Title	A tale of two schools: Curriculum deliberation and school-level orientation in transforming knowledge through lesson study
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Purpose – This paper examined how teachers engaged in curriculum deliberation through lesson study (LS) and how different types of teacher knowledge were elicited, co-constructed, and transformed in integrated ways across LS stages. It also clarified how different school-level orientations influence the nature, depth, and scope of the deliberation.

Design/methodology/approach – The study adopted an interpretive qualitative case study approach involving two schools, employing participant observations of LS cycles and post-LS teacher interviews. Thematic analysis and analytical coding were conducted.

Findings –The two cases revealed core features of curriculum deliberation trajectory enabled by LS: problem identification, planning to unlock the educative potential of content, and reflection on enactment for improvement. The types of teacher knowledge that informed deliberation on English language learning were uncovered to reveal LS teams' initial comprehension, collective reasoning and actions, and new knowledge derived. Pedagogical content knowledge was prominently drawn on in unlocking curriculum potential and transformed with the knowledge of student learning gained from the live lesson observations. The school-level orientations were found to influence the extent to which teachers can interrogate existing practices and co-construct knowledge.

Originality – The study offers a nuanced understanding of curriculum thinking in LS teams, which is enabled by processes that construct the dialogic space for coordinating curriculum commonplaces to transform content into pedagogical representations to cultivate student future capacities. It highlights the importance of viewing sustainable LS from an interconnected perspective that calls attention to the social contexts of deliberation.

Keyword (max 5) – Lesson study, Curriculum deliberation, School-level orientation, Teacher knowledge, Pedagogical representations

Introduction

This paper reports on how lesson study (LS) processes enable a certain kind of deliberation in the form of curriculum thinking. LS is understood as an inquiry situated in classroom practice. In an extensive literature review, 73% of reviewed studies focused on the benefits of LS in building a professional learning community (PLC), developing teaching practice, and improving student learning (Xu and Pedder, 2014). Much is known about the advantages of LS participation, but the processes through which it brings about curriculum thinking are understudied. An understanding of curriculum thinking is important to account for the processes through which curriculum decisions that consider learners, teachers, subject matter, and milieu (Schwab, 1969) are initiated and acted on to cultivate students' 'human powers' of capabilities and dispositions (Deng, 2021, p. 1652).

The study set out to examine the deliberation in LS teams in two Singapore schools with contrasting contexts that influenced inquiry conditions. The research questions were (1) How does LS enable curriculum deliberation? (2) What is the teacher knowledge drawn on and co-constructed through curriculum deliberation in LS? (3) How does the school-level orientation influence teacher learning in LS? Transcript analysis of planning discussions found that the deliberation trajectory was characterised by cycles of pedagogical reasoning and actions that followed along the LS stages to transform content into pedagogical representations. The findings point to powerful LS processes that enable an interconnected coordination of commonplaces. The influence of social contexts on deliberation calls for an interconnected view of teacher learning and has implications for sustainable LS.

Literature review

Three areas and their interrelations are reviewed: lesson study, curriculum deliberation, and teacher knowledge, to offer a composite lens that guides data analysis.

Lesson study processes

How LS works has been explained in terms of intervening pathways involving changes in teachers' knowledge, curriculum resources, and PLC (Lewis *et al*., 2009). These changes were examined along LS stages such as the investigation phase, to study the curriculum and formulate goals, and the phases of planning, teaching, and reflection (Dudley, 2013; Lewis *et al*., 2006). Yet more systematic examinations along and beneath all stages are still needed to unpack fully the working mechanism of LS.

From a curriculum perspective, starting with goal setting signals the importance of situating inquiry in a curriculum concern. For example, in teaching expository texts in an American school, goal setting was informed by differentiated instruction and content that develops students' life skills of problem-solving and cooperation (Hurd and Licciardo-Musso, 2005). In this study and others reported in LS literature (e.g., Fernandez and Yoshida, 2012), goal-setting presumes students' learning gaps. In fact, how student problems are identified informs LS inquiry foci (Fang, 2022), which are also shaped by the school's curriculum emphasis (e.g., Goh and Fang, 2017). Therefore, further studies are needed to understand how social contexts influence problem identification in LS.

A study by Tan-Chia *et al*. (2013) of seven Singapore schools reported that LS processes helped teachers enact formative assessment using feedback from lesson enactment. The study by Fang (2022) of a team in a Singapore school, supported by a curriculum specialist, found that deliberation was characterised by a problem-solving orientation involving anticipating student responses and designing corresponding teacher support. These studies highlight the powerful processes of the inner workings of LS in English language (EL) education and suggest that more needs to be explored to understand

both the curriculum deliberation processes and contexts of deliberation to enhance LS practices, particularly when no external experts are involved, for instance, in the two schools that we examined.

The nature of the interconnected view of curriculum deliberation

Scholars designate curriculum deliberation as a mode of inquiry in curriculum making that deeply engages with problems of practice arising out of discontent with particular schooling situations, such as curriculum design (Pereira, 1992; Schwab, 1969). Curriculum deliberation entails reflective decision-making that considers four curriculum commonplaces or philosophic traditions encompassing learners, teachers, subject matter, and milieu (Deng, 2013; W. A. Reid, 1992; Schwab, 1969). The fifth commonplace in the work of Schwab (1969) refers to that of a curriculum specialist in coordinating the commonplaces. Schwab (1969) posited that dealing with the commonplaces one by one misses the point that curriculum deliberation is an interconnected way of examining commonplaces. However, scholars, including M. J. Reid (e.g., 2010), presented the commonplaces individually, and were thus unable to produce a coordinated analysis of commonplaces as the process of teachers' deliberation.

How teachers engage in LS to establish goals, plan, teach, and reflect (Dudley, 2013; Lewis *et al*., 2006) resembles curriculum deliberation by nature that progresses along different inquiry stages. More attention was paid in LS literature to the benefits of LS participation (Xu and Pedder, 2014) rather than the mediational role of deliberation, rendering it an implicit part embedded in the LS mechanism, and thus left largely unexplored. Most recently, Fang's (2022) study uncovered the important role of the curriculum specialist in coordinating commonplaces and providing subject content. Our research reported here, however, examines two schools doing LS independently, without external expert support. Yet, the two cases, under different school orientations, contribute in different ways to an understanding of what curriculum deliberation is possible when teams are self-reliant in selecting and improving the content of teaching through LS processes.

On a deeper level, the curriculum discourse involves curriculum thinking that is very much similar to German Didaktik which brings together the teaching of knowledge and 'Bildung', understood as the 'full formation of the individual through the development of intellectual and moral capabilities' (Deng, 2021, p. 1659). Such curriculum thinking involves teachers making defensible educational decisions by re-conceiving the substance of knowledge in productive ways for developing student capacities. To do so, teachers interpret the educational potential of the content by coordinating curriculum commonplaces in ways that enable them to select and organise knowledge for classroom application. Teachers aim at unlocking the educational potential of the content by identifying core concepts and their appropriate pedagogical representations. Therefore, the fundamental task involved in deliberation is concerned with deploying teacher knowledge to analyse content and design learning experiences for students to develop specific capabilities.

The above presents an interconnected perspective to study teachers' learning through LS. Of note is the social milieu within which teachers' decisions and learning occur (M. J. Reid, 2010). The study by Opfer and Pedder (2013) involving a teacher survey in 388 British schools found that the conditions created by school-level structures had the next strongest effect on teacher learning, besides the influence of teacher knowledge and practices. Clarke and Hollingsworth's (2002) Interconnected Model of Professional Growth further proposed that teacher learning occurs through the mediating processes of reflection and enactment shaped by influences from four domains: teachers' personal domain, classroom practice domain, outcome domain, and the external domain that situate the learning stimuli, which in this study would be the two school contexts.

The milieu in curriculum making denoted by the school-level orientations calls attention to their curriculum emphasis and established practices that influence deliberation. Such contextual factors can determine how much teachers can question the status quo. As Argyris and Schön (1974) argue, when teachers interrogate organisational norms and structures that result in productive changes, they experience a double-loop learning. This contrasts with a single-loop learning, where teachers adopt new strategies that maintain established practices within an acceptable range. In this paper, we unpack how LS processes enable curriculum thinking of the LS teams of two primary schools and how different school orientations result in a double-loop or single-loop learning.

Teacher knowledge for curriculum thinking-based deliberation

Research on LS has so far examined knowledge types that teachers draw on and develop through LS separately. For example, Dudley (2013) examined video recordings of British teachers' lesson planning and reported that they drew on subject matter knowledge (SMK), knowledge of students, knowledge gained from lesson observation, and pedagogical content knowledge (PCK), which echoed some of Shulman's (1987) knowledge categories. Among these, teachers drew most frequently on PCK (Dudley, 2013). Through the improvement cycles, LS makes teachers' practical knowledge interconnected with the knowledge of student learning that 'embodies the aspects of content most germane to its teachability' (Shulman, 1987, p. 9). For instance, in a recent learning study case (Wood and Andrew, 2022), the Economics teachers strengthened their PCK by using a pre-test to identify the variation in students' prior understanding of supply-demand relationships and connected it with a related verified economics model to generate insights and identify critical features of the objects of learning to design and study student learning experience.

Shulman (1987) attributed a teacher's PCK development to his or her engagement with a process of pedagogical reasoning and actions that starts with initial comprehension and ends with new comprehension through transformation, instruction, evaluation, and reflection. Through LS, this process is engendered by the collaborative curriculum-making process that both builds and transforms PCK through group deliberation. Therefore, to understand PCK development, a reconceptualization through the lens of the curriculum-making and deliberation process is adopted by our study to explain how teachers begin with content in the institutional curriculum, interpret its educational potential in cultivating student future capabilities, identify its core concepts, and transform them into instructional activities (Deng, 2018). Underneath the deliberation in a LS cycle lies curriculum thinking, which centres on the what and why of the curriculum. It is informed by a theory of content concerned with academic substance, educative potential, and how students' interactions with content cultivate capacities for life (Deng, 2018).

Putting it together, we frame the two school cases of curriculum deliberation through LS in the form of curriculum thinking. It uncovers how the curriculum-making process characterises the way the LS mechanism enables teacher knowledge to be elicited and enacted in interconnected ways when curriculum commonplaces are coordinated and educative potential is unlocked. The purpose of the study is to examine how curriculum thinking is enabled when teachers come together to deliberate the core elements of literacy education, drawing on their practical knowledge types and transforming them into appropriate pedagogical representations through LS. In turn, the school-level orientations influence such knowledge use and curriculum thinking outcomes in the two case schools.

Sites of the study

The two school sites for our study provide contrasting cases with regard to the schools' history, curriculum emphasis, and orientations to lesson study. The impact exerted by the contrasting social

contexts within which the LS teams functioned was made visible by tracing the team's curriculum deliberation discourse.

New Vision is a relatively new school that was established a decade ago. Teacher and student profiles were diverse across races, reflecting Singapore's multi-racial society. Teachers shared a deep concern for low-performing students who qualified for the school financial assistance scheme because of their socio-economic background. The philosophy of the child as the protagonist shapes the school-level orientation in 'honouring the voices of the child' in their learning.

Ningxia was founded a century ago. Teachers and students comprise mainly ethnic Chinese, reflecting the unique profile of the well-established school. Teachers were performance-oriented, exhibiting strong accountability to students' parents, who were well-educated and involved in their children's academic achievement. The emphasis on examination excellence is the hallmark of Ningxia's school-level orientation.

In both schools, all teachers teaching the same grade level were placed in the same PLC. New Vision school allowed teachers to work out their inquiry focus, which engendered a broader consideration of practice. New Vision team met weekly for 90 minutes, focusing mainly on LS.

Ningxia school spelt out the inquiry focus for the team, and they worked within the given parameters established by the school-level orientation. Ningxia team met weekly for an hour for administrative matters before LS. The shorter weekly PLC duration and priorities that competed for LS time could also account for less optimal conditions for deliberation.

Organisation of LS

Both teams had planning meetings, conducted a research lesson (RL1), and post-lesson reflection. Both teams then refined the RL1, and another teacher re-taught it (RL2) in a different class.

The observation of LS occurred over a ten-week school term with Ningxia school teaching the research lesson for a third round because the school decided that all three novices should each teach a RL. Whitney, Jolin, and Mei Xian taught RL1, RL2, and RL3, respectively. The pre-assignment of novices could account for less motivation for Ningxia's experienced teachers to contribute, leading to more unevenness among teachers in the floor-taking during deliberation. The novices asked clarifying questions about what was expected for the RL when it was their turn to teach it and contributed less after that. The experienced teachers contributed more when they asserted their views on practices to ensure examination excellence. Ningxia's experienced teachers demonstrated more dominance in participation and were more prone to quick consensus.

In New Vision, teachers collectively planned before drawing lots to determine who should teach the RL. There was more motivation for all teachers to deliberate because of an equal chance of being cast the lot to teach. There was greater distribution in turn-taking, as the team typically employed a round-robin discussion to gather everyone's perspectives. Ahmad and Siti, who taught RL1 and RL2, respectively, were experienced teachers. New Vision's experienced teachers demonstrated a more contemplative teacher leadership with a larger propensity for deliberation.

Methodology

An interpretive qualitative case study approach was adopted and participant observations of LS cycles and post-LS teacher interviews were employed. Both schools' familiarity with LS was a major sampling

consideration, and each team identified by the school had a unique story to tell of curriculum deliberation.

Participant Profiles

Both LS teams taught EL to seven-year-old students (Grade One). Each had a total of 11 teachers, three of whom were novices with less than two years of experience (see Table I).

Table I
Participants' Profiles

A difference in the teams' profiles was their age composition. The composition of beginning and experienced teachers influenced how well the novices were supported by knowledgeable peers. New Vision had more teachers with at least 8 years of experience (73%) than Ningxia (45%).

Data collection

The first author participated in the meetings, which were transcribed. Eight transcripts from New Vision (8 hours and 7 minutes of data) and ten transcripts from Ningxia (5 hours and 39 minutes) were collected. Post-LS individual interviews with all novices and selected experienced teachers were conducted. Excerpts from transcripts were presented as a form of a stimulated recall (Calderhead, 1981) to gather teachers' perspectives. Assertions formulated based on data analysis were shared as a form of member checking to validate interpretations.

Data analysis

Thematic analysis (Braun and Clarke, 2006), a recursive process of searching across transcripts to identify patterns of meaning, was employed by the first author in discussion with the second author. Transcripts were carefully read and broadly segmented into topic issues that were marked by a shift in the discussion focus. New Vision's transcripts were segmented into 59 topic issues and 1267 meaningful utterances. Ningxia's transcripts were segmented into 100 topic issues and 1033 meaningful utterances, revealing a faster pace of discussion that moved along with more cut-and-dried decisions.

Meaningful utterances were open-coded in Nvivo10. Data given the same code across different transcripts were compared to ensure consistent application or to refine the codes. The finalised open codes were sorted according to patterns of similarity to form core categories (Saldaña, 2013). The first and second authors came together to discuss the categorical aggregation to notice emerging themes and reach a consensus.

For analytical coding, a priori codes drawn from the conceptual framing were used to label meaningful utterances to derive data on knowledge sources. For example, statements indicating teachers' reasoning that drew on their knowledge of the school's policies and resources were coded under school-level orientation. Nvivo10 was used to determine the percentage of utterances under the open and analytical codes. Table II presents the analytical codes, examples, and inclusion criteria.

Table II
Coding Criteria for Types of Knowledge Teachers Drew on

Findings

Drawing on the broad themes from the categorical aggregation in coding analysis, the curriculum deliberation trajectory is reported to illustrate how LS enabled the deliberation in two different school contexts and how school-level orientations influenced teacher learning. Findings on the knowledge that teachers drew on and co-constructed across LS stages are then presented.

New Vision: From analysing student difficulties to unpacking the educative potential of the curriculum in the context of student-centred educational philosophy

The school's values, curriculum orientation, and orchestration of LS were important contextual influences on deliberation. New Vision's philosophy of putting students at the centre of learning underscored their practice of attending to student responses to improve learning. It also shaped how LS inquiry was facilitated by enabling teacher agency to drive the inquiry focus. The analytical narrative that follows traces the trajectory of the team's deliberation over the common student problem in reading and writing. 41.67% of meaningful utterances in the open coding focused on analysing students' challenges in justifying particular adjectives used to describe character traits.

The team began working out their inquiry focus by exploring what 'students have difficulty learning'. During the round-robin brainstorming, Usha, a novice teacher, described her students' problem with 'linking reading and writing'. Other teachers delineated different dimensions of the problem, using the categories of high-ability (HA) and low-ability (LA) students in their sense-making. For example, Susan, an experienced teacher, specified the problems LA students had with 'identifying the words, understanding the words, and committing to memory'. Sally, the Senior Teacher, reasoned that instruction was lacking to justify that 'explicit teaching must be made' using the worksheets from the new school-based reading skills programme. The team's collective reasoning unpacked the common student problem that informed the team's inquiry goal, which was to 'develop confident readers and writers'. The teachers began with content from Smarty Pants, a Big Book in the national curriculum, and examined its potential for teaching adjectives to describe people, based on character traits. They then selected a corresponding character study worksheet as a post-reading activity.

During RL1, teachers observed that students struggled with giving reasons when describing Smarty Pants. Usha, the novice, suggested that the fill-in-the-blanks task, 'He is _____ because _____', was too narrow. She observed that some students 'look at the actions first to come out with the adjective'. Her observation led to the team's cognitive dissonance: from the adult perspective, they failed to expect that children use descriptions of actions to justify inferences about Smarty Pants' character traits. This led the team to re-evaluate the greater educative potential of the content in developing students' capacity to relate people's outward behaviour (the actions), with their inner qualities (the personal traits).

They formed a broadened understanding of content and its potential through observation of student responses and democratic deliberation by both novice and experienced teachers. Certain transformations in their PCK occurred that resulted in the following improvements in RL2: the design of a leading-in activity for students to describe a helpful friend to situate learning within an authentic context and differentiating resources to support learners of different abilities. An open-ended task was designed that enabled students to describe Smarty Pants' actions before explaining their viewpoint about his traits. Additionally, a matching task was designed to support LA students in connecting the description of actions with a corresponding explanation of the traits.

Their working hypotheses about improved, good pedagogical practices were confirmed in RL2. Students could make a good judgement of their friends' strengths and relate people's behaviour to

deeper qualities. Teachers' beliefs about the educative value of differentiated instruction and student-centred pedagogy were reinforced.

Table III below indicates that the teachers' initial comprehension relied on their knowledge of existing resources (31.76% of meaningful utterances in the analytical coding). Later, their collective reasoning and actions co-constructed new knowledge of students informed by RL1 observations (44.44%). In redesigning RL2, teachers transformed their new knowledge into actionable PCK (55.38%) when developing new pedagogical representations of content. In the end, the discourse again drew mostly on teachers' knowledge of students (50.34%) drawn from RL2 observations. The findings suggest a cyclical development of teacher knowledge made possible by the iterative stages of planning, enactment, reflection, and re-planning.

Table III
New Vision: Types of Knowledge Teachers Drew on in Different Stages of Lesson Study

Ningxia: From teaching to the test to rethinking what constitutes effective communication in the context of examination washback

The school's orientation to examination excellence influenced Ningxia's inquiry conditions. The narrative that follows traces the trajectory of the team's deliberation, starting with the inquiry focus identified by the school on preparing students for the new national oral examination format. 39.98% of meaningful utterances in the open coding focused on developing a strategy for students to give more elaborated responses.

Beginning with the school examination task involving the use of picture stimuli and prompts (e.g., Which ice cream would you like? Why?), Shannon, the knowledgeable other, identified the problem of students not being able to 'go beyond one sentence' responses. Anita, an experienced teacher, suggested teaching students the TREES (**T**houghts, **R**easons, **E**xamples, **E**xperience and **S**uggestions) framework to generate ideas. The teachers concurred as the framework was also used with Grade 4 students in the school.

During RL1, teachers observed that the Grade 1 students still gave brief responses when asking each other to recommend one of the ice-creams shown in the three-picture stimuli. Teachers had anticipated students to be able to draw on the TREES framework to give more elaborated responses with reasons, examples, recalled experiences, and suggestions. Yet, their assumptions of the value of the framework for younger learners were challenged, leading to their cognitive dissonance. With further deliberation, they decided on a more age-appropriate script and made the following improvements in RL2: the use of Wh-questions (Who, Where, When, Why, and Which) to help students elaborate and an authentic scenario to situate the conversation (i.e., If you are going to organise an ice cream party, what would you have?).

Observations in RL2 confirmed the team's working hypothesis of the value of Wh-questions in helping students generate content to sustain their peer conversations. However, the post-RL deliberation pivoted on teachers' discontent with students not referring explicitly to the picture stimuli in their dialogue, which would be a requirement under examination conditions. This led them to redesigning that shifted teacher modelling and the paired interaction task in RL3 to within the boundaries of the examination requirements. The experienced teachers specified at length how Mei Xian, the third novice teacher tasked to teach RL3, should model thinking aloud in choosing among the given pictures.

During RL3, students were observed discussing who made the ice cream and how it was made, beyond talking about eating it. This observation led the team to deliberate on what constituted effective

communication in the real-world context and the potential of questions in broadening the scope of the dialogic discourse and in generating multiple perspectives. Nevertheless, the washback effect of examinations brought the deliberation back to the narrower framing of the examination task and the assessment context, where questions are posed by the oral examiner to the students.

Table IV below indicates that teachers drew increasingly more on PCK as they planned for the RLs (38.93%, 52.96%, and 56.04% of meaningful utterances coded in RL1, RL2, and RL3, respectively). Their collective reasoning and actions that drew on their knowledge of students from RL1 observation (42.86%) were, however, not sustained. In the end, the percentage of deliberation informed by the knowledge of students in RL3 Reflection was 18.31%, which was less than half of that in RL1 Reflection. This was driven by teachers' overriding concern with the examination demands (accounting for 38.73% of post-RL3 Reflection). The findings suggest that teacher knowledge development could be limited when deliberation is predominantly influenced by the milieu of school orientation to examination demands, with implications to be discussed later.

Table IV
Ningxia: Types of Knowledge Teachers Drew on in Different Stages of Lesson Study

Discussion

The two cases extend the extant literature beyond the current canonical understanding of LS stages as planning, enactment, and reflection (Dudley, 2013; Lewis *et al*., 2006). They illustrate how LS processes enable an interconnected coordination of curriculum commonplaces to unlock the curriculum potential of content in different school contexts. They also highlight the importance of viewing sustainable LS from an interconnected perspective, which will be discussed below.

Coordinating curriculum commonplaces and unlocking curriculum potential through LS processes

By carefully examining teachers' LS discourses in two schools from a curriculum thinking perspective, we have uncovered what lies beneath the broad teacher development pathways in Lewis et al. (2009). Tracing the ways teachers plan, enact lessons, and reflect on student observations across different LS stages uncovers how teacher knowledge is applied, co-constructed, and developed in interconnected ways through coordinating the commonplaces of the content, the learner, the teacher and the milieu. As LS moves teachers from transforming and enacting the curriculum in the RL to their group reflections on lesson enactment, teachers' PCK is updated and transformed by new knowledge of student learning gathered from the live observations of students' interactions with content and with one another. Teachers' new comprehension of PCK and knowledge of students are deployed in further deliberations that draw on their interpretation of students' challenges to re-evaluate specific content and unlock its greater curriculum potential by redesigning more appropriate pedagogical representations.

These cyclical LS processes teachers undertake resonate with Shulman's (1987) generic model of pedagogical reasoning and actions conceived from the standpoint of individual teachers. But under mediated LS processes, teachers' group deliberation reflects a deeper level of curriculum thinking that centres on the educative potential of the institutional curriculum, and how the design of learning experiences for students to interact with content and others can promote Bildung, the cultivation of students' future 'human powers' (Deng, 2021, p. 1652).

The mediational role of deliberation in LS opens up teachers' curriculum thinking to connect content with student needs and through enactment, reflection, and improvement, enable appropriate pedagogical representations to make the content accessible to students. The curriculum deliberation

perspective enables teachers to move beyond the technical dimension of PCK to arrive at defensible educational decisions that attend to students' future capabilities and support the future significance of learning. In the case of New Vision school, LS enabled the curriculum potential of institutional content to be re-conceived in ways that facilitated students' interactions with content and peers to develop their capacity to make a sound judgement of people's inner qualities based on and beyond their outward actions. Even in Ningxia, a school with an over-emphasis on examinations, the curriculum potential of the speaking task was unlocked with an age-appropriate script and the use of an authentic scenario to cultivate student capabilities for effective communication.

Social contexts of deliberation for sustainable LS

The extent to which LS can support the Bildung-development of students for the long term is influenced by the social contexts within which deliberation and decisions occur. This has implications for how sustainable LS is understood and promoted.

The inquiry conditions in New Vision enabled teachers to interrogate the narrow task that resulted in productive changes to the design of the existing institutional curriculum to promote student capacities, which Argyris and Schön (1974) would argue is a measure of double-loop learning. However, Ningxia's inquiry conditions constrained the extent to which teachers could interrogate the governing variables of examination demands. This resulted in the teachers adopting a new strategy of using an authentic learning task but maintaining the established practice of limiting students' responses to the context of the picture stimuli, which indicates a measure of single-loop learning (Argyris and Schön, 1974).

The cross-case analysis supports extant literature on the influence of the milieu on teacher learning (Clarke and Hollingsworth, 2002; Opfer and Pedder, 2013). It offers insights to school leaders on how they can insure more optimal inquiry conditions by building teams that promote the full participation of both novice and experienced teachers and offering a light-touch orchestration to support teacher agency in driving the inquiry.

While the idea of sustainable LS may be understood in terms of resource provision for teachers' professional development, a broader view of educational sustainability is to consider it from the perspective of meeting students' present needs and also developing students' 'full formation' of capacities for life (Deng, 2021, p. 1659). The cross-case analysis contrasted how New Vision demonstrated a more sustainable LS by focusing on cultivating curriculum potentials that developed students' capacities for using language to make a sound judgement, while Ningxia focused only on a formulaic use of a templatised framework and shorter-term examination gains.

The two cases raise the following questions for building sustainable LS. Firstly, in terms of teachers' stance towards inquiry, to what extent do teachers approach curriculum deliberation as a means of unlocking the educative potential of content to develop language and human capacities? Secondly, in terms of cultivating students' capacities, what opportunities are enabled for learners' voices to be heard and honoured in designing learning experiences and co-constructing classroom discourse? Finally, in terms of EL teaching, to what extent do teachers adopt a process-oriented approach with a long-range perspective in addressing students' language learning needs? When teachers like those in New Vision school are guided by the school's philosophy of honouring learners' voices, they develop a strong sense of inquiry to be able to 'see' curriculum potential for student development. They develop 'eyes' to see the purpose and meaning of education as well as the commitment to unlock students' human powers and thus sustain lesson study in interconnected ways.

Conclusion

This paper has presented what curriculum thinking in LS can enable in cultivating children's English language capacities in different contexts. Future research can study curriculum deliberation in the context of other subject disciplines to understand how the nature of curriculum problems are understood and commonplaces considered in ways specific to the discipline.

LS activities that promote deliberation, including problem identification, planning to unlock the educative potential of content, teaching to generate feedback from the evidence of student learning, and reflection on enactment for improvement, can potentially be developed into situated PD experiences to develop teacher capacities for curriculum thinking. Understanding how decisions are deliberated about the what and why to teach students in a situated context can better inform teachers' professional development in the deliberative tradition.

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Table I

Participants' Profiles

School	Teacher	Role	Gender	Race	Teaching Experience (years)	Prior lesson study experience
New Vision	Amalia	Beginning Teacher 1	Female	Malay	0 – 2	No
	Wei Jie	Beginning Teacher 2	Male	Chinese	0 – 2	No
	Usha	Beginning Teacher 3	Female	Indian	0 – 2	No
	Ahmad	Research Teacher 1	Male	Malay	8 – 15	Yes
	Siti	Research Teacher 2	Female	Malay	More than 15	No
	John	Lesson Study Facilitator	Male	Chinese	More than 15	No
	Mary	Knowledgeable Other	Female	Chinese	More than 15	Yes
	Sally	Senior Teacher	Female	Chinese	More than 15	No
	Fatimah	Team Member 1	Female	Malay	8 – 15	No
	Cathy	Team Member 2	Female	Chinese	8 – 15	No
	Susan	Team Member 3	Female	Chinese	8 – 15	Yes
Ningxia	Whitney	Beginning Teacher 1	Female	Chinese	0 – 2	No
	Jolin	Beginning Teacher 2	Female	Chinese	0 – 2	No
	Mei Xian	Beginning Teacher 3	Female	Chinese	0 – 2	Yes
	Maisy	Lesson Study Facilitator	Female	Chinese	More than 15	No
	Mildred	Assistant Level Master	Female	Chinese	More than 15	Yes
	Shannon	Knowledgeable Other	Female	Chinese	More than 15	Yes
	Jacqueline	Team Member 1	Female	Chinese	More than 15	No
	Jeti	Team Member 2	Female	Chinese	More than 15	No
	Anita	Team Member 3	Female	Chinese	3 to 7	No
	Jennifer	Team Member 4	Female	Chinese	3 to 7	No
	Dezhen	Team Member 5	Female	Chinese	3 to 7	No

Table II
Coding Criteria for Types of Knowledge Teachers Drew on

Criteria	Coding examples from New Vision transcripts	Justification for inclusion
Statements indicating teachers' reasoning that draws on their knowledge of school's existing policies and resources.	Just have this thought. You want to consider the Live Resource Room.	Represents knowledge of school norms structures, and practices.
Statements indicating teacher reasoning based on subject matter knowledge (SMK).	So, I just want to check, cause we were talking about feeling words, the adjectives is (sic) mainly on feelings words, right?	Represents knowledge of EL (but not about teaching EL).
Statements indicating teacher reasoning based on pedagogical content knowledge (PCK).	Under the STELLAR structure, we always start with SBA1 then followed by SBA 2 right. We will actually be introducing the book by asking questions about the character itself.	Represents knowledge of pedagogic approaches best suited to teaching EL.
Statements indicating teacher reasoning based on the observations or evaluations of student learning outcomes or knowledge of student learning.	For example, like when they told me Smarty Pants is a swimming person, to me that shows one thing they did not know the meaning of characteristic, ok. They thought of something else, they thought of action rather than of character.	Represents knowledge of students gained from lesson observation or evaluation of student work.
The use of adjectives that signal cognitive dissonance for learning in teachers' account of events such as being overwhelmed or confused.	The way I am hearing is that we are jumping into the lesson, even to the book. What is the overarching thing we want to do?	Represents tension and motivation for change.

Table III
New Vision: Types of Knowledge Teachers Drew on in Different Stages of Lesson Study

Types of Knowledge	RL1 Planning	RL1 Reflection	RL2 Planning	RL2 Reflection
Statements indicating teacher reasoning based on their knowledge of school policies and resources.	**31.76%**	11.11%	18.06%	6.90%
Statements indicating teacher reasoning based on pedagogical content knowledge (PCK).	28.82%	36. 11%	**55.38%**	33.79%
Statements indicating teacher reasoning based on knowledge of students.	23.53%	**44.44%**	11.81%	**50.34%**
The use of adjectives that signal cognitive dissonance for learning.	5.29%	5.56%	12.85%	4.14%
Statements indicating teacher reasoning based on subject matter knowledge (SMK).	10.59%	2.78%	1.91%	4.83%

Table IV
Ningxia: Types of Knowledge Teachers Drww on in Different Stages of Lesson Study

Types of Knowledge	RL1 Planning	RL1 Reflection	RL2 Planning	RL2 Reflection	RL3 Planning	RL3 Reflection
Statements indicating teachers' knowledge of school policies and resources.	34.31%	26.19%	14.07%	**38.96%**	29.67%	**38.73%**
Statements indicating teacher reasoning based on pedagogical content knowledge (PCK).	**38.93%**	30.95%	**52.96%**	14.29%	**56.04%**	25.35%
Statements indicating teacher reasoning based on knowledge of students.	19.95%	**42.86%**	14.81%	27.27%	9.78%	**18.31%**
The use of adjectives that signal cognitive dissonance for Learning.	6.08%	0%	17.78%	7.79%	4.40%	16.20%
Statements indicating teacher reasoning based on subject matter knowledge (SMK).	0.73%	0%	0.37%	11.69%	0%	1.41%