Core 3 Research Programme
Baseline Investigation of Subject Domain Pedagogies in Singapore’s Primary and Secondary Classrooms (C3-PP)

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KEY IMPLICATIONS

• Provide more space for students to review and reflect on their learning through the use of self-assessment and peer assessment while providing more process-level and self-regulation feedback to students.

• Craft various professional development courses for teachers, including how to support classroom discussions, how to build competence in engaging students in self-assessment and peer assessment, and how to balance the elements of the inquiry cycle.

• Devise refined Singapore Coding Schemes for the various subjects, provide video data for secondary analysis as well as provide baseline data for future longitudinal studies.

BACKGROUND

Since the launch of Thinking Schools, Learning Nation (1997) and Teach Less, Learn More (2004), the CORE Research Programme has aimed to provide a systemic description and measurement of curriculum and reform initiatives. Both CORE 1 (2004 to 2007) and CORE 2 (2009 to 2014) advanced our understanding of a range of pedagogical practices through rigorous designs and instrumentation. However, the studies had some limitations, which CORE 3 aims to address. This study continues the CORE focus of providing policy-makers, stakeholders and researchers with well-informed, timely and evidence-based baseline descriptions of pedagogical practices in Singapore schools.

FOCUS OF STUDY

In view of important syllabus revisions and curricular shifts such as the new 2020 English syllabus and 2019 Literature in English, a unique opportunity to collect baseline data in English Language (EL), Mathematics (MA) and Additional Mathematics (AM), and new baseline data for Literature (LIT), History (HI), Geography (GE), Physical Education (PE), Music (MU), Visual Arts (VA) and Computer Application (CPA) surfaced. Data collection in 2018 to 2019 allowed us to inform the MOE curriculum review cycles. Given the commonalities between the domains and the varying foci, the study yields a nuanced understanding of the strengths and tensions in these subjects.

KEY FINDINGS

Given the selection of schools from a representative sample, and the selection of teachers with a minimum of 4 years’ teaching experience...
experience teaching an “average” class, the findings may not be generalizable to a population representative of the entire system. Nonetheless, the findings have key implications for theory, practice, curriculum development and research. Overall, as our study comprises baseline data for AM, HI, GE, LIT, MU, PE, CPA, VA, we cannot comment on whether they have improved over time. However, we can note that unlike findings reported in CORE 1 (2004) and CORE 2 (2010), Conceptual Knowledge is now in more than 70% of all lessons observed in Primary 5 (P5) subjects and in more than 60% of all lessons observed in Secondary 3 (S3) subjects. We also see a respectable emphasis on metacognitive knowledge in P5 MA and P5 VA, and S3 AM, S3 LIT, S3 EL where metacognitive knowledge was enacted and observed in more than 30% of all lessons.

Disciplinary knowledge such as epistemic, rhetorical and hermeneutical knowledge are low except for specific subjects such as P5 MA, S1 and S3 LIT (Epistemic Knowledge), P5 MA, S3 EL (Rhetorical Knowledge), P5 VA, S3 EL, S1 and S3 LIT (Hermeneutical Knowledge). These indicate further potential areas for improvement by emphasizing more of these disciplinary forms of knowledge. We also see areas for improvement for classroom discussion and the use of pair/group work, and with the exception of P5 and S3 PE, almost all subject domain teachers struggle to recap their lessons at the end, due to running out of time. We also see areas for improvement for self-assessment, peer-assessment, and self-regulation feedback which remained low across all subjects at P5 and S3 levels.

When comparing P5 and S3 EL and MA data across 2010 and 2018, we note that conceptual knowledge and metacognitive knowledge has improved within the 8-year period. We see the need to improve rhetorical knowledge and epistemic knowledge, both seen to be important disciplinary forms of knowledge for these two subjects.

We observed significant increases in whole class discussion and pair/groupwork for the two subjects, and hope these increases continue as they are important for student knowledge construction. We also note that teachers are employing more Assessment for Learning practices in their lessons, although the use of self-assessment, peer-assessment and self-regulation feedback is still infrequent and therefore constitutes important areas for improvement.

The study contributes to the empirical evidence base of a range of subject-domain pedagogies in Singapore primary and secondary classrooms. The study provides a valuable source of feedback to various stakeholders such as MOE and NIE on the state of teaching and learning in these subject-domain classrooms. Such evidence base can be used to drive new areas of pre- and in-service education through the identification of core strengths of the teachers in our sample, and identification of areas of improvement in the respective subject-domains. Ongoing post-closure discussions with MOE and NIE on the respective subject-domain findings will help to sharpen the utility of the research findings for programme development and practice innovations, as well as inform policy reviews.

**SIGNIFICANCE OF FINDINGS**

**Implications for theory and practice**

- Incorporating reflection in student learning.
- More focus on questioning techniques to better elicit extended responses from students.
- More attention to the use of process-level and self-regulation feedback for student learning.

**Implications for professional development**

- Collaboration with Academy of Singapore Teachers, various subject branches as well as NIE to translate relevant research findings into appropriate professional development courses for in-service teachers which may include supporting classroom discussions, and Assessment for Learning.

**Implications for curriculum refinement**

- Engagement with each subject branch to discuss the domain specific findings for each subject and the implications for curriculum development and refinement where applicable and appropriate.

**Implications for research**

- Singapore Coding Scheme 3 are refined for EL, Mathematics and AM while new coding schemes are devised for LIT, HI, GE, Music, VA, PE, and CPA.
RESEARCH DESIGN

In 2018/2019, we observed a thematic unit of school curriculum work for each participating teacher and conducted brief post-lesson teacher interviews. Student work samples and teacher tasks were collected. We conducted end-of-unit teacher interviews and engaged in Focus Group Discussions (FGDs) with students. Lesson videos were coded (in Microsoft Excel) in five-minute lesson phases. The binary codes largely focused on knowledge work, classroom talk, visibility of learning, skills and values. The lesson-level Likert codes were drawn from the local syllabus and broader, domain-specific normative understandings. Coded data was compiled in SPSS for statistical analyses. Content and thematic analyses surfaced key themes in the teacher interviews and student FGDs.

PARTICIPANTS

A total of 191 teachers from 15 government schools (8 Primary and 7 Secondary) and 10 government-aided schools (4 Primary and 6 Secondary) participated. For each school, we asked for a representative teacher for each focus subject from the relevant P5, S1 and S3 levels. For S1 and S3, we only observed Express classrooms as this constitutes the stream for the majority of the students in secondary schools; and we observed a sample of NT classrooms for CPA (NT).

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• Video data can be re-analyzed in subsequent CORE studies or other secondary analyses (subject to ethics approval).

• Baseline data collected for the various subjects can be provided for comparison for future longitudinal studies in these same subjects.