemic conditions enable the responsible and sustainable use of AI in lesson planning?

By addressing these questions through a mixed-methods design, the paper responds directly to calls within Networked Learning scholarship for empirically grounded studies that engage critically with AI as both method and phenomenon. In doing so, it contributes quantitative evidence on workload reduction alongside rich qualitative insights into teacher

experience, offering a nuanced account of how AI can support, rather than undermine, professional judgement, inclusion, and collaborative practice.

2. Methodology

2.1 Research Design

This study adopted a mixed-methods research design, combining quantitative and qualitative approaches to examine the impact of AI-supported lesson planning on teacher workload, professional practice, and pupil experience. A mixed-methods approach was selected to enable both the measurement of change over time (e.g. planning hours, confidence levels) and the exploration of how teachers and pupils experienced and made sense of AI in practice. This design aligns with calls within Networked Learning research for studies that attend to both measurable outcomes and the relational, situated nature of learning within professional networks (Ryberg et al., 2025).

The study followed a convergent design, in which quantitative and qualitative data were collected across the same timeframe and analysed in parallel, allowing findings to be triangulated across data sources. This was particularly appropriate given the socio-technical framing of AI adopted in the study, where changes in workload, pedagogy, and professional identity were understood as interrelated rather than discrete phenomena.

2.2 Participants and Context

The research was conducted across five primary schools within a single multi-academy trust in England. The trust had an established digital infrastructure, including 1:1 iPad provision, and a strategic commitment to inclusive practice and professional collaboration. These contextual factors provided the conditions for sustained engagement with AI tools across the duration of the study.

Fifteen teachers participated in the project, representing Early Years Foundation Stage (EYFS), Key Stage 1, and Key Stage 2. Participants included early career teachers, experienced classroom teachers, and subject leaders, reflecting a range of professional experience and digital confidence. All fifteen teachers completed both the baseline and follow-up surveys, enabling direct comparison of workload and confidence measures over time.

Pupil voice data were collected from Key Stage 2 pupils only, reflecting ethical considerations and developmental appropriateness. A total of 68 pupils participated in pupil voice surveys, with a smaller subset contributing to follow-up focus group discussions facilitated by class teachers. No identifiable pupil data were collected.

2.3 AI Tools and Intervention

Teachers piloted a range of AI tools selected for their relevance to lesson planning, usability, and safeguarding compliance. These included:

- ChatGPT for open-ended lesson ideation and sequencing
- TeachMate AI and Aila for structured planning templates
- Olex.AI for writing feedback and curriculum-aligned scaffolding
- Magma Maths for real-time assessment data to inform planning

Teachers were encouraged to use AI flexibly and critically, rather than following a prescribed workflow. This approach reflected the study's interest in how AI is appropriated within professional practice, rather than its performance under controlled conditions.

2.4 Data Collection

Four primary data sources were used:

1. **Teacher Surveys**
   Baseline and follow-up surveys captured quantitative data on weekly planning hours, perceived workload impact, confidence in lesson planning, and perceived ability to meet the needs of all learners. Surveys included Likert-scale items and short open-ended responses.

2. **Teacher Reflective Journals**
   Teachers maintained reflective journals throughout the study, documenting experiences with AI outputs, prompt development, perceived benefits and limitations, and changes in planning practices. These journals provided insight into evolving professional judgements and sense-making processes.
3. **Classroom Observations**
   Structured observations were conducted by senior leaders using a standardised proforma focusing on lesson sequencing, differentiation, pupil engagement, and use of AI-informed resources. Observation notes were used to corroborate self-reported changes in practice.
4. **Pupil Voice Surveys and Focus Groups**
   Pupil surveys captured perceptions of engagement, enjoyment, and independence in AI-informed lessons. Focus groups explored these themes in more depth, providing contextualised insights into learner experience.

2.5 Data Analysis

Quantitative survey data were analysed descriptively, comparing baseline and follow-up measures to identify changes in planning time, workload perception, and confidence. Given the exploratory nature of the study and the small sample size, the analysis focused on trends rather than inferential statistical testing.

Qualitative data from journals, observations, and pupil voice were analysed thematically using an iterative coding process. Initial codes were generated inductively from the data and then refined into themes aligned with the research questions. Triangulation across data sources enhanced credibility and supported the identification of convergent and divergent patterns.

2.6 Ethical Considerations

Ethical safeguards were embedded throughout the study. Participation was voluntary, with informed consent obtained from all staff participants. Pupil voice activities were conducted in line with school safeguarding policies, and no personal or identifiable data were entered into AI platforms.

All tools underwent Data Protection Impact Assessments (DPIAs) prior to use, and teachers received training on data protection, bias, and critical evaluation of AI outputs (DfE, 2021; ICO, 2021). The study adhered to GDPR requirements and emphasised the importance of professional oversight in all uses of AI.

3. Findings

3.1 Teaching and Learning Transformation

The most immediate and quantifiable effect of AI was on planning efficiency. Across the fifteen teachers involved in the study, average weekly planning hours dropped by 52.5%, from 10 hours to 4.75 hours. The range of reduction was significant: early career teachers (ECTs) reported the largest decreases, in some cases saving up to seven hours a week, while more experienced staff tended to save between three and five hours. Teachers described this reduction as "game-changing," particularly in freeing evenings and weekends for rest or preparation of classroom resources.

Beyond the reduction in time, AI reshaped how planning was experienced and enacted. Many teachers emphasised that the greatest value came at the earliest stage of the planning process, with AI reducing the stress of starting with "a blank page." One teacher explained:

> Instead of spending an hour trying to structure my ideas, I get a skeleton plan in minutes and can then adapt it for my class. It feels like a thinking partner.

Classroom observations corroborated these reflections. Senior leaders noted that lessons planned with AI support tended to be more tightly sequenced, with clearer learning objectives and improved scaffolding of concepts. In mathematics, for example, AI was frequently used to generate graduated sets of practice problems that progressed from fluency to reasoning and problem-solving, aligning with mastery principles. In literacy, teachers used AI to produce model texts, guided writing prompts, and vocabulary scaffolds that enriched classroom discussion.

The use of AI also expanded teachers' creative repertoire. Case studies highlighted that AI-generated suggestions often introduced new activities that teachers had not previously considered. A Year 5 teacher described how AI helped design a cross-curricular geography and creative writing project:

> The AI suggested a newspaper report from the perspective of a child experiencing a volcanic eruption. It wasn't something I had planned, but it really engaged the class and developed their non-fiction writing.

Pupils responded positively to these innovations. Focus groups revealed that children valued the variety and interactivity of AI-informed lessons. One Year 6 pupil commented:

> It feels like lessons are more fun now — there are quizzes, pictures, and challenges that make it exciting.

Another noted:

> We get to try things in different ways, not just writing in books.

These findings were particularly pronounced for younger and less experienced teachers. ECTs reported that AI gave them "a safety net," reducing the cognitive load of planning and enabling them to focus more energy on delivery. One ECT reflected:

> I felt less anxious about whether I was covering everything, because I could cross-check my plan with AI outputs. It gave me confidence.

At the same time, teachers were cautious not to over-rely on AI. Several emphasised the importance of professional judgement in curating, adapting, and contextualising outputs. As one subject leader observed:

> AI can provide structure and ideas, but it doesn't know my class. The value is in how I shape what it gives me.

Overall, AI transformed lesson planning into a more efficient, reflective, and creative process. It saved significant time, enriched pedagogical approaches, and increased teacher confidence, while maintaining — and in some cases enhancing — professional autonomy. These outcomes suggest that AI, when used critically, has the potential not only to reduce workload but also to elevate the quality of teaching and learning.

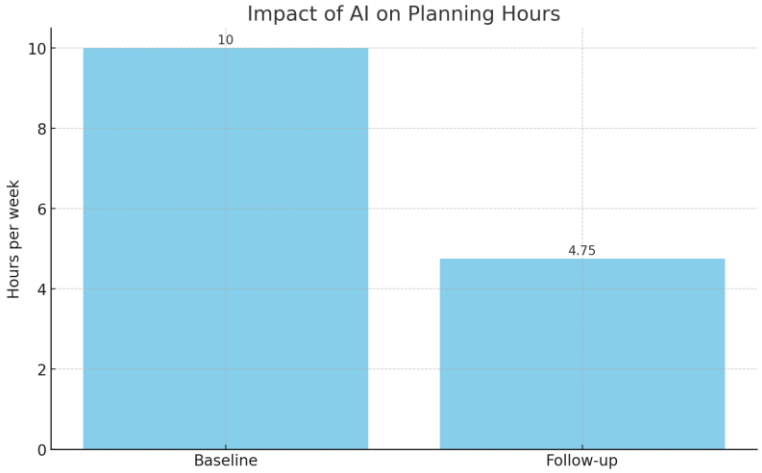

Figure 1: Impact of AI on Planning Hours (Baseline vs Follow-up)

3.2 Professional Learning and Staff Development

Professional learning was both a prerequisite for and an outcome of the project. Teachers entered the pilot with varying levels of digital confidence, ranging from early career teachers with limited exposure to AI tools to experienced subject leaders who were initially sceptical about its relevance. Early survey data indicated that 64% of staff felt "uncertain" about AI's usefulness for planning, while 21% expressed explicit concerns about reliability and bias. By the conclusion of the study, these figures had shifted dramatically: 88% reported that AI had improved their planning efficiency, and only 7% remained hesitant about its long-term role.

A structured professional development pathway underpinned these changes. The project began with introductory workshops focused on safeguarding, data protection, and prompt literacy. Teachers were introduced to different AI platforms and supported in identifying appropriate use cases, such as generating differentiated writing scaffolds or designing formative quizzes. These workshops emphasised professional judgement, with facilitators stressing that AI was a "co-planner" rather than a replacement for teacher expertise.

Midway through the pilot, peer-led sessions and drop-in clinics were introduced, enabling teachers to share strategies and troubleshoot challenges collaboratively. This distributed model was effective in building trust and reducing anxiety. One participant noted in their reflective journal:

"I realised I wasn't losing my professional voice. AI gave me a starting point and options I wouldn't have thought of, but the final decisions were always mine."

The creation of prompt libraries and exemplar lesson sequences further supported professional learning. Teachers reported that seeing how colleagues phrased prompts or adapted outputs gave them confidence to experiment. In one school, a Year 6 teacher built a "bank" of literacy prompts that were later used by colleagues across Key Stage 2, demonstrating how expertise began to circulate across the network.

Leadership also played a role in shaping professional development. Senior leaders attended sessions alongside classroom teachers, modelling openness to experimentation and creating a culture of psychological safety. This encouraged staff to take risks without fear of failure. One senior leader reflected:

"Sharing my own first attempts, even when clumsy, showed colleagues that this was a learning process for all of us. That seemed to matter more than perfecting the technology."

By the end of the project, teachers were not only more confident with AI tools but also more reflective about pedagogy. Several described the process as encouraging them to revisit curriculum sequencing, rethink differentiation strategies, and reconsider what constituted efficient planning. These outcomes echo findings from research on professional learning communities, which suggest that collaboration and distributed leadership are central to sustainable innovation (Liu et al., 2022; Hilal et al., 2024).

In summary, professional learning within this project was characterised by layered CPD, peer-to-peer collaboration, and the cultivation of prompt literacy. Rather than being an isolated technical skill, working with AI became a shared professional practice embedded within the network of schools. This illustrates how networked learning environments can amplify innovation, turning individual experimentation into collective growth.

3.3 Inclusive Practice and Accessibility

A central finding of the project was the extent to which AI enhanced inclusive practice. Teachers reported that the speed and flexibility of AI-supported planning allowed them to generate differentiated resources that would previously have taken hours to produce. This included scaffolded writing frames, dual-language home learning letters, simplified reading texts, and visual instruction guides. By embedding these adaptations seamlessly into lesson design, teachers reduced the stigma sometimes associated with differentiated resources.

Survey data reinforced these outcomes, with 95% of staff stating that AI improved the speed and quality of inclusive planning. Pupil voice further confirmed these benefits: learners described lessons as "easier to follow" and "more interesting" when supported by visuals and interactive elements created through AI. One Year 4 pupil with English as an Additional Language (EAL) explained:

> I like it when the lesson has pictures because I can understand faster, and I don't need to ask the teacher every time.

The inclusion gains were not only perceived but also measurable. As shown in **Figure 2**, 91% of surveyed pupils reported increased engagement in AI-informed lessons, 78% described greater independence in completing tasks, and 85% reported higher levels of enjoyment. These findings suggest that AI contributed not just to access, but to learner agency and motivation.

Teachers also highlighted the value of AI for supporting families. AI-enabled translation tools facilitated more effective communication with parents of EAL learners, who were able to engage more confidently with homework and school updates. This strengthened home–school partnerships, particularly in communities where linguistic diversity has historically posed challenges for parental engagement.

Case studies from across the schools illustrate the breadth of impact. In one Year 3 class, a pupil with speech and language difficulties was able to complete a science investigation independently using AI-generated visual step-by-step instructions. In another, a child with social, emotional, and mental health (SEMH) needs benefited from AI-generated social stories that reduced anxiety during transitions. Teachers observed that these resources not only supported individual learners but also enriched the whole-class experience, as all pupils had access to multimodal representations of concepts.

Overall, AI demonstrated its potential as a leveller, enabling teachers to embed inclusive practices consistently and at scale. While challenges remain in ensuring quality and contextual appropriateness of AI outputs, the evidence suggests that AI can play a significant role in advancing equity and belonging when integrated critically and thoughtfully into planning.

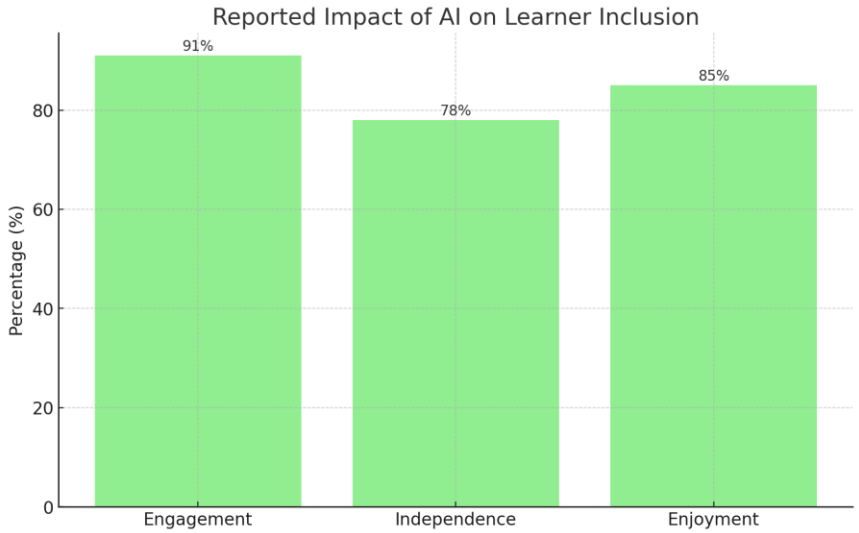

Figure 2: Reported Impact of AI on Learner Inclusion

3.4 Workload, Efficiency and Wellbeing

One of the clearest outcomes of the project was the impact of AI on perceptions of workload. At the baseline stage, 75% of teachers identified lesson planning as a "high impact" contributor to stress and described the process as "time-consuming" and "overwhelming." Average weekly planning time was reported at ten hours, with some teachers noting peaks of up to twelve hours during assessment weeks. By the conclusion of the pilot, the majority of teachers described planning as a "low impact" workload task, and the proportion reporting feelings of being overwhelmed had fallen to 0%.

Quantitative findings were complemented by qualitative reflections that illustrated how AI reshaped the emotional experience of planning. Teachers frequently described AI as removing the anxiety associated with "starting from a blank page." One participant wrote in their journal:

> Before AI, I'd spend Friday evenings dreading the pile of planning ahead. Now I feel like I have a partner who gives me a structure, and I can spend more energy making it my own.

Another explained:

> Planning feels less like firefighting and more like crafting. I can focus on what will excite my class instead of just getting something done on time.

These shifts in perception were underpinned by measurable gains. Teacher confidence in planning increased from 50% to 100%, and the proportion of teachers who felt they were consistently able to meet the needs of their class rose from 37.5% to 100%. These data indicate that AI was not simply a timesaving tool but also a confidence-building mechanism, strengthening teachers' sense of professional efficacy.

However, the project also revealed the complexity of workload as a systemic issue. Several teachers noted that while AI reduced planning time, the saved hours were often reabsorbed into other responsibilities, such as data entry, assessment moderation, or administrative tasks. This echoes wider debates in the literature on the "workload paradox," in which technological efficiencies do not necessarily lead to reduced working hours but may instead enable the intensification of other duties (Williamson & Eynon, 2020).

Wellbeing outcomes were mixed but generally positive. Teachers reported reduced stress and greater job satisfaction linked to improved planning efficiency and confidence. For some, the sense of professional renewal was as important as the saved time. One teacher wrote:

> It has made me feel like I am in control again. I'm not constantly behind — I can be proactive, not reactive.

Nevertheless, leaders recognised that without broader systemic adjustments, there was a risk of undermining these benefits. Protecting the wellbeing gains achieved through AI would require intentional strategies, such as ringfencing freed planning time for collaborative work or reflective practice, rather than allowing it to be absorbed into administrative load.

In summary, the project demonstrated that AI can transform planning from a source of stress into an empowering professional practice. Yet it also highlighted that efficiency does not automatically equal wellbeing. For the promise of AI to be fully realised, institutional policies must ensure that time saved is reinvested in ways that sustain teacher morale and professional growth, rather than contributing to the intensification of other workload demands.

4. Discussion

This study set out to explore how AI-supported lesson planning operates within primary school contexts, with particular attention to workload, pedagogy, inclusion, and the conditions that shape responsible adoption. Drawing on a mixed-methods dataset, the discussion below addresses each research question in turn, situating the findings within contemporary debates in AI in education and Networked Learning scholarship.

4.1 AI, Workload Reduction, and Planning Efficiency

The first research question asked to what extent AI could reduce teacher workload and improve lesson planning efficiency. The quantitative findings provide clear evidence of a substantial reduction in planning time, with average weekly hours decreasing by 52.5%. This aligns with emerging literature suggesting that Generative AI can support teacher productivity by reducing time spent on preparatory tasks (Kehoe, 2023; Seo et al., 2024).

However, the qualitative data add important nuance. Teachers did not describe AI as "doing the planning for them", but rather as removing the cognitive and emotional burden of starting from a blank page. This distinction is critical. AI functioned as a structuring device that enabled teachers to work more efficiently *within* their professional

judgement, rather than bypassing it. From a Networked Learning perspective, this supports a view of AI as a mediating artefact within professional practice, shaping activity without determining it (NLEC, 2021).

At the same time, the findings exposed a workload paradox. While planning time decreased, saved time was often reallocated to other professional demands. This echoes broader critiques of educational technology as a mechanism that can reconfigure rather than reduce workload (Williamson & Eynon, 2020). The implication is that technological efficiency alone is insufficient; institutional conditions and leadership practices are essential in translating efficiency gains into sustainable workload reduction.

4.2 Pedagogical Practice, Teacher Agency, and Professional Identity

The second research question examined how AI-supported planning influenced teaching practice and professional agency. Contrary to concerns that AI might deskill teachers, participants consistently reported increased confidence and a stronger sense of control over their planning. Teachers used AI to compare approaches, test alternative explanations, and refine sequencing, suggesting that AI expanded rather than narrowed pedagogical repertoires.

This finding resonates with Networked Learning scholarship that emphasises learning as a relational and dialogic process, distributed across people, tools, and practices (Ryberg et al., 2025). AI became part of a broader professional network in which ideas circulated through shared prompts, collaborative planning discussions, and reflective dialogue. Importantly, this networked use of AI was not automatic; it was actively cultivated through shared professional learning structures and leadership modelling.

Teacher agency was further reinforced by the explicit framing of AI as a "co-planner". This framing appears to have been crucial in maintaining professional identity, as it positioned teachers as decision-makers who curated, adapted, and rejected AI outputs as needed. The findings therefore challenge deficit-oriented narratives of AI adoption and instead support conceptions of AI as augmentative when embedded within collaborative professional cultures.

4.3 Inclusion, UDL, and Learner Experience

The third research question explored the contribution of AI-supported planning to inclusive practice. The findings demonstrate that AI enabled teachers to operationalise Universal Design for Learning principles more consistently by generating differentiated materials, alternative representations, and scaffolded tasks at speed. Survey and pupil voice data showed increased engagement, independence, and enjoyment, particularly among learners with SEND and EAL. From a Networked Learning perspective, these inclusion gains are significant because they highlight how equity is produced not only through individual teacher actions but through access to shared tools, resources, and professional knowledge. AI-supported planning allowed inclusive practices to be embedded as part of mainstream lesson design rather than as add-on interventions, reducing stigma and increasing learner agency.

However, the discussion also points to potential risks. The sustainability of inclusive benefits depends on equitable access to reliable AI tools and ongoing professional development. Without these conditions, there is a danger that AI could exacerbate existing inequalities between schools and systems, a concern highlighted in post-digital critiques of educational technology (NLEC, 2021).

4.4 Conditions for Responsible and Sustainable Adoption

The final research question focused on the cultural and systemic conditions that enable responsible AI use. The findings indicate that successful adoption was not driven by the sophistication of tools but by leadership, trust, and professional learning structures. Distributed expertise, shared experimentation, and psychological safety enabled teachers to engage critically with AI rather than adopt it unreflectively.

These conditions align closely with Networked Learning's emphasis on participation, collaboration, and shared responsibility. The development of prompt libraries, peer mentoring, and cross-school dialogue illustrates how AI use became embedded within professional networks rather than isolated individual practice. This provides a clearer empirical basis for the paper's claims about networked learning than the original draft, grounding them directly in observed practices and reported experiences.

4.5 Implications for Networked Learning Research

Taken together, the findings contribute to calls within Networked Learning scholarship for more empirically grounded studies that engage directly with AI as both method and phenomenon (Ryberg et al., 2025). By combining quantitative

workload data with rich qualitative insights, the study demonstrates how AI-supported planning operates within real-world professional networks, highlighting both its potential and its limitations.
Crucially, the findings suggest that AI's educational value lies not in automation, but in its capacity to support collaborative, reflective, and inclusive professional practice. This positions AI not as a disruptive force external to networked learning, but as a mediating element that can strengthen professional networks when introduced thoughtfully and critically.

5. Conditions for Success

Success depended on cultural, infrastructural, and strategic enablers. Leadership prioritised workload reduction and The findings of this study indicate that the impact of AI-supported lesson planning was shaped less by the technical capabilities of individual tools and more by the professional, cultural, and organisational conditions in which they were embedded. Drawing directly from the empirical evidence presented, five interrelated conditions emerged as critical to responsible and sustainable adoption.

5.1 Values-Driven Leadership and Strategic Alignment

Leadership emerged as a foundational condition for successful AI adoption. In schools where senior leaders explicitly framed AI as a means to support workload reduction, inclusion, and professional judgement, teachers were more willing to engage critically and experiment with new approaches. This alignment reduced anxiety and helped counter narratives of AI as a surveillance or accountability tool. Importantly, leaders modelled learning alongside staff, signalling that AI adoption was a collective professional endeavour rather than an imposed expectation.

5.2 Professional Learning as a Networked Practice

The study demonstrated that AI adoption was most effective when embedded within structured, collaborative professional learning rather than isolated individual use. Layered CPD, peer-led sessions, and shared prompt libraries enabled expertise to circulate across schools and year groups. These networked learning structures supported the development of prompt literacy and critical evaluation skills, allowing teachers to move beyond surface-level use towards more reflective practice. This finding aligns with Networked Learning scholarship that emphasises learning as relational and distributed across communities of practice.

5.3 Psychological Safety and Professional Trust

Teachers consistently highlighted the importance of psychological safety in enabling experimentation. The opportunity to trial AI tools without fear of judgement or failure encouraged honest reflection on both benefits and limitations. Where trust was evident, teachers felt able to reject or adapt AI outputs rather than feeling compelled to use them. This condition was particularly significant in maintaining professional agency and avoiding uncritical adoption.

5.4 Infrastructure and Access

Reliable digital infrastructure was a necessary, though not sufficient, condition. Access to 1:1 devices, stable connectivity, and safeguarded platforms reduced technical barriers and ensured that AI use could be sustained over time. However, the findings also suggest that infrastructure must be accompanied by professional development and leadership support; access alone did not guarantee meaningful or ethical use.

5.5 Ethical Governance and Professional Oversight

Finally, clear ethical frameworks underpinned responsible use. The use of Data Protection Impact Assessments, staff training on bias and safeguarding, and explicit expectations around human oversight ensured that AI remained a supportive planning aid rather than a decision-making authority. Teachers reported greater confidence in using AI when boundaries were clear, reinforcing the importance of governance structures that protect professional judgement and pupil welfare.

Taken together, these conditions illustrate that AI adoption is a socio-technical process rooted in professional relationships, trust, and shared responsibility. They provide a grounded explanation for why AI supported planning effectively in this study and why similar initiatives may struggle where these conditions are absent.

6. Conclusion and Recommendations

This study set out to examine the role of AI in lesson planning across five primary schools, with a focus on workload, pedagogy, inclusion, and the conditions that shape sustainable adoption. The findings demonstrate that AI-supported planning can significantly reduce planning time, enhance teacher confidence, and support inclusive practice when integrated critically and collaboratively into professional routines.

Crucially, the evidence shows that AI did not replace professional judgement but instead functioned as a co-planner that supported reflection, creativity, and pedagogical decision-making. Teachers' experiences challenge deficit-oriented narratives that frame AI as inherently deskilling, instead highlighting its potential to strengthen professional agency when embedded within trusted networks of practice.

From a Networked Learning perspective, the study provides empirical support for the argument that educational innovation is mediated through relationships, dialogue, and shared inquiry rather than technology alone. The observed use of shared prompt libraries, peer mentoring, and cross-school collaboration demonstrates how AI became part of a networked professional learning ecology. This directly substantiates the claim that professional communities and collaborative practices are central to responsible AI adoption, addressing earlier concerns about evidential grounding.

The study also highlights important cautions. Efficiency gains in planning did not automatically translate into reduced overall workload, reinforcing the need for institutional policies that protect and purposefully reinvest time saved. Similarly, the inclusive potential of AI depends on equitable access to tools, sustained professional learning, and ethical governance.

Based on these findings, the paper makes the following recommendations:

- AI adoption in schools should be framed explicitly as a professional support, not a substitute for teacher judgement.
- Investment in AI tools must be matched with structured, networked professional learning opportunities.
- Leadership practices should prioritise psychological safety, trust, and shared ownership of innovation.
- Ethical governance frameworks should be embedded from the outset to safeguard pupils and professionals.
- Future research should continue to combine quantitative and qualitative approaches to examine AI within real-world educational networks.

In conclusion, the promise of AI in lesson planning lies not in automation but in its capacity to enhance collaborative, inclusive, and reflective professional practice. When approached through the lens of Networked Learning, AI can be understood not as an external disruption, but as a mediating element that strengthens the social and pedagogical networks at the heart of teaching and learning.

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