Tick or Fix: Enacting Daily Reviews in Primary Mathematics Classrooms and Implications for Inclusive Teaching

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Daily Reviews are widely used in primary mathematics classrooms, yet little is known about how teachers enact these routines or the opportunities they create for inclusive teaching. We observed Daily Reviews in two primary classrooms using a descriptive research design to explore (1) how the routine was enacted and (2) how these enactments reflected inclusive practices. Although both teachers used a structured, slide-driven review built around a write–reveal cycle, their enactments differed in instructional variation and student participation. Implications for future implementation suggesting that routines may benefit from practices that make students' thinking more visible.

Daily Review in mathematics has become increasingly encouraged across Australian schools and promoted by state and territory education departments, as well as by national bodies such as the Australian Education Research Organisation (AERO, 2024). It involves fast-paced mathematical questions, completed on mini whiteboards for the first 15-20 minutes of a lesson. Teachers design their own questions or source prepared slide decks (e.g., Ochre Education, 2026). The Daily Review aligns with broader instructional models that prioritise retrieval, rehearsal, and explicit teaching (Victorian Department of Education, 2026), influenced by Rosenshine's (2012) *Principles of Effective Instruction.* These principles reflect a belief that frequent rehearsal strengthens recall and supports well-connected mathematical knowledge. AERO similarly recommends reviewing prior content at the beginning of lessons to activate knowledge, assess students' understanding and plan support. While cognitive load theory (Sweller et al., 2011) supports explicit models of instruction (Kirschner et al., 2006), researchers caution against its mechanical approach, particularly when it may limit opportunities for reasoning or student agency. As Attard (2025) argues, these practices must not come "at the expense of flexible and responsive teaching, student engagement, and authentic mathematical problem solving and inquiry" (p. 4).

Inclusive teaching in mathematics involves using strategies such as scaffolding, differentiation, reflection and feedback to ensure all students can participate and make progress (Darragh et al., 2025; Ingram et al., 2020). Inclusive teaching practices as referred to in our study include the pedagogical moves, participation structures, and interactional routines through which teachers support students to participate in mathematics. A Daily Review that incorporates these elements has the potential to support inclusive teaching practices. Yet little is known about how teachers enact these routines in practice, or whether the structure supports inclusive teaching. Given this potential and widespread uptake of Daily Reviews, our study addresses a gap in the literature by analysing how primary school mathematics teachers enact Daily Reviews and situate these enactments within the broader discussions of inclusive teaching. As part of a larger study, we observed six primary school teachers (Foundation to Year 6) implementing Daily Review. For this paper, we focus on two teachers who implemented the Daily Review but enacted it differently in practice. Our guiding research questions were:

How is the Daily Review enacted in two primary classrooms?

In what ways do these enactments reflect inclusive teaching practices?

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Review of literature

This study is theoretically informed by cognitive science perspectives on memory and instruction (Rosenshine 2012; Sweller et al., 2011) and by inclusive pedagogy, which emphasises participation, access, and responsiveness to learner diversity (Darragh et al., 2025).

The Daily Review

The following review considers the principles of instruction, benefits and limitations related to the implementation of the Daily Review, and practices that reflect inclusive pedagogies.

Daily Review is positioned as a pedagogical routine that supports long term retention, reduces cognitive load, and prepares students for the acquisition of new content. By prompting students to deliberately recall previously taught material, this routine supports the consolidation of knowledge in long term memory, which in turn reduces the cognitive load experienced during new learning (Sweller et al., 2011). This is based on the premise that when working memory and cognitive load increase beyond what students can manage, unnecessary demands are placed on the learner, hindering effective engagement with the task (Sweller et al., 2019). Existing literature frames Daily Review as part of Rosenshine's research informed ten principles of instruction including beginning a lesson with a short review of previous learning; presenting new material in small steps with student practice after each step, asking a large number of questions and checking the responses of all students; checking for student understanding and providing scaffolds for difficult tasks (Rosenshine et al., 2012, p. 12).

Some describe the Daily Review as process driven, focusing on what teachers do and what students learn (e.g., Hiebert & Stigler, 2023). This process-driven approach prioritises response production and correctness over exploration of why answers are correct or incorrect. While practices such as *teacher-directed unison responding* (Merlo, 2024) ensures high student participation, the level of participation does not necessarily recognise diversity and inclusion in relation to students' mathematical thinking and sense-making.

While Daily Reviews have been promoted as an important part of mathematics lessons, concerns have been raised about their implementation (e.g., Swan, 2023). Some teachers, for example, create overly long PowerPoint presentations, student participation is dominated by chanting slide content and answers without genuine understanding. If instruction is delivered too quickly, it reduces students' opportunity to read, and process slide content at their own pace. Similarly, the dominant Initiation-Response-Feedback (IRF) pattern (Sinclair & Coulthard, 1975) is teacher-dominated and has been found to reduce the opportunities to engage students or to shape students' thinking (Myhill, 2006).

Inclusive Teaching Practices

Teachers play a central role in creating inclusive teaching environments, drawing on their expertise to plan, teach, and adapt learning in ways that attend to students' mathematical needs (Attard, 2025). Inclusive teaching practices go beyond behaviour participation and should involve designing and delivering learning experiences that respond to the diverse strengths, backgrounds, and needs of all students (Darragh et al., 2025). Additionally, inclusive practices provide students with multiple pathways for understanding and engaging with mathematical concepts. Research shows that the highest learning gains occur when students engage in high-level thinking, reasoning, and problem solving (Stein & Lane, 1996). Students' mathematical connections are further strengthened when they reflect on prior learning, use concrete materials, construct their own knowledge, and discuss and learn from their mathematical mistakes (e.g., Ingram et al., 2020). Contemporary mathematics practices promote dialogic teaching, with a focus on openness for dialogue, inviting student contribution, fostering dialogic participation, and encouraging students to take risks (Hennessy et al., 2016).

Consistent with this, Alexander (2008) argues that students require opportunities to participate in mathematical talk, to justify, and refine their thinking.

Student thinking can also be explored through an equity lens considering aspects of access, achievement, identity, and power (Gutierrez, 2012). Students should have access to high-quality tasks and develop their identity as learners and doers of mathematics, and as participants in the classroom community (Sherin & van Es, 2026). Gutierrez's (2012) power dimension is particularly relevant to considering who are the sources of mathematical knowledge within the classroom, and how students are positioned to learn that mathematical knowledge.

Policy documents also emphasise inclusive teaching practices. Equity is a key principle of the National Council of Teachers of Mathematics (NCTM, 2000), while the Australian Curriculum: Mathematics (ACARA, 2025) advocates responsive teaching that builds on students' mathematical thinking rather than rigid adherence to scripted instruction. It is also important to emphasise that no single pedagogical approach can meet the needs of every mathematics learner (MERGA, 2025). Effective mathematics teaching relies on a range of intentional and high-quality practices that can be tailored to specific contexts, learners and purposes (MERGA, 2025)

Methodology

A descriptive research design (Kervin et al., 2016) enabled detailed analysis of two case-study teachers' Daily Review enactments and their inclusive teaching opportunities.

Background and context

The study took place in an Australian non-government K–12 International Baccalaureate (IB) school whose philosophy emphasises critical thinking, inquiry-based learning, and developing independent thinkers. The school was implementing a year-long mathematics improvement initiative, which included all classes adopting Daily Review as part of their regular mathematics lessons. Teachers engaged in professional learning on explicit instruction and completed a one-hour Daily Review module. While adoption of explicit instruction and Daily Review routines may seem at odds with the IB philosophy, teachers were encouraged to adapt the routines to their context.

Data collection and analysis

Data were collected through field notes and video-recorded observations of six teachers (Foundation-Year 6) conducting a Daily Review (15-20 minutes) at the beginning of a mathematics lesson. From the six observed teachers, two were purposively selected as case-study teachers to provide an analysis of contrasting Daily Review enactments. Tessa and Kimba (pseudonyms) taught Year 2 and Year 4 respectively; both had 15 years of teaching experience.

Data analysis occurred in two cycles. First-cycle, descriptive coding identified the structural components of each teacher's Daily Review (e.g., pacing, task types, questioning patterns). Second-cycle pattern coding examined how these routines created or limited opportunities for inclusive participation. Codes included *strategy sharing*, *misconception visibility*, *peer reliance*, and *teacher positioning*. Comparative case analysis enabled identification of similarities and differences across the two classrooms, and their implications for inclusion.

Results

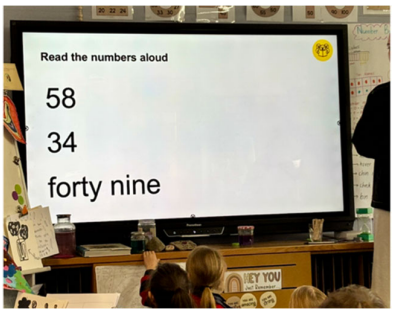
This section presents the results of the Daily Review observations for each teacher. Tables have been used to document the mathematical focus, pedagogical routines, student participation, and instructional variations for each Daily Review.

Daily review: Tessa (Grade 2)

Tessa's enactment of the Daily Review was highly structured and teacher-directed, with Ochre-generated slides (e.g., see Figure 1), sequencing short response items at a steady pace. Students were seated on the floor in front of an Interactive Whiteboard (IWB) where the slides were projected. The teacher sat to the side of the IWB and remained there throughout the session.

Figure 1.

Scene depicting representation of a Daily Review slide



Classroom observations showed that students responded either with choral responses (all students respond aloud together, at the same time, to a teacher's prompt) or worked individually and silently, writing answers on mini-whiteboards and holding them under their chins for rapid teacher checking. Students were then instructed to 'tick or fix' their answers. Some students corrected their responses and then erased their work, ready to move onto the next question. Although the teacher occasionally acknowledged that alternative methods may have been used, these acknowledgements did not lead to invitations for students to share or justify their reasoning. Interaction was minimal, with limited opportunities for mathematical talk or comparison of approaches. The Daily Review lasted for 15 minutes.

Table 1 provides an overview of the structure of Tessa's Daily Review, including mathematical focus, pedagogical routine, instructional variations, and student participation patterns. The write-reveal cycle refers to the repeated instructional sequence whereby students write independently, then 'hover' (place board face down or hold to chest), 'chin it' (hold boards under chin or in air), after which the teacher scans responses and reveals the answer on IWB. Students then 'tick or fix' their answers before they 'bin it' (rub out their answer).

Table 1.

Structure of Tessa's Daily Review Lesson

Mathematical focus (slides)	Pedagogical routine	Instructional variations	Student participation pattern
Skip counting (2s, 3s, 10s) using number chart	Slide-based instruction; teacher read prompt and progressed slides		Choral whole-class responses
Place value tasks (expanded form; number	Slide-based write–reveal cycle	Placed 3 students close to her who required	Individual whiteboard responses; answers held under

Mathematical focus (slides)	Pedagogical routine	Instructional variations	Student participation pattern
of the day; nearest 10; before/after)		additional assistance with interpreting and writing	chin; self-correction following reveal
Additive reasoning representations (number bonds; bar models; number lines; partitioning)	Slide-based write-reveal cycle	As above; prompt to compare with neighbour; acknowledgement that different strategies may have been used	Individual whiteboard responses; brief peer comparison when prompted

The table shows that the instructional routine remained consistent across tasks, with variation limited to mathematical content and occasional prompts for brief peer comparison.

Field notes showed that the format enabled efficient whole-class monitoring of answers but afforded restricted insight into students' thinking processes. Because only final answers were visible, the teacher had limited access to students' reasoning or misconceptions, making it challenging to provide targeted support to students or identify when follow-up was needed to address misconceptions, struggle, or peer reliance. When answers were revealed, there were visible displays of enthusiasm (e.g., "Yes!) from some students, indicating they also valued correct answers and opportunities to check. The structure and positioning of students as well as the teacher allowed for potential non-thinking behaviours (e.g., such as faking or copying) to remain unnoticed. The teacher remained largely in one position, supporting a small group seated nearby, and intermittently recorded observational notes. When asked, Tessa explained that she sometimes adapted the format to differentiate for a small group of students who worked through an 'extended' Daily Review together rather than the whole-class administered version. She reported positively on the review process, and that the routine builds retention through rehearsal, had strengthened her instructional confidence, and was positively received by students.

Daily review: Kimba (Grade 4)

Kimba's Daily Review followed a similar slide-based, write-reveal structure to Tessa's, but differed markedly in interaction pattern. Students were frequently asked to explain and demonstrate their strategies and encouraged to ask questions. Alternative strategies were accepted and discussed, and choral responding was minimal. Kimba remained standing throughout and moved constantly around the room. While the lesson was fast paced, she welcomed students' contributions. The Daily Review ran for 20 minutes. Using the same format as Table 1, Table 2 provides an overview of Kimba's Daily Review structure.

Table 2.

Structure of Kimba's Daily Review Lesson

Mathematical focus (slides)	Pedagogical routine	Instructional variations	Student participation pattern
Continuing patterns; numbers in descending order	Slide-based instruction; write-reveal cycle	Asked students to describe rule for pattern; invited explanations before revealing answers; selected students to justify reasoning	Individual whiteboard responses; boards held under chin; self-correction
Equations	Slide-based write–reveal cycle	Asked 'How do you know?'; elicited multiple solution strategies; revoiced and compared students' methods	Individual whiteboard responses

Mathematical focus (slides)	Pedagogical routine	Instructional variations	Student participation pattern
Vertical algorithms (addition/subtraction)	Slide-based write-reveal cycle	Probed place value reasoning; asked students to explain regrouping; addressed misconceptions openly (working from left to right)	Individual whiteboard responses showing working out; students modelling of strategies on class IWB
2x multiplication facts; dividing by 2	Write-reveal cycle	Asked students to connect doubling and halving; prompted generalisations (ending in even number); brief discussion of strategy efficiency	Some choral responses (skip counting); individual recording on whiteboards; some partner checking
Area of a rectangle	Write-reveal-cycle	Asked students to explain meaning of area	Individual whiteboard responses with drawings
Draw a hexagon	Write-reveal-cycle	Addressed misconception of hexagon having 8 sides	Individual whiteboard drawings

Table 2 shows several instructional variations that mainly involved eliciting students to explain their thinking. Choral responding was minimal and enacted as whole class skip counting. Video analysis showed that while the lesson was fast-paced, Kimba encouraged extended exchanges and there was wide student participation in these exchanges. There were at least two opportunities where errors or misconceptions were revealed, and these were addressed as teachable moments (unplanned teaching opportunities). Students were observed using post it notes to record PowerPoint slide numbers they found challenging. When asked, Kimba explained that these would be addressed through 'targeted mini lessons' prior to students re-encountering the content again, thereby catering for diversity.

Discussion

While both teachers implemented a structured, slide-driven Daily Review built around a write-reveal cycle, the enactment differed substantially in instructional variations and student participation. Tessa's lesson prioritised pace, accuracy, and whole-class synchrony, while providing limited opportunities for students to explain and make visible their mathematical reasoning, both of which are recognised indicators of inclusive teaching practices (Ingram et al., 2020). In contrast, Kimba demonstrated inclusive practices through embedded frequent invitations for strategy sharing, comparison, and public unpacking of misconceptions, allowing for students to discuss and learn from their mathematical mistakes (e.g., Ingram et al., 2020),

Although both lessons were highly routinised and teacher-directed, Kimba's enactment incorporated more dialogic and adaptive moves, particularly through inviting students' contributions and encouraging students to take risks (Hennessy et al., 2016). This was evidenced by inviting students to demonstrate on the IWB how they would solve the algorithms. Students were active participants in the classroom community (Sherin & van Es, 2026) and positioned to add to the teacher, as sources of mathematical knowledge (Gutierrez, 2012).

Although students were instructed to 'tick or fix' their responses, observations showed that this rarely involved reflection on why an answer was incorrect. Instead, students typically erased and replaced their response once the answer was revealed. This suggests that the routine functioned more as answer verification than as a process of diagnosing and addressing misunderstandings. Kimba appeared more aware of this limitation and created inclusive opportunities for students to explain strategies and publicly discuss and examine misconceptions.

Participation largely consisted of students responding in ways that were prompted by the slides or teacher, such as writing answers, holding boards under their chins, and choral responses. Tessa's Daily Review was dominated by unison choral responding (Merlo, 2024). While this ensured widespread participation, it did not necessarily support inclusive teaching, as the 'power' (Gutierrez, 2012) remained with the teacher and students had limited opportunities to contribute their thinking. As noted by Alexander (2008), students need opportunities to engage in meaningful talk; therefore, highly procedural Daily Review routines may restrict valuable interaction with peers and the teacher.

The rapid pacing and tightly sequenced slides meant that students progressed through tasks simultaneously. While that might support fluency rehearsal (Rosenshein, 2012), it risks sweeping students along without ensuring conceptual understanding, particularly when answers are quickly revealed and the next questions appears immediately. Kimba attempted to mitigate this through questioning and discussion of strategies; however, the fast pace continued to limit opportunities for individual reflection and the sharing of diverse mathematical thinking, both of which are important aspects of inclusive teaching practices.

Conclusions and Implications

In this paper we report on two classrooms and observations of two single Daily Review lessons at one point in time. We did not observe the full range of mathematics instruction enacted by these teachers, and the routines described here represent only one component of their broader mathematical teaching practice. It is also important to note that the findings should not be interpreted as a critique of the teachers or the Daily Review routine itself. Both teachers implemented the mandated structure thoughtfully and with clear commitment to supporting students' learning. Daily review routines can provide valuable opportunities for rehearsal, consolidation, and whole-class participation. However, the structure of the routine, particularly the rapid write-reveal cycle and emphasis on answer verification may limit teachers' access to students' reasoning and constrain opportunities for responsive and inclusive teaching. While such routines may appear inclusive because all students participate simultaneously, participation alone does not necessarily reveal individual understanding, enable instruction to be adjusted (Sherin & van Es, 2026), or position students as contributors to mathematical knowledge (Gutierrez, 2012)

The findings reveal that Daily Reviews are not enacted uniformly, with enactment choices influencing opportunities for inclusive practices. Rather than evaluating the effectiveness of Daily Reviews, this small-scale study contributes nuanced insight into how the practice is interpreted and enacted within classroom contexts. By making visible the pedagogical variations within ostensibly similar routines, the study provides an important foundation for future research examining the relationship between Daily Review enactment, student participation, and inclusive mathematics teaching practices. Complementary instructional approaches, such as number talks, promote inclusive practices by encouraging students to articulate strategies, compare methods, and reason collectively. Integrating such dialogic practices alongside Daily Review routines may provide teachers with richer insights into student thinking and strengthen opportunities for responsive and inclusive mathematics teaching.

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