



Research paper

Toward a diagnostic toolkit for intervention in teachers' agency during curriculum reform: Groundwork for a Change Laboratory in Vietnam

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ABSTRACT

This study presents a diagnostic toolkit in support of teachers' agency during curriculum reform, potentially supported with a Change Laboratory intervention. The instrument was developed with a Vietnamese school undergoing an educational reform. Using cultural-historical activity theory core concepts, we examined the school's approach to its students, its orientation to overcome systemic contradictions, its engagement with expansive learning processes and transformative agency, and its future prospects. The findings suggest that a full-scale Change Laboratory is not necessary in this context, but a theme-focused intervention for specific concerns of teacher groups could benefit the practitioners.

1. Introduction

In recent decades, the focus on teacher agency amid curriculum reforms has grown (e.g., Biesta et al., 2015; Datnow, 2012; Edwards, 2015; Tao & Gao, 2017; Vähäsantanen, 2015). This attention has been spurred as curriculum reforms in many countries have emphasized the key agentic role of teachers in successful reform efforts (Min, 2019; Priestley et al., 2012; Ryder et al., 2018; Scanlon et al., 2021). However, evidence suggests that teachers across different contexts have experienced tensions and dilemmas, and their agency has been constrained during the challenging process of reforms (Bergh & Wahlström, 2018; Fu & Clarke, 2019; Lasky, 2005; Liyanage et al., 2015; Yin et al., 2014). These tensions, in many cases, arise from contradictions prompted by reform requirements, such as clashes between prescriptive objectives, accountability and professional autonomy (Bergh & Wahlström, 2018; Poulton, 2020; Ryder et al., 2018), conflicts between student-centred pedagogy and exam-oriented assessment pressure (Fu & Clarke, 2019), and contradictions within and between systems from macro to micro (Yang & Clarke, 2018). In this context, a pressing need for teacher educators is to support the exercise of teacher agency in overcoming those systemic challenges. Intervention research aimed at supporting teacher agency plays a crucial role in this regard (Carrington et al., 2023; Kajamaa & Hyrkkö, 2022; Leijen et al., 2022; Morselli & Sannino, 2021).

In the realm of intervention research supporting teacher agency, a school-based approach has proved effective (Leijen et al., 2022). Whole school interventions, involving stakeholders, especially school leaders,

are found to promote shared understanding, vision and commitment, fostering a new working mode across the community (Carrington et al., 2023; McMaster, 2013). Such interventions are valuable for building collective agency necessary in systemic school changes and curriculum reform (Carrington et al., 2023; Sannino et al., 2016).

For interventions and especially whole-school interventions to sustain and actually benefit school practitioners, they must be tailored to address the school's specific needs (De Clercq, 2007) and the concrete challenges faced by school teachers. The demands whole-school interventions pose on both researchers and practitioners are such that the interventions can significantly benefit from a thorough diagnosis of the needs and challenges in the given school. By that way, the limited resources can be put into focused and effective use. Diagnostic instruments to this end, to the best of our knowledge, are not yet available. Developing such instruments has the potential to facilitate the preparation of suitable interventions and enable school practitioners to gain self-evaluative insights into strengths and weaknesses, based on which they can develop and implement their own change and improvement agenda (De Clercq, 2007; McMaster, 2013; McNamara et al., 2002). Specifically concerning interventions aimed at supporting teacher agency during curriculum reform, a diagnostic tool is instrumental to identify issues and areas where collective agentic initiatives can be undertaken. In response to this need, our study introduces a diagnostic toolkit developed with the entire staff of a Vietnamese school undergoing curriculum reform. The toolkit aims to support teacher agency in view of a prospective Change Laboratory intervention and provides the

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school with a helpful instrument for self-evaluation and curriculum development.

1.1. Teacher agency

Teacher agency in curriculum reform is a fertile topic of inquiry. Some authors characterize teacher agency as individual capacity to exert professional freedom, make independent choices and take actions in teaching and curriculum practices (Campbell, 2012; Lasky, 2005; Tao & Gao, 2017; Vähäsantanen, 2015), emphasizing its link to professional identity (e.g., Lasky, 2005; Tao & Gao, 2017; Vähäsantanen, 2015; Wei & Chen, 2019) or self-discrepancies (Ruan et al., 2020). Other authors view it as what teachers are able to achieve when engaging with contextual situations, rather than a quality they possess (Biesta et al., 2015; Priestley et al., 2012). Going beyond an individual-focused perspective, Pyhältö et al. (2014) highlight teacher agency in educational change as a relational capacity that involves relying on others as a resource for learning and contributing to community development. In this sense, teacher agency encompasses not only individual decision-making and problem-solving, but also collaborative, collective ability for achieving meaningful changes in their practice (Datnow, 2012; Edwards, 2011).

Theoretical lenses to approach teacher agency for change have also been diverse, including for instance, social cognitive theory, ecological perspectives, subject-centred sociocultural perspectives, and object-oriented approaches (Cong-Lem, 2021). In our study, we adopt an object-oriented approach, using cultural-historical activity theory (CHAT). With CHAT, our focus is on collective teacher agency (Morselli & Sannino, 2021), a topic less explored compared to individual teacher agency (Fu & Clarke, 2018). CHAT framework conceptualizes agency as transformative, emphasizing the collective process of transforming teachers' activities understood as systemic entities of relations in constant flux (Sannino, 2022). With its key concept of the activity system, CHAT allows systematic analysis of collective agency, providing a pathway to generate clear and precise evidence of agency (Severance et al., 2016; and in this journal as well, e.g., Chang, 2024; Sannino, 2010). Also, CHAT offers a formative intervention methodology, which supports the formation and development of agency among practitioners through collaborative efforts to transform their activity system towards relatively long-term future-oriented visions (Sannino et al., 2016). A known formative intervention method is the Change Laboratory (CL), also used in a number of studies published in this journal (e.g., Chang, 2024; Morselli & Sannino, 2021). In short, CHAT is a theoretical and methodological framework particularly suited for exploring the uncharted terrain of developing a diagnostic instrument for whole-school interventions in support of teacher agency and school change. Through the lens of CHAT, this study also contributes to discussions on teacher agency during curriculum reform.

1.2. Studying and facilitating agency with the Change Laboratory

Rooted in cultural-historical activity theory (CHAT), the Change Laboratory (CL) has gained prominence as a resource for studying and facilitating teachers' agency in diverse contexts (e.g., Blomsø et al., 2023; Cakir et al., 2022; Cenci et al., 2020; Chang et al., 2020; Diao et al., 2022; Hopwood et al., 2023; Morselli & Sannino, 2021; Sannino, 2010; Virkkunen et al., 2012; Yamazumi, 2021). In CL interventions, activity theorists, school leaders and teachers collaborate in 6–10 sessions over months, analysing with CHAT theoretical models data on challenges experienced in their school. The participatory analysis is meant to inform a joint design of a relatively long-term new vision and its implementation in the school (Sannino & Engeström, 2017). The CL process of collective analysis and co-design is in itself a window into the formation of teachers' transformative agency for school change (Haapasaaari et al., 2016; Sannino et al., 2016; Yamazumi, 2021).

At the same time, however, CL is also a demanding and time-

consuming intervention for all involved. Therefore, CL is best conducted in schools where specific conditions enable them to most benefit from this demanding process. CL literature lacks diagnostic instruments to this end. When a CL intervention is considered, it is useful to examine whether a full-scale CL effort is truly needed or if a lighter approach would suffice. Moreover, as a participatory research analysis and design process, CL's results depend heavily on the time and efforts invested by school practitioners and interventionists. The implementation of a curriculum reform is however in itself particularly time consuming for school practitioners, setting on them tight scheduling constraints and additional demands. A diagnostic tool can be very helpful to find out what could be the focus of the CL to be as productive and supportive as possible.

1.3. Research questions

This study addresses the gaps presented above by: (1) constructing a first diagnostic toolkit to ascertain the relevance of a CL intervention aimed at supporting teacher agency for a school undergoing curriculum reform; (2) exploring how such a diagnostic toolkit can facilitate the preparation of a CL and support schools' self-evaluation and development. Our inquiry is guided by the following research questions.

1. How to build a diagnostic toolkit that assesses a school's need for a Change Laboratory intervention during a curriculum reform?
2. What does such a diagnostic toolkit, used in a real case, reveal about the necessity of a Change Laboratory intervention for a school undergoing curriculum reform?
3. Which aspects of the diagnostic toolkit brought about in this study are central for the school to support teachers' agency in the next steps of the curriculum work?

1.4. CHAT core concepts and the construction of a diagnostic toolkit for supporting teachers' agency in curriculum reform

The construction of a CL diagnostic toolkit requires, as a foundational step, investigating core concepts of CHAT on which the intervention method builds. Such concepts include: the object of activity, the activity system and its contradictions, expansive learning and transformative agency, and the collective zone of proximal development.

1.4.1. The object of activity

CHAT is an object-oriented theory in that human activities are understood as driven by objects. Without an object, an activity would not have a reason to exist. The object is the societal purpose that an individual or a collective strive to achieve through their activity (Morselli, 2019), carrying in itself the activity's meaning and motive (Engeström & Sannino, 2010). The object of the school's instructional activity, for instance, is represented by the pupils. Their learning and development embody the school's societal purpose. In CL interventions, the object plays a critical role as it directs the participants' learning and agency. Reconceptualisations of the object of activity can energize collective efforts (Sannino et al., 2016), thereby promoting learning and agency among teachers. Thus, a CL diagnostic toolkit should enable the exploration of how teachers see their students and approach them in the specific context of the school activity.

1.4.2. The activity system and its contradictions

One of the key instruments that facilitates CL participatory analyses of activities is the model of the activity system (Fig. 1). By using this model as a template, teachers and researchers explore the specific dynamics of the activity and identify the most acute contradictions which may be generating the observed challenges in the activity.

This model depicts the activity as a system of relations in constant movement and constituted by six elements: 1) the subject represented by an individual or a collective whose point of view is chosen as the

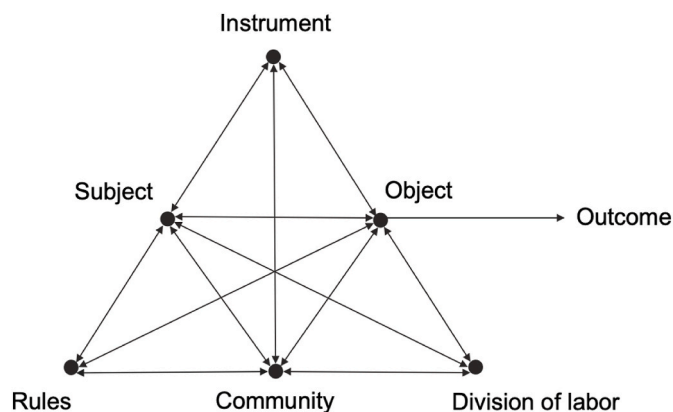


Fig. 1. The Model of an Activity System (Engeström, 1987/2015, p. 78).

perspective of analysis; 2) the object toward which the activity is directed and which in the course of the activity is continuously turned into outcomes; 3) the instrument refers to the tools used to carry out the activity; 4) the community consists of the individuals and groups who share the same general object; 5) the division of labor pertains to the horizontal and vertical division of tasks and responsibilities; and 6) the rules refer to the explicit and tacit norms, conventions and standards that are to be followed when carrying out the activity.

Historically evolving activity systems are continuously sites of contradictions which can give strong impetus for transformation when they become aggravated (Engeström, 2001; Engeström & Sannino, 2010). In the context of CLs, analysing the activity system and identifying the most acute contradictions are central to the participatory efforts by school practitioners and researchers. Hence, a diagnostic toolkit needs to consider the activity system's interacting elements and the most pressing contradictory dynamics manifested within it.

Researchers are advised to formulate hypotheses of contradictions by tracing their discursive manifestations, namely dilemmas, conflicts, critical conflicts and double binds (Engeström & Sannino, 2011). Dilemmas are characterized by situations where individuals are compelled to choose between two incompatible courses of actions. The dilemmatic thinking is often manifested through the linguistic cue "On one hand, ... on the other hand". Conflicts are marked by the practitioners resisting, disagreeing, arguing, or criticizing. Critical conflicts arise when individuals are immobilized by inner doubts stemming from conflicting motives. They are usually expressed through emotional personal anecdotes that convey feelings of violation, guilt, or being silenced. Double binds are characterized by a sense of being trapped with no available solution and a compelling urge to break free from the current crisis. Double binds are often recognized when practitioners express a pressing need, saying "We must ..." (Engeström & Sannino, 2011). Among these, double binds and critical conflicts hold the greatest promise for driving change. A CL diagnostic toolkit must consider these manifestations to formulate initial hypotheses about contradictions within the activity system by taking these manifestations into consideration.

1.4.3. Expansive learning and transformative agency

CL was originally conceived as an intervention for both researching and facilitating learning for change in activities facing transformations (Engeström & Sannino, 2010). This type of learning is called expansive learning (Engeström, 1987/2015). In this type of learning, learners, instead of acquiring established knowledge, engage in a creative participatory process to analyse their activity and design ways to transform it (Engeström, 2015).

Expansive learning, however, does not take place only in the context of intervention research. It has been shown that CL is a way to enhance this process, but in fact expansive learning can take place also when collectives spontaneously question the status quo, reflect on the history

of the activity, attempt at finding what might be at the root of the current challenges, and develop ways to respond to them by envisioning long-term transformations. These are steps in an expansive learning process whether or not researchers are involved. A diagnostic toolkit should therefore be able to ascertain whether an expansive learning process might be already ongoing in the school, so that a CL would be organized as much as possible in continuity with what the practitioners have already been doing.

The very nature of expansive learning is such that agentic actions are integral part of its process (Ko et al., 2022; Sannino, 2022). Within CHAT and the CL literature, agency is seen as the "participants' ability and will to shape their activity systems" (Engeström & Sannino, 2010, p. 20) and is understood as a collective process of transformation of the activity system. The essence of the concept of transformative agency (Sannino, 2022) was defined by Virkkunen (2006) as "breaking away from given frames of action and the taking of initiatives to transform them collaboratively" (p. 43).

CHAT literature includes a specific method for the analysis of expansive learning actions (Engeström et al., 2013). Being very laborious, this method is best utilized for full-scale data analyses of large datasets (Bal et al., 2018), not for a preliminary diagnostic phase of an intervention inquiry. For diagnostic purposes, the toolkit should detect possible occurrences of broad steps of the learning process rather than specific features. In this study, useful indicators of expansive learning and transformative agency include recent, ongoing, or anticipated collaborative initiatives related to curriculum implementation. The toolkit should also identify creative solutions under construction or consolidation in the school.

1.4.4. The collective zone of proximal development

Vygotsky's concept of zone of proximal development as reformulated in *Learning by Expanding* (Engeström, 1987/2015) has been a critical resource to support envisioning future steps in activity development in CL interventions. It is a space in which a qualitatively novel direction for the activity development is outlined by practitioners in response to contradictions which cause problems in their work (Engeström, 1987/2015; Engeström & Sannino, 2010). The zone of proximal development should be part of a CL diagnostic toolkit.

To assess whether the school in a curriculum reform is already learning expansively and acting transformatively, a diagnostic toolkit could seek instances conveying the main dimensions of development foreseen in the school, pointing at possibilities to resolve the contradictions generated by the new curriculum's demands. These dimensions can be identified by looking into articulations of visions, ideas and challenges particularly salient for the school's future in connection with the new curriculum.

2. Research setting and methods

2.1. The Thanh Cong school setting

We conducted this study in collaboration with Thanh Cong (pseudonym), a public primary school in northern Vietnam. It is situated in a rural community where most of parents work in agriculture. This medium-sized school serves approximately 700 students in grades 1–5, with 38 staff members. Each grade has 3 to 5 classes, accommodating around 32 students per class. Recently, under the pressure of a national curriculum reform, the New Curriculum 2018, the school has been working hard to renew itself. The change process, however, has not occurred easily.

The school's teachers, who have been accustomed to a knowledge transmission approach, expressed feelings of worry and confusion as they grappled with the reform requirements, which emphasizes a shift from knowledge delivery towards virtue and competence development (Vietnam Central Party Executive Committee, 2013). Teachers are now expected to design activities that promote students' active participation,

initiatives, and creativity, using differentiated instruction and integrated teaching approaches (Nguyen, 2017). Additionally, schools and teachers are required to evaluate students' competence and virtue development using diverse formative assessment methods (Ministry of Education and Training [MOET], 2018). New obligatory experiential learning activities also necessitate initiatives to ensure students' access to these activities.

Increased local decision-making and teacher autonomy outlined in the reform also bring out challenges. Under the New Curriculum 2018, teachers now collaborate closely with colleagues to choose textbooks and develop school-based curricula, departing from their previous practices. Unlike the longstanding tradition of a single government-designed textbook since 1970 (Hoang et al., 2020), autonomy is granted to teachers, schools, and local authorities to select textbooks aligned with the national core curriculum (Ministry of Education and Training, 2020b). Expected outcomes and guidelines are provided, but detailed regulations, for example, weekly class requirements at the school level have been abolished. Schools are now expected to develop their own curricula that suit the local contexts, students' needs, and available conditions. Teachers have increased authority over teaching materials, instructional methods, and assessment formats that suit their specific contexts, provided that these align with the national core curriculum directions. While the reform offers numerous possibilities for creativity (Hoang et al., 2020), it also presents challenges that require teachers to collaborate and effectively leverage their autonomy.

As the reform is implemented annually and began in 2020–2021, at the time this study was conducted, the school was simultaneously implementing two curricula: the 2006 curriculum for grades 4 and 5, and the 2018 curriculum for grades 1, 2, and 3.

2.2. Data collection

The data was collected in 2022, following the ethical guidelines of the Finnish National Board on Research Integrity. After school management board approval, invitations and information about the study were sent to all 32 teachers (24 homeroom teachers and 8 subject teachers¹), with the school management board serving as the liaison between the researchers and the teachers. Eventually, 27 teachers and two school leaders volunteered for interviews, providing informed consent. The inclusion of as many participants as possible from the school aimed at guaranteeing that the dataset fulfils the criterion of comprehensive multi-voicedness about the school activity (Engeström, 2001).

Once an orientative interview schedule was agreed upon, the teachers were grouped by position. Meetings were coordinated by school leaders to accommodate teacher's schedule. Table 1 lists the research participants and the date of each interview.

Data collection primarily involved semi-structured thematic interviews. The interview questions focused on three main themes of the reform: teachers' experiences with the overall educational reform, teachers' experiences with the virtue- and competence-based curriculum, and teachers' future visions about the implementation of the new

¹ In this Vietnamese school, each homeroom teacher is assigned to a specific class, serving as the main point of contact for students and their families. They play a comprehensive role by providing overall students assessment, managing behaviours, organizing homeroom activities, and coordinating with other staff members. Additionally, they teach most subjects in the curriculum, for example, maths, mother tongue, sciences, and experiential learning activities; for this, they are also general teachers. Subject teachers instead specialize in one subject for the entire school. This school has 2 PE teachers, 1 music teacher, 1 arts teacher, 1 ICT teacher, 2 English teachers and 1 teacher of Ho Chi Minh Young Pioneer Organization. The teacher of Ho Chi Minh Young Pioneer Organization is responsible for collaborating with other members in the school and community (e.g., parents) to organize students' extracurricular activities. The teacher works in alignment with Ho Chi Minh Young Pioneer Organization, an official national organization.

Table 1

List of the research participants and the date of each interview.

Interview number	Interview date	Participant groups	# of participants /total practitioners
1	08.12.2022	Grade 1 teachers	3/4
2	07.12.2022	Grade 2 teachers	4/4
3	29.10.2022	Grade 3 teachers	3/5
4	05.11.2022	Grade 4 teachers	5/5
5	30.10.2022	Grade 5 teachers	3/5
6	10.12.2022	Teacher leaders	3/5
7	05.12.2022	PE teachers	2/2
8	06.11.2022	Music teacher	1/1
9	30.01.2023	Art teacher	1/1
10	05.12.2022	ICT teacher	1/1
11	31.10.2022	English teachers	2/2
12	06.11.2022	General teacher of HCM Young Pioneer Organization	1/1
13	28.12.2022	Vice principal	1/1
14	10.02.2023	Principal	1/1

curriculum in this school. Questions were tailored to specific positions and responsibilities of participants, guided by a school document outlining practitioners' division of labour. For example, the questions for general teachers focused on the implementation of the new curriculum in classroom teaching activities, while those for teacher leaders concentrated on professional learning activities within their grades and across grades. Subject teachers were asked about subject-specific teaching, and the Ho Chi Minh Young Pioneer Organization teacher about the organization of school-level experiential learning and extra-curricular activities. During the interviews, attention was paid to participants' reports of the reform's influence on the school activities, initiatives and challenges they faced in connection with the new curriculum. They were also prompted to reflect on the roots of challenges and propose alternative solutions. Finally, they were asked to articulate their visions for the school's future, and desired support for curriculum implementation.

A total of 14 group and individual interviews, conducted in Vietnamese, lasting 40 min to an hour, were video-recorded. Thirteen interviews occurred online via Zoom, with one in-person interview during the first author's school visit in December 2022. This visit also served the purpose of complementing the interview data with field notes and documents provided by the school. It allowed us to gain a first-hand overview of the research context and obtain clarifications on aspects raised during interviews which required further information.

2.3. Data analysis

In compliance with ethical considerations, participants' identities were strictly anonymized using assigned codes (e.g., G1. T3, for Teacher 3 of Grade 1), as detailed in Appendix A. The data were coded as described in the following, and the diagnostic toolkit was created while conducting the analyses.

Initial Coding. All recorded interviews were carefully watched, listened, and summarized in English. The first author noted down initial ideas about the raw data, transcribed verbatim vivid quotes, and created initial codes. As suggested by Braun and Clarke (2012), this phase facilitated data familiarization. After having a general sense of the data, a coding frame for the next analysis phase was developed jointly by the two authors.

Building a Coding Frame. The core concepts from CHAT, presented in the first section of the article (object of activity, contradictions in the activity system, expansive learning and transformative agency, and zone of proximal development), served as basis for the development of the coding frame and diagnostic toolkit. Toward a meaningful translation of these concepts into diagnostic resources, the following questions emerged.

- How do the participants speak about the pupils (object of activity) in connection with the new curriculum?
- What might be indications of main contradictions the school is facing with the new curriculum and how are they located in the activity system of the school?
- In which phase of a possible expansive learning process is this school, regarding agentive actions undertaken in connection with the new curriculum?
- What might be the main indications of dimensions of the zone of proximal development foreseen in the school?

A coding frame in the form of a template was developed based on these questions. The coding frame represents an embryo of the diagnostic toolkit in the making (Table 2).

Systematic Data Coding. The data was coded systematically using the template in Table 2. The first column of the table lists the key CHAT concepts identified as essential for creating the diagnostic toolkit. The second and third columns contain corresponding codes to CHAT concepts and specifications on how to apply them for the analysis. The fourth column includes data excerpts with identifiers. The last column features content descriptors meant to convey the essence of the given data excerpt, using keywords and expressions as close as possible to those used by the participants.

Columns four and five of Table 2 were filled in as follows. The recorded interviews were meticulously watched and reviewed. Each excerpt was coded deductively using CHAT concepts (e.g., dilemmas, conflicts, critical conflicts, double binds, instruments, division of labor, rules, community) and inductively, creating and using data-driven codes. Content analysis and thematic analysis techniques were utilized to describe the meaning of the qualitative data and identify themes across the dataset (Braun & Clarke, 2012; Schreier, 2014).

To enhance the quality and reliability of the coding process, we took steps in line with consensus coding commonly used in qualitative research (Olson et al., 2016). A ten-page segment of an interview was pilot-coded by the first author and then sent to the second author for independent parallel coding. Initially a 74% rate of agreement was reached between the two coders. Discussions were held to resolve any

disagreements, particularly regarding unclear or ambiguous items, until consensus was reached on the interpretation of the data. This procedure allowed us to improve the functionality of the codebook.

In the coding process, information accuracy was validated through fieldnotes, school documents and official regulations collected during the school visit. Following the coding phase, occurrences of codes were quantified, and illustrative qualitative examples were selected to answer the research questions. The results are reported in the next section.

3. Results

The diagnostic toolkit stems from the data analyses, comprising four main components corresponding to the rows two to four of Table 2: object of activity, contradictions within the activity system, expansive learning and transformative agency, and zone of proximal development. Next, we will describe each component and illustrate how they serve a diagnostic purpose in our school case.

3.1. Component 1: Tool for a detailed diagnosis of the object

Minimally this component should include the features displayed in the first, second and fourth columns of Table 3.

The columns in Table 3 detail the types of characterizations school practitioners conveyed of students (object of activity) - negative, improving, or positive - with specific contents and occurrence counts. The characterizations stem from the content descriptors in Table 2.

Analyzing the first, second, and fourth columns reveals contradictory orientations among practitioners at this school toward the object of activity. While negative characterizations of students were more prevalent (76 occurrences), there were also numerous indications of positive and optimistic orientations (53 and 57 occurrences, respectively). Examining the second column reveals specific contents of these contradictory orientations. Common negative characterizations included shyness (18) and limited communication skills (18). Other common characterizations conveyed that students were slow, weak, and less capable compared to their urban counterparts (11). Regarding shifts toward positive changes, among the higher numbers of occurrences,

Table 2
The coding template and embryo of the diagnostic instrument in the making.

Key concepts from CHAT	Codes	Concept use when processing the data	Data excerpts as examples with participants' and data identifiers (Particularly vivid examples reported verbatim)	Content descriptors (keywords and expressions remaining as close as possible to the terms used by the participants)
Object of activity	Characterizations of the pupils	Search for instances in which the participants speak about the pupils in connection with the new curriculum	G1.T1 – 1:52 “Students in rural areas are timid but they are very obedient”.	Obedient Timid
Contradictions manifested within the activity system (s)	e) -Dilemmas f) -Conflicts g) -Critical conflicts h) -Double binds i) -Instruments l) -Division of labor m) -Rules n) -Community	Search for instances which possibly manifest the main contradictions the school is facing with the new curriculum and how they are located in the activity system(s) of the school.	G2.T4 – 45:25 “The authority said there were digital textbooks. But I must be honest, I am old, I am tired of opening digital textbooks. To open it, many steps. Sometimes I couldn't access to it. Young teachers are good at ICT, but I find it too difficult!”.	g) Difficulty for older teachers in using digital books and ICT i) Only digital textbooks were available during training on the new textbook.
Expansive learning	a) -Significant events from the past b) -Significant ongoing events c) -Significant events expected to happen in the near future d) -Relevant solutions that have been or are being constructed, or might be even already consolidating	Search for instances which possibly convey expansive learning processes this school may be involved in with regard to the new curriculum	P – 25:55 “To help teachers overcome the hesitance to change, we organized many teaching learning sessions in all grades and subjects for all teachers to participate and discuss the difficulties over the last three years ... Our teachers were more confident, and some aspects have been more effective”.	d) Organization of teacher learning sessions over the last three years for increased teacher confidence and effectiveness in teaching the new curriculum.
Zone of proximal development	o) -Visions, ideas or challenges particularly salient for the long-term future of the school	Search for instances which possibly convey the main dimensions of development foreseen in the school which point at resolving the contradictions	G3.T2 – 55:47 “I need to help my students develop language competence, the ability to communicate, because my students are much limited in communicative competence”.	o) Help students develop language competence

Table 3
Basic tool for a detailed diagnosis of the object.

Orientation	Characterizations of students	Participant identifiers (occurrences)	Category occurrences
Negative	Shy (18)	G1.T1 (4); G2.T4 (1); G3.T1 (2); G4.T2 (2); G4.T1 (1); G5.T1 (2); G7.Tm (4); G9.E2 (1); HYPO (1).	76
	Limited in communicative skills (18)	G1.T1 (1); G2.T4 (4); G3.T3 (2); G3.T1 (1); G4.T1 (1); G4.T2 (3); G4.T3 (1); G5.T1 (1); G5.T2 (1); G7.Tm (2); HYPO (1)	
Negative but several participants see improvement after the new curriculum	Slow and weak in comparison with urban students (11)	G1.T1 (3); G3.T2 (1); G3.T1 (1); G4.T3 (1); G4.T2 (1); G6.PE2 (1); G7.Tm (2); G7.Ta (1)	53
	Self-confident (17)	G1.T1 (1); G2.T4 (1); G3.T1 (1); G3.T2 (1); G4.T2 (1); G4.T3 (2); G5.T1 (1); G7.Tm (3); G7.Ta (1); G9.E2 (1); VP (1); P (3)	
Positive	Active (16)	G1.T1 (4); G2.T4 (1); G3.T2 (1); G4.T3 (2); G7.Tm (1); G7.Ta (1); G9.E2 (1); G9.E1 (1); VP (1); P (1); HYPO (1)	57
	Obedient (11)	G1.T1 (3); G2.T4 (3); G4.T2 (1); G4.T3 (1); G5.T1 (1); G5.T2 (1); HYPO-40:43	
	More engaged, excited, and happy following the new curriculum (11)	G1.T1 (1); G2.T1 (1); G4.T3 (1); G7.Tm (1); G7.Ta (1); G8.ICT (2); G9.E2 (2); P (1); HYPO (1)	
	Improving in their thinking, competences, (life) skills and virtues following the new curriculum (10)	G1.T1 (3); G2.T1 (1); G3.T1 (1); G7.Ta (1); G8.ICT (1); G9.E1 (1); VP (1); P (1)	

Note. This table only includes the illustrative characterizations of students that occur most frequently.

several participants mentioned that students lacking self-confidence (17) and activeness (16) were improving after the introduction of the new curriculum. As to the positive characterizations, students' obedience, increased engagement, excitement, and happiness following the curriculum's implementation in both academic and extracurricular activities were among the higher numbers of occurrences (11).

The analysis also suggests a transition in the school's approach to the object of activity, as prompted by the reform requirements. This is evidenced by the shift from negative characterizations of students' general traits to more positive characterizations associated with the new curriculum. Practitioners were moving from mainly depicting students as limited in both cognitive abilities and character qualities, due to their rural backgrounds, to recognizing students' capability of developing competences. This transition was well articulated by a teacher in the following excerpt:

“[When we first accessed the textbook in the first year], we were very nervous and wondered if we could do that, if our students could do that. Our students are from the rural areas, they are not active, not quick like their peers in towns and cities!” (G1.T1)

The worry stemmed from their conception of students as being limited in character qualities and abilities, and therefore, as ill-equipped to meet the higher standards set by the new curriculum concerning students' activeness. However, this teacher reported also that, after the implementation of the new curriculum, she saw the students in a different light: “Compared to the previous curriculum, my students' mother tongue competences have improved significantly” (G1. T1). The teacher started to recognize that her students were capable of succeeding in the new curriculum, even though she tended to associate competences with academic performance in subjects such as mother tongue and math.

The analysis also indicates that equating students' competences with academic ability was a shared conception in the school: “Now I am seeing that we are overemphasizing [students' ability to study] math and mother tongue” (Vice principal). However, the vice principal then started to question this perspective: “But not all students are good at math and mother tongue.” She proposed a new way of thinking about students: “I expect that the new curriculum, at least in my school, helps develop students' true competences”. In this excerpt, she used “true competences” to refer broadly to students' potentials. Some other participants, such as the ICT teacher, also began to break away from the prevalent conception that associated students with mainly academic performance, highlighting the importance of students' interests: “Students are actually very quick, if their interests are touched upon”.

Practitioners at this school showed a willingness to approach the

object of their activity differently. However, as observed in the aforementioned examples, they still struggled to reconceptualize the object, due to strongly consolidated common perceptions. Even among the participants who progressively described students in terms of talents and potentials, negative characterizations were still expressed. For example, while groups 7 and 9 (involving a music teacher and English teachers) frequently mentioned students in positive terms, they also presented students as “shy”, “not confident”, “not active”, and “more limited than urban students”. The presence of these contradictory orientations indicates that these are aspects the school could benefit from focusing on, to push forward the reconceptualization of the students.

The first three columns from the left in Table 3 suggest furthermore that intervening in this reconceptualization effort may be more needed in some groups. Group 4 (involving teachers of grade 4) and group 3 (involving teachers of grade 3) stand out as more struggling as they expressed the most negative characterizations. PE teachers also tended to use strongly negative language when describing students, often linking students with cognitive ability (good, weak) as well as memory and retention (forget, remember). Therefore, if a CL is to be initiated at this school, it may be necessary to provide more immediate support in terms of reconceptualization of the object of activity in grades 3 and 4, and among PE teachers.

3.2. Component 2: Tools for a detailed diagnosis of the activity system and manifested contradictions

This part of the diagnostic toolkit comprises two specific tools, one for the activity system (Table 4) and the other one for indications of possible contradictions within the activity (Table 5).

Table 4 in its complete form is filled with instances in which the interviewees referred to specific components of the activity system (instruments, division of labor, rules, and community). Instruments, for example, include curriculum contents, textbooks, teaching materials, equipment, ICT tools, etc. Division of labor includes references to tasks divided within the school, such as among teachers and between teachers and administrators. Rules refer to regulations and standards mentioned by participants as either constraining or enabling factors within the school. These include, for example, rules about textbook selection, local facility provision procedures, assessment, or conventions shared by the community. For the community, we traced references to people or subgroups who were recognized as sharing the same object of activity. They included parents, school administrators, trainers, etc. The subject, that is the teachers whose point of view was taken as the very starting point of this study, is not separately included in this table.

To count the occurrences, we proceeded as in the following: If a

Table 4
Tool for a detailed diagnosis of the activity system.

Code	Code frequency in the dataset	Content descriptor examples
Instrument	43	Multiple textbooks, PowerPoint slides provided by the publishers, outdated PE teaching equipment
Division of labor	67	Teachers convey knowledge to students in the old curriculum, teachers organize activities and students construct the knowledge in the new curriculum, teachers propose textbooks and the city's education department decide the approved textbooks
Rules	53	National textbook selection regulation in the new curriculum, utilization of grading specification in the old curriculum, three levels of completion assessment rule in the new curriculum
Community	42	Parents, local education department, local youth union

Note. Due to space constraints, Table 4 provides only a few illustrative examples of the coding.

particular content was repeated, we marked it with x2, meaning that it is mentioned twice by the same participant or by two participants in the same excerpt. However, we still counted the specific code as one instance, considering the repetitions only as possible indicators of importance to the participants.

The first column of Table 5 displays teacher groups' name and the number of manifested contradictions of each. The second to fifth columns include the respective numbers of specific manifestations (dilemmas, conflicts, critical conflicts, and double binds), along with their themes.

In this school, dilemmas (68) and conflicts (41) were common while critical conflicts (22) and double bind (1) were significantly fewer, suggesting that the contradictions are not particularly severe or aggravated. It is noteworthy that, this school, implementing the reform for three years in some grades, has likely overcome critical change phases, as evidenced by teachers referring to past struggles only and the low number of contradictions among those already implementing the new curriculum (e.g., grade 1, grade 2, music, and English teachers). This interpretation is further supported by the evidence about the school's solutions to implementation problems, as will be shown when we discuss the diagnostic tool for expansive learning.

Table 5 not only assesses the overall intensity level of manifested contradictions in the school. It also identifies themes that are of primary concern to teachers. Overall, manifested contradictions in this school revolve around the themes of textbooks, teaching equipment, and teaching methods. Notably, Table 5 discloses that different teacher groups experienced varied tension levels, highlighting themes crucial for tailored teacher support planning. For instance, ICT, Art, and PE teachers expressed a higher number of manifested contradictions, especially critical conflicts, compared to others. PE teachers' manifested contradictions were related to assessment practices, while those of Art and ICT teachers' were related to parents' insufficient appreciation for their subjects. This suggests that PE teachers would benefit from an intervention targeting assessment challenges, while Art and ICT teachers could benefit from support or possibly an intervention focusing on collaboration with parents' community.

Tables 4 and 5 together indicate where in the activity system these contradictions might be located. In this school, the primary concern highlighted by interviewees is the division of labor (67), particularly the shift in the division of labor between students and teachers as prompted by the new curriculum requirement. For instance, a grade 1 teacher mentioned:

“Previously, we teachers provided students with available knowledge, but when implementing the new curriculum, to help students

develop their competences, we have to organize [activities] for them to explore the knowledge themselves by constructing, discovering [the knowledge]”. (Teacher 1, grade 1)

The teaching activity shifts from teachers transmitting knowledge to students actively discovering it. This signifies a reconfiguration of division of labor and therefore may generate a contradiction wherein the object of the activity system in its culturally more advanced form with the new curriculum contradicts with the object of the dominant form represented by the more stabilized way of teaching in this school (Engeström, 1987). A CL-inspired micro intervention therefore could focus on helping teachers overcome this contradiction.

Another aspect emerging from these tables is the involvement of various stakeholders in different curriculum tasks within the school, including the public, publishers, teacher trainers, textbook writers, the local education department, the municipality committee of people, MOET, and parents. This suggests that the contradictions faced by the school with the new curriculum may extend beyond its boundaries, hinting at contradictions between different activity systems. We detected specific manifestations of contradictions that support this emerging hypothesis. Below are examples that illustrate how textbook selection at this school can be mediated by neighbouring activity systems. One teacher voiced a conflict arising from the misalignment of textbooks across grades:

We did choose the textbooks and registered them, but at the beginning of the school year, we were informed that we couldn't teach the textbooks we selected initially. We did not know; they did not explain clearly why, maybe it was decided by the majority. Teachers in grade 1 could teach the textbooks they selected. At the end, the school and the authorities told us to choose that textbook, so we followed. (G2. T1)

Clarifying this, the vice principal voiced a dilemma: while the teachers and the school have the right to evaluate and propose textbooks, the books they propose may not be the ones finally taught at the school.

After we have chosen the textbook, I send it to the authority. But it depends, we must wait to see if the authority would choose the same textbooks that we have chosen. For grade 1, teachers had the right to choose and teach the textbook they selected. But for grade 2 and grade 3, they no longer have that right. Their proposed textbooks are considered as a channel of information, but we have to see if their selection matches the city's decision. If yes, they can teach the textbook. For example, the textbook of grade 3 matched, so they could teach exactly what they had planned. But for grade 2, as I said earlier, the mother tongue and experiential learning textbooks did not match and were not in the final decision of approved textbooks. (Vice principal)

The above examples show that the dilemmas and conflicts expressed by the school's practitioners concerning textbook selection may stem from a contradiction between the school's activity system and that of the city's education department. Hence, the participation of both parties in a possible CL would be salient for addressing the contradiction.

In summary, the diagnostic tool on manifested contradictions reveals that the need for a full-scale CL seems not urgent for this school, due to the low intensity of overall manifested contradictions. However, certain teacher groups might still benefit from theme-focused support, which could be planned by analysing critical conflicts and double binds specific to each group. Additionally, the diagnostic tool of activity systems indicates that systemic contradictions in this school are intricately tied to the division of labor, with the analysis strongly pointing at the reconfiguration of division of labor and the influence of external activity systems.

Table 5
Instrument for a detailed diagnosis of the manifested contradictions.

Teacher groups	e – Dilemma	f - Conflict	g - Critical conflict	h - Double bind
Teacher of grade 1 (4)	1 Life skill education	1 Material development	2 Learning goal, textbook	0
Teacher of grade 2 (5)	0	4 Textbook, teaching aids (2), young teachers' inactiveness	1 ICT	0
Teacher of grade 3 (12)	5 Textbook, test (2), learning goal, content coverage	6 Textbook (2), overemphasis on language and math, experiential learning, teaching aids, content coverage	1 Textbook	0
Teachers of grade 4 (11)	4 Textbook, curriculum knowledge, teaching innovation, local education	6 Textbook, teaching aids, overemphasis on students' hard work, overemphasis on language and math, students' passivity, students' competence	1 Textbook	0
Teachers of grade 5 (11)	9 Textbook, teaching innovation (3), ICT, learning goal, students with disabilities, paperwork pressure, assessment pressure	1 Paperwork pressure	1 Paperwork pressure	0
Teacher leaders (7)	6 Textbook (2), assessment (grade 3) x2, integrated teaching (2), professional learning.	1 Integrated teaching	0	0
PE teacher (8)	3 Textbook, teaching facility, assessment	3 Content coverage, learning goal, teaching facility	2 Assessment (2)	0
Music teacher (4)	1 Textbook	3 Training about the new curriculum, community's attitude to "extra" subject, teaching facility	0	0
Art teacher (13)	5 Assessment, textbook (2), training about the new curriculum, teaching innovation	5 Textbooks (3), training about the new curriculum (2)	3 Textbook, training about the new curriculum, community's attitude to "extra" subject	0
ICT teacher (14)	8 Textbook use (4), teacher authority, subject's impersonal nature, limited class time, computer shortage	2 Teachers' authority x3, parents' awareness of ICT	4 Teacher-student relationship, teacher stress and burnout (2), community's attitude to "extra" subject	0
English teachers (4)	3 Training about the new curriculum, teaching innovation, teacher collaboration	0	1 Students' confidence	0
General manager of HCM Young Pioneer Organization (8)	7 Extracurricular activity organization (5), textbook, training about the new curriculum	1 Extracurricular activity organization	0	0
Vice principal (18)	6 Training about the new curriculum (3), textbook, students with learning difficulties, extracurricular activity organization	7 Teaching equipment (2), textbook, teaching innovation (3), overemphasis of math and mother tongue	5 Teaching equipment, textbook, experiential learning organization (2), holistic curriculum	1 Holistic curriculum
Principal (13)	10 School-based curriculum, teaching equipment (2), English teacher shortage, teaching innovation (2), ICT, expectation of students' improvement and reality, facility, students with learning difficulties.	1 Teaching equipment	1 Teaching equipment	0
Total	68	41	22	1

Note. This table presents the number of discursive manifestations of contradictions identified within each teacher group and their related themes. The number in brackets next to a theme indicates the number of manifestations within that theme.

3.3. Component 3: Tool for a diagnosis of expansive learning and transformative agency processes

The third component of the diagnostic toolkit is presented in Table 6. It includes the number of references to events, initiatives, and solutions potentially indicating expansive learning and transformative agency.

Table 6 shows that the school was actively focused on analysing the past (18) and on finding solutions (47), rather than on the present (9) and future (7).

Notably, the school has prioritized experiential learning and extracurricular activities, evident in the significant number of events organized over the past three years (10). These events included school-wide contests (e.g., performances, sports, drawing), experiential activities (e.

g., New Year festival fair, lantern-making during the Mid-Autumn festival), and out-of-school visits.

The school has also demonstrated a proactive approach to professional learning, organizing teacher learning events and school conferences related to the new curriculum, especially in the past (5) and present (5). This dedication to teacher learning may have contributed to the development and adoption of relevant solutions in professional development activities (9). Moreover, the school's emphasis on professional development appears to have borne fruit in terms of competence-based teaching approaches (11 solutions) and assessment for student progress (6 solutions). Despite no recent events in this regard, it is possible that the school has consolidated the results achieved so far.

A closer look at the contents of these events and solutions reveals

Table 6

Instrument for a detailed diagnosis of the contents of the reported events potentially indicating expansive learning and transformative agency.

Concerned aspect required/promoted in the curriculum	Past	Present	Future	Solution
Promotion of experiential learning and extracurricular activities	10	1	2	4
Professional learning in connection with the new curriculum	5	5	2	9
Assessment for students' progress	0	0	0	6
Competence-based teaching approach	1	0	0	11
Flexible school-based curriculum	0	0	0	4
Teacher voice in textbook selection and use	1	0	1	3
Increased English education	0	0	1	2
Knowledge application among students	0	0	0	3
Life skill education	0	1	0	1
Parent collaboration in supporting students study the new curriculum	1	1	0	1
Modern facilities	0	1	1	1
Promotion of ICT	0	0	0	1
Cross-subject content integration	0	0	0	1
Total	18	9	7	47

some clear signs of expansive learning and agency. First, school administrators and teachers have transformed their professional learning activity to promote innovative teaching methods, by reflecting on the previous activity system, examining the causes of its dysfunction and adopting a new solution. In the following case, they replaced the conventional “one-way” rule with a more collaborative mode of working, by building on a professional learning model from the MOET. Specifically, to address teachers’ reluctance to change teaching methods, the school has embraced a new model of professional learning, guided by Documentary 1315² (Ministry of Education and Training, 2020a). Each teacher group in the school proposes annual thematic learning sessions and takes its turn leading them. Within each group, teachers collaboratively implement the lesson study model (Uffen et al., 2022; Wei, 2019), engaging in the collective design, testing, and analysis of challenging lessons. This new professional learning model is reportedly more “open” (G2. T4) than the previous “one-way” sessions, which “mostly commented on the attendance and behaviours of teachers and students”, as reflected by teacher leader 1. The adoption has led to increased teacher confidence, effectiveness, and positive outcomes, as acknowledged by the principal.

In addition, they have also expanded their activity system in pursuit of an equally expanding object. According to the principal, since 2022, the school has increased its efforts to organize more experiential activities for its students, such as encouraging all students to participate in performance contests. Previously, each class would only select one or two students to represent their grade, resulting in only one performance per grade. However, this year, a new approach was adopted: all classes were encouraged to contribute at least one performance to allow for wider student participation. The school also prioritized performances that involve greater numbers of students to offer them more opportunities to engage in experiential learning. As illustrated in this example, the school has changed its rule of performance selection, to pursue its new objective of fostering students’ activeness.

The above examples illustrate what has been found in our analysis: the school’s willingness to adjust components of its activity system and its ability to actually implement long-term design for the activity system. This suggests that the school has already embarked on expansive learning and demonstrated transformative agency.

² This document provides instructions for implementing professional learning activities in schools across the nation in response to the new curriculum.

3.4. Component 4: Tool for a detailed diagnosis of zone of proximal development

A CL diagnostic toolkit needs to include a component pertaining to the participants’ visions for their school that can be helpful for sketching a zone of proximal development. Table 7 is such a tool, outlining the number and contents of participants’ proposed visions for the school’s future.

Table 7 presents topic categories and corresponding frequencies of participants’ visions regarding the new curriculum. The most common topic was the development of students’ competences and virtues (17). Participants actively discussed and envisioned students’ competences and virtues beyond pre-existing characterizations. This finding aligns with the school’s approach to expanding its object of activity, as indicated earlier. Teaching methods (12) and extracurricular activities/experiential learning (7) were also prominent categories, resonating with diagnostic results on contradictions within the school’s activity system and on the process of expansive learning and transformative agency. These findings can inform the next steps for implementing the new curriculum.

Teachers in this school actively aligned their actions with their envisioned future, focusing on teaching methods and experiential learning for students’ virtue and competence development. This demonstrates the school practitioners’ willingness and capacity to envision and realize their future collectively, and thus deserves recognition as a possible indication of transformative agency.

However, not all teacher groups had a clear vision for the school’s future, suggesting that if a Change Laboratory is initiated, it should concentrate on developing a shared and co-constructed vision. The diagnostic study informs the formulation of such a collective vision.

4. Overall findings based on the diagnostic toolkit

This article begins by posing three research questions.

1. How to build a diagnostic toolkit that assess a school’s need for a Change Laboratory intervention during a curriculum reform?

In this study, we mobilized four key CHAT concepts, namely the object of activity, activity system and its contradictions, expansive learning and transformative agency, and collective zone of proximal development, to create a diagnostic toolkit evaluating the need for a CL in a selected school. We utilized the toolkit to examine four aspects. Firstly, we assessed the school’s willingness to reconceptualize and expand its object by exploring how the school practitioners approach their students in connection with the new curriculum. Secondly, we investigated the severity of the practitioners’ experiences of contradictions within the school’s activity system during the reform by analysing the practitioners’ discursive manifestations of contradictions (dilemmas, conflicts, critical conflicts, and double binds). Thirdly, by analysing

Table 7

Instrument for a detailed diagnosis of the numbers and contents of visions for the future.

Topical categories	Vision number
Students’ competences	9
Students’ virtues	8
Teaching methods innovation	12
Experiential learning and extracurricular activities	7
Collaboration with parents	5
Environment for students to develop their potentials and talents	3
Facilities upgrade	2
Supportive learning environment	2
Inclusive education	1
Supporting teachers’ initiative	1
Other visions	6
Total	56

significant events and initiatives related to curriculum implementation, we explored possible evidence of expansive learning and agency processes at the school. Finally, we assessed to what extent the practitioners may have started sketching the zone of proximal development to address the most pressing contradictions in their activity system.

2 What does such a diagnostic toolkit, used in a real case, reveal about the necessity of a Change Laboratory intervention for a school undergoing curriculum reform?

Our study developed and tested the toolkit in a Vietnamese school undergoing curriculum reform to assess the potential benefits of a CL intervention. The diagnostic toolkit indicates that the school practitioners, although displayed contradictory orientations, showed movement toward expanding their conceptions of students, the object of their activity. The school has actively engaged in expansive learning and transformative agency processes and demonstrated signs of collective envisioning. The diagnosis of contradictions within the activity system suggests that as a collective, the practitioners are not in a near-crisis situation. Overall, this school was making noticeable progress in implementing the new curriculum, suggesting that a full-scale CL does not seem necessary.

3 Which aspects of the diagnostic toolkit brought about in this study are central for the school to support teachers' agency in the next steps of the curriculum work?

Although the diagnostic toolkit indicates that a full-scale Change Laboratory may not be immediately necessary, it indicates that some teacher groups are still experiencing challenges with different curriculum facets. The toolkit provides valuable insights into areas needing support in curriculum implementation and identifies teacher groups who may benefit from such specific support. One possibility therefore would be to consider a lighter variation of a CL, focusing specifically on themes in which the school is facing challenges and signs of

transformative agency are less evident.

Table 8 presents themes that a potential CL in this school could focus on, based on the diagnostic findings. The table also specifies the groups of participants who might most benefit from such a light-weight CL.

5. Discussion and conclusion

Our study contributes a diagnostic toolkit sorely needed in intervention research, particularly in the field of whole-school development and supporting teacher agency in curriculum reform. The toolkit helps to determine the severity and contents of challenges in a school undergoing reform that call for a CL intervention. In this school case, it has brought into attention the tensions between different activity systems in textbook selection and the changing division of labour between teachers and students as prompted by the new curriculum. Also, it helps prevent unnecessary full-scale CL interventions. Even in cases such as ours, where a full-scale CL turns out unnecessary, the diagnostic toolkit still proved relevant for identifying aspects in the new curriculum where teachers' agency can and should be specifically supported. For this, the diagnostic toolkit offers knowledge of particular kind, empowering interventionists and school practitioners to make informed decisions. By illuminating ongoing processes of collective learning and agency formation and obstacles to these processes, the toolkit aids in selecting an appropriate intervention approach and scale to specific school needs, which is essential for sustainable whole-school interventions (Goldberg et al., 2019).

Importantly, our findings highlight four critical conditions required for a fruitful realization of a CL intervention to support teachers' agency in curriculum reform.

- (1) Among practitioners, there are, on one hand, restrictive and contradictory orientations in the approach to students (object of activity). On the other hand, indications of willingness to expansively reconceptualize the object of activity are also present.

Table 8
Potential themes of focus for a Change Laboratory and participant groups mostly benefiting from a Change Laboratory.

Themes	Grounds in the diagnostic for focusing on this theme in a possible CL	Groups mainly concerned with the theme	Important notes
Approach to students	The diagnosis on the object of activity indicates that the school is willing and has already been changing the approach to students; however, a CL might be still helpful to accelerate the object expansion process.	Grade 3, grade 4 and PE teachers	These groups might need more support to overcome negative characterizations of students but the whole school can benefit from this.
Supporting students' confidence in communication	The diagnosis on the object of activity, expansive learning and transformative agency, and zone of proximal development points at this theme.	All	Most of teacher groups agree on the need to support students' development of confidence and communicative skills.
New requirement on assessment	The diagnosis on manifested contradictions, especially critical conflicts points at this theme.	Grade 3, grade 5 and PE teachers	These groups might need support with competence-based assessment. Teachers of grade 5 and PE teachers experience achievement pressure. PE teachers need support to overcome critical conflicts concerning fair assessment and encouraging feedback.
New requirement concerning teaching methods and ICT integration	The diagnosis on manifested contradictions within the activity system and zone of proximal development points at this theme. The administrators emphasize this need and teachers themselves express their wishes to innovate teaching methods, showing their readiness. The existing model of co-teaching whereas the novice teachers are paired with older teachers at this school might help.	Older teacher groups, grade 4 and grade 5 teachers	Older teachers are facing more difficulties compared to younger teachers; they need stronger support to change their teaching habits and using ICT. Teachers of grade 4 and grade 5 have not taught the new curriculum and have yet to receive much training on new teaching methods.
New requirement on experiential learning and extracurricular activities	The diagnosis on manifested contradictions and zone of proximal development points at this theme. This theme resonates with their existing efforts as indicated in the diagnosis on expansive learning and transformative agency.	Administrators and HYPO teacher	The vice principal expresses critical conflicts and double bind and asks for support with this.
Community - Collaboration with parents	The diagnosis of manifested contradictions and zone of proximal development points at this theme.	Grade 3, ICT, Art, Music teachers	These groups of teachers share tensions resulting from the lack of parents' collaboration. Some teacher groups and administrators mention the possibility of collaborating with parents to support students' self-study and experiential learning participation.

- (2) Within the school's activity system, there are manifestations of contradictions concerning curriculum work, including high occurrences of critical conflicts, and double binds.
- (3) There are indications of expansive learning and transformative agency, characterized by participants' capacity and willingness to question and reshape their activity systems (Engeström & Sannino, 2010). However, if these indications are particularly strong, it may imply that the expansive learning process is already underway, which would require careful consideration of the need for an intervention and possibly a recalibration of the scope of the intervention.
- (4) There are indications of willingness and capability among the school practitioners to envision the future in terms of implementing the new curriculum, yet a clear and shared vision has not been fully developed. In such cases, a CL intervention can facilitate the process of charting a zone of proximal development with the collective.

Findings in Table 8 in particular and in the analysis in general also provide a useful archive of data from which mirror materials (Sannino & Engeström, 2017) could be selected from if a CL will be realized.

Furthermore, the results obtained from our diagnostic toolkit contribute to a deeper understanding of teachers' agency in the context of reforms. Drawing on CHAT framework, we conceptualize agency as transformative, collective and future-oriented action, requiring initiative and commitment from practitioners to break out of stabilized but problematic frames of action (Sannino et al., 2016). We argue that this understanding is particularly relevant for studying teacher agency in the context of a curriculum reform. In such contexts a future-oriented vision has typically been established at the national level but, to become fruitful in practice, must be appropriated and shaped in a situated and creative manner by the school practitioners themselves (Fullan & Miles, 1992).

Our study suggests that teachers' agency in curriculum reform may be productively studied by focusing on (1) teachers' characterizations of students and readiness to reconceptualize the object of activity; (2) teachers' willingness to analyse and overcome systemic contradictions in their activity system(s), catalysed by reform requirements; (3) teachers' potential for transformative actions, as reflected in their engagement with the expansive learning process during curriculum work; (4) teachers' initiatives to outline future prospects for the implementation of the reform in their school, thereby charting their collective zone of proximal development.

In our study, school practitioners manifested transformative agency in all the examined aspects, although object expansion was less evident compared to others. Our finding of teachers' agency regarding object expansion is in line with what Engeström and Sannino (2010) called "expansion by enrichment" (p. 9), referring to processes where the expansion of the object is characterized by the integration of a new repertoire rather than the abandonment of old conceptions. New discourses of students' strengths, talents, and interests appeared among teachers who had actually engaged with the reform, but remnants of negative 'deficit orientation' still persisted. These results, consistent with Scanlon et al.'s (2021) findings, also suggest that teachers' agency

during curriculum reform is likely to develop gradually over time.

Interestingly, the transformative agency exhibited by these teachers seems to manifest through their strong commitment to state-mandated policies. As noted by Engeström (2001), goal-directed personal and group actions cannot be comprehensible until we interpret them against the background of entire activity systems. In the case of these Vietnamese teachers, their agency cannot be fully understood without considering the functioning of their whole activity systems. Even when teachers adhere to seemingly top-down policies, it may be seen as a manifestation of collective agency. In this case, the whole school endeavoured to make sense of the new policies, which initially made them confused and frustrated. Once they recognized the relevance of these policies by addressing the contradictions they fuelled, they committed to implementing them throughout their entire activity system. Their agency is demonstrated through collaborative meaningful engagement with the external reform requirements (Severance et al., 2016). This kind of agency would be difficult to detect if only individual teachers' actions were scrutinized without capturing the dynamics of collective agency (Spicer, 2011). This finding also highlights the mediating role of collective sense-making in reform implementation and in building agency for school development (Coburn, 2001; Ganon-Shilon & Chen, 2019). Teacher agency may be better understood in movement toward something new, eventually fuelled by formative interventions (Morselli & Sannino, 2021).

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CRedit authorship contribution statement

Hien Dinh: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft.
Annalisa Sannino: Conceptualization, Methodology, Validation, Writing – review & editing.

Declaration of competing interest

The authors have no competing interests to declare.

Data availability

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Appendix A

Legend.

G1. T1: Teacher 1 in grade 1	G6. PE1: PE teacher 1
G1. T2: Teacher 2 in grade 1	G6. PE2: PE teacher 2
G2. T1: Teacher 1 in grade 2	G7. Ta: Art teacher
G2. T2: Teacher 2 in grade 2	G7. Tm: Music teacher
G2. T4: Teacher 4 in grade 2	G8. ICT: ICT teacher
G3. T1: Teacher 1 in grade 3	G9. E1: English teacher 1
G3. T2: Teacher 2 in grade 3	G9. E2: English teacher 2 TL ¹ : Teacher leader grade 1 TL ³ : Teacher leader grade
G3. T3: Teacher 3 in grade 3	3 HYPO: General teacher of Ho Chi Minh Young Pioneer Organization VP: Vice principal
G4. T1: Teacher 1 in grade 4	P: Principal
G4. T2: Teacher 2 in grade 4	
G4. T3: Teacher 3 in grade 4	
G4. T4: Teacher 4 in grade 4	
G5. T1: Teacher 1 in grade 5	
G5. T2: Teacher 2 in grade 5	

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