This manual is divided into two parts. The first part describes the details of data collection for the classroom observation component (COC) of CIEPSS. It includes information on what to do before, during and just after the observation, including details on how to proceed with coding the data using the classroom coding scheme. The second part of the manual explains the classroom coding scheme (as represented in the coding instrument) with rationales and definitions for all categories.

All members of the research team who are involved in data collection for the COC must be well-acquainted with the contents of this manual.

PART 1: PROCEDURES FOR COC DATA COLLECTION

ITEMS TO BRING ON OBSERVATION AND CODING FIELDWORK

Based on experiences of a number of researchers who have been involved in classroom observation coding we have created a checklist for use by observers and coders. Please check the Data Collection Checklist, below, before you go out to schools for observations.

Data Collection Checklist

- A laptop with coding instrument (Excel coding sheet) and coding manual loaded
- An extension cord, a multi-head adaptor
- A video camera (camcorder)
- A tripod
- An additional memory card for the camcorder
- Wide angle lenses
- Two audio recorders with straps & Microphones (batteries with sufficient power)
- A digital camera
- A notebook and pen
- A roller bag
- Schedule of observations
- Directions and contact details for school
- Name tag or name card

The researcher must be trained to use the coding instrument and all equipment before fieldwork begins. The researcher must thoroughly understand the coding scheme.

Every researcher should have a fully charged laptop for coding. Take along an extension cord and a multi-head adaptor just in case the laptop is not sufficiently charged, the plug is too far or the socket is a different type.

Arrange to take a fully charged video camera and necessary accessories (a tripod, an additional memory card, wide angle lenses, an extension cord, and a multi-head adaptor). Some tripods come with a small
plastic piece to connect the video camera to the tripod. If this is not included with the tripod, the tripod cannot be used. Please check if all the parts of tripod are included before packing.

Arrange to bring at least three audio recorders to record teacher and classroom talk during the lesson. The teacher’s audio recorder should have a strap so the teacher can wear it during the class. Take along extra AA or AAA batteries, depending on the recording equipment (approximately two batteries for two hours of lessons or interview). During data collection, the batteries should be changed every two hours.

Take a fully charged digital camera for taking photos of artefacts used by the students and teacher.

Take along a notebook/paper and pen for taking notes.

Use a roller bag as a carrier for all the above items and please check the items and fully charge the necessary items before packing.

**CLASSROOM SET UP**

**EQUIPMENT FUNCTIONING**

Set up the video recorder on a tripod at the back of the room as in the figure below. It is likely that you not be able to see the entire room but capture as much as possible. The camera should stay in position throughout the lesson. Do not try to move it to new locations, and do not set it up at the front of the classroom “Hang” one audio recorder on the teacher. It should be turned on and recording when you place it on the teacher. Let it run and record for the entire lesson. Not capturing some data is more problematic than capturing too much so do not stop the recorder until you or the teacher is leaving the room after the lesson ends.

**FIELD NOTES**

You will be able to make some observations in additional to the coding as the lesson moves along. If so, please write up your observations as field notes. **Minimally** the field notes should include:

- a class map that you draw out to show the configuration of the classroom, the placement of equipment and people in the room, and any distinctive features of the classroom,
- notes to identify which microphone and recorder the teacher is wearing and which students are wearing recorders,
- notes about anything unexpected that happens during the lesson (e.g. fire drill, problems with instructional equipment that requires the teacher to call a technician, etc.),
- questions/comments that are of interest and might be worth investigating further in the video/audio files or through interviews with the teacher or students.
CLASSROOM ARTEFACTS
Please take note of artefacts used during the lesson (i.e. materials used by the students and teacher; students’ work). If possible, snap a photo using the digital camera so there will be a record of artefacts used. In case there is a problem with the digital camera, there are too many observations on the same day, or the artefacts are too extensive to photo, please ask the teacher to allow you to make a photocopy of any printed artefacts or photograph with the video recorder. All photocopies should be scanned in as soon as possible on return to the research centre to avoid a backlog of paper building up.

OBSERVATION AND CODING INSTRUCTIONS
The CIEPSS coding scheme has been adapted and developed based on the Singapore Coding Scheme for Classroom Knowledge Discourse (SCS) (Luke, Freebody, Cazden, & Lin, 2005), the Peer Work and Peer Talk (PWPT) coding scheme (Silver & Kogut, n. d.), the coding scheme for Nurturing Innovation in Primary One Classrooms through Early Childhood Practices (Wright & Gan, 2006) and the coding scheme developed for ‘A Study on the Implementation of ‘Strategies for Effective Engagement and Development (SEED): Pilot’ (Silver & Wright, 2008).1

The coding instrument (Excel coding sheet) is colour coded to assist you in prioritizing your coding. Always fill in the ‘Intro’ sheet, and then move to each PP sheet in turn, using as many sheets as needed. Code each item by filling in the adjacent blue and/or yellow cells. White cells should be coded during the observation; peach coloured cells can be done during the observation as time allows. If that is not possible, they can be done later while watching the video file. In all cases, you should watch the video file after the lesson to confirm your coding.

TIMING
While doing your observation keep an eye on the clock on your computer to note times for activities.

PRINCIPLES OF OBSERVATION
Observe. DO NOT over think or over read. Only report what is observed, (what do you see the teacher doing? what do you see the students doing?), not what you like or prefer. Refer back to this manual frequently – especially if you find yourself wavering in a decision between two or three coding categories.

LESSON CODING
Each observed lesson must be coded using the coding instrument on your laptop. Follow these general steps:

Read over manual to refresh your memory of the coding categories.
Code as accurately and extensively as possible during the lesson, filling in the white cells first.
After the lesson, watch the video from beginning to end to refresh your memory. For this overview, you can use fast forward but do not forward more than 5 minutes at a time.
Watch video in full with sound on or with T audio file as sound. Confirm and complete the coding, filling in all white and peach coloured cells. Do not fast forward and do not skip parts of the lesson.
Watch the video file as many times as need to supply all required information and feel confident in your coding. Limited fast forward may be done in time segments of less than 5 minutes when confirming the coding (i.e. after the entire lesson has been completed coded and the researcher is only confirming that coding is complete).

1 ‘A Study on the Implementation of ‘Strategies for Effective Engagement and Development (SEED): Pilot and development of a large scale grant proposal’ (Dixon et al., 2008) was a pilot study for the CIEPPS project.
**SPECIFIC CODING PROCEDURE (TRAINING/PRACTICE)**

‘Practice coding’ is the coding done individually and independently by all researchers on the team as part of training. Practice coding is essential for ensuring consistent, accurate coding across lessons, subjects and researchers. In all cases, researchers first code with an experienced coder, then do practice coding individually and independently. This is followed by meeting with a group of other coders to check coding agreement. When agreement is sufficiently high, researchers will be able to go out to classrooms for ‘live coding’.

For practice lesson coding, you will need to watch the entire video a **minimum** of two times, three or more is better for accurate coding. Remember when coding live, you will do the first coding while watching the class and then complete the coding and check it with the video after the lesson is done.

Keep track of any questions or concerns as you work. For training purposes, you can keep these notes on the sheet itself (at the bottom in the page in the space for observer notes) or on a separate sheet of paper. At each step, confirm your coding by looking at the definitions in the manual – do NOT rely on your own memory, your own experiences, or your own perceptions as our goal is to code in a uniform manner across coders.

For practice coding, follow these detailed procedures:

**Step 1**
Type in the information for the ‘Intro’ sheet. For our practice coding, enter only Practice 3 (EL) or Practice 4 (Maths) – whichever is relevant – on this sheet. Other information is not needed.

*Coding 1*
Watch the video to determine where PP1 begins and ends. To do that, watch from the beginning of the video until the point that you think PP2 begins, then watch a few more minute to confirm that the PP has changed.

Using the sheet for PP1, mark the time for PP1 to begin and end.

Fill in other PP1 information as best you can with the priority on coding the white cells first. While watching PP1 the first time, you should code for Column A, #2-5 and #7. For these practice lessons, use the video counter to determine the ‘lesson time’.

While watching the PP, you can move on to begin coding the activities within the PP. Fill in information for Column E, #2-13. For subsequent activities within the same PP, continue coding to the right of the excel sheet (Column F, #2-16, Column G, #2-16, and so on).

Code all of the white cells for activities as best you can on the first viewing. You might also be able to code information in the peach cells (documentation, knowledge classification, knowledge manipulation), especially if it is a long activity. However, if you are not able to code all of the information at the first ‘pass’, you can leave the peach cells and code them when you watch the video a second time.

*Coding 2*
After you have gone through the entire PP one time, coding the white cell information for each activity, watch the video for PP1 again.

Go back to Column A to code the rest of the information for PP1: theme/topic, student engagement, classroom management, environmental warmth, promotes learning. Where possible, please record the evidence (i.e. teacher's talk) that explains your coding choice in the space next to the blue cell.

Play through the PP, coding any other details for activities which were not coded in the first pass (e.g. knowledge manipulation, etc.)

**Step 2**
Go on to PP2. Follow the procedures for Coding 1 and Coding 2, as above, and complete the coding for PP2.

Continue in this manner for the entire lesson, coding all PPs and activities.
Step 3
Watch the entire video again, checking your coding against the definitions in the manual as you watch. For this coding, you should be able to play the video through without having to go forward and backward. If a PP or activity is quite long, you might fast forward a few minutes at a time. Never fast forward more than five minutes at a time.

Your goal at this point is to confirm your coding with the manual and across the entire lesson. Ideally, this coding would be done at least one day after you finish Step 2.

Depending on how consistent you are and how sure you are about the coding, you might want to watch the entire video a fourth or even fifth time. However, if you feel like you are just guessing in your coding and trying to confirm by checking the manual does not seem helpful, it is better to leave your coding as you had it originally and wait for group discussion before making changes.

Additional Notes
For categorical coding (e.g. Participation Patterns, Activities), identify the category that best describes what you observe in the class, following the Definitions/Descriptors closely. If none of the existing categories capture what you observe, code for ‘other’. In principal, ‘other’ should be used rarely as this requires additional collating and coding after the fact.

For quantitative and qualitative coding (e.g. almost never–a little–sometimes–always; 0%-25%--26%--50%--51%-75%--76%--100%; Explicitly discouraging–Implicitly discouraging–Implicitly encouraging–Explicitly encouraging), first consider the extreme values (1 and 4). If those are not appropriate, consider the intermediate values (2 and 3), then make your final decision.

DATA ORGANIZATION
After data collection, save all materials (video and audio recordings, pictures of artefacts, excel coding sheets, etc.) with appropriate file names, following the project conventions. For the practice coding, excel coding sheets should be saved as ‘CIEPSS_COC_Practice#CC_Subject_Level_RA’s initials_DDMMYY’ (i.e. CIEPSS_COC_Practice1CC_English_P2_RS_15.05.09) and a copy sent to the Lead RA to collate. For lessons which are part of the project proper (i.e. not the practice lessons but the lessons we collect and analyse as part of the study), file naming should follow the conventions described in the CIEPSS project protocols.

PART 2: CODING SCHEME RATIONALE AND PROCEDURES
The coding instrument is a prepared Excel sheet with categories to be filled in by the researcher. All categories are required, although in some cases a ‘nil’ response is appropriate. The coding instrument includes an ‘Intro’ sheet for general information about the observation, followed by a number of PP sheets – one per participation pattern. Whenever the lesson enters a new PP, move to a new PP sheet, using as many PP sheets as needed. Leave any unused PP sheets blank. The final sheet of the coding instrument is a ‘Data Summary’ sheet with programmed calculations to summarize the data. Do NOT use or change this sheet! The calculations will be done automatically and checked by the COC Research Associate.

At the beginning of each observation or before the lesson begins, fill in the information in the Intro sheet.

During the observation, using the PP coding sheets to record what happens in the lesson following the coding categories described below. While observing the lesson, note the colour coding (white, blue, and peach cells) on the coding sheet which identifies areas of priority for real time coding.

Use a different coding sheet for each participation pattern.

For each participation pattern (PP), be sure to note the time began and ended, the lesson number, and the theme/topic(s). In addition, the activities used (type, PP time for the activity, and physical arrangement during the activity) and the sequence of those activities must be noted. This is the absolute minimum coding required in any lesson.

Several categories are aligned with PPs and are to be coded for behaviour throughout the PP: student engagement, classroom management, environmental warmth, promotes learning. Other categories are
aligned with activities: skill focus, artefacts/tools used, documentation, knowledge classification. For categories which are aligned with PPs, code based on what you see throughout the PP. For categories which are aligned with activities, code only as appropriate for that activity.

FRAMING

Framing refers to information for the lesson as a whole. This is given on the sheet for PP1 to facilitate coding. You can duplicate the information on subsequent PP pages but it is not necessary. Remember to return to the framing section at the end of the lesson to record the end of the lesson time and to confirm the theme/topic for the lesson as a whole.

PP Time Begin

Enter the time at the beginning of the lesson. Round up or down the seconds to the nearest minutes (i.e. 1 min 29 secs = 1min or 1 min 30 secs = 2 mins). Do note the international convention (13 hours 25 min). Key in the hour in the hour cell and the minutes in the minute cell.

<table>
<thead>
<tr>
<th>PP time begin</th>
<th>Hour</th>
<th>min</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>25</td>
</tr>
</tbody>
</table>

PP Time End

Enter the time at the end of the lesson. Round up or down the seconds to the nearest minutes (i.e. 1 min 29 secs = 1min or 1 min 30 secs = 2 mins). Do note the international convention (13 hours 25 min). Key in the hour in the hour cell and the minutes in the minute cell. Do not calculate the lesson time. This will be done automatically by Excel with the beginning and ending time given.

Physical Arrangement at the Beginning of the PP

Rationale

Jordan and Henderson (1995) define physical arrangement as “the spatial layout of a setting, the arrangement of furniture, the open spaces, walkways, coffee niches, door to the outside, and so on” (p. 74). They have argued that physical arrangement is crucial as it has an impact on interaction process between people. The physical arrangements used in the CIEPPS coding scheme are drawn from the SCS and modified based on observations undertaken in the PWPT studies and the SEED Pilot.

Instructions

Code for the physical arrangement of the class at the beginning of the PP and as it changes throughout the lesson (in PPs and activities). The physical arrangement should correspond to the classroom map submitted as part of the field notes (see above).

Physical arrangement types are:

1 = Single Columns
2 = Double Columns
3 = Clusters
4 = Floor Seating
5 = Learning Centres
6 = Laboratory Benches
7 = Free Movement
8 = Other (PLEASE SPECIFY)

Definitions/Examples

Examples for the physical arrangement are as followings:
Note: ‘Cluster’ does not rely on students sitting at desks. Instead, it indicates that students are clustered together. Therefore, when students are seated at the front of the classroom in groups, rather than ‘whole class’, code as ‘cluster’ rather than ‘floor group seating’.

**Learning Centres:** Teachers set up learning centres with different themes, topics or activities. Children move around to the different learning centres either individually or in groups.

**Laboratory Benches:**
**Free Movement**: Students move around the classroom freely; student choice/decision for where to go/be.

**Other**: Any other physical arrangements not covered by these categories.

**Theme/Topic(s)**

**Rationale**
Lessons in Singapore primary schools are often thematically linked or focussed (either explicitly or implicitly). For example, the current Mathematics Syllabus (Curriculum Planning and Development Division, 1997) is thematic. Thematic teaching is also implicit in the current STELLAR programme for P1 and P2 English (Ministry of Education, 2008). Thematic teaching might also be evident across subject areas, for example in ‘integrated project’ work.

**Instructions**
In this cell, indicate the overall theme/topic of the lesson as best you understand it from your observation.

**PARTICIPATION PATTERNS (PPS)**

**Rationale**
Reder, Harris, and Setzler (2003) define the Participation Pattern as “the grouping of the class” (p. 551) in an activity or a task. The coding scheme in their 5-year longitudinal study ([www.labschool.pdx.edu](http://www.labschool.pdx.edu)) includes **teacher fronted**, **student fronted**, **individual private**, **individual public**, **pair**, **group**, and **free movement** as participation pattern codes (p. 551). Crucially, this includes not only the physical arrangement in the room, but also how teacher and students participate in the work that is done (i.e. the teacher is leading the learning process or students are leading the learning process). The CIEPPS PP definitions are drawn from PWPT (Silver & Kogut, n. d.) and based on the ESOL LabSite Classroom Coding Scheme (National Labsite for Adult ESOL, n. d.).

**Instructions**
Each participation pattern in a lesson should be coded on a separate worksheet. For our purposes, participation pattern is defined as the interactional pattern in the class (e.g. teacher fronted, student fronted, etc.). Select one participation pattern and code all of the activities that occur within that participation pattern. **If there is more than one participation pattern at the same time** (i.e. learning centres) please open another PP sheet in the coding scheme, and use both sheets at the same time. On both sheets indicate the time frame (which would be the same on both sheets) and participation pattern (which will be different on the two sheets). Proceed to code the other categories for each PP on the relevant Excel sheet.

The options for the participation patterns are

- 1 = Whole class teacher fronted
- 2 = Whole class student fronted
- 3 = Individual public
- 4 = Individual private
- 5 = Large group work (6+)
- 6 = Small group work (3-5)
- 7 = Pair work
- 8 = Free movement
- 9 = Other (PLEASE SPECIFY)
Definitions/Descriptors

**Whole class teacher fronted:** the students are working as a whole class and the teacher is leading the process.

*Whole class student fronted:* the students are working as a whole class and one or more students are leading the process (see CIEPPS Pilot_RP_PP4_25.04.08). The student or students have ‘the floor’ in the sense that the whole class is supposed to be paying attention to the student(s). Take into account amount and type of teacher interventions. If teacher intervenes and interrupts frequently, this might be coded as teacher fronted (e.g. Practice3, PP5, Act2).

**Individual public:** the students are working individually on a public space in the class (e.g. doing assignments near the whiteboard, putting up posters for everyone to view). This might also include working at their desks when teacher and student behaviour indicates that public sharing of the work is clearly accepted or encouraged (i.e. not necessarily done ‘together’ as in peer work but clear acceptance of sharing).

**Individual private:** the students are working individually at their seats. There is the intention for students to work alone (though this might not be enforced). Cc. with ‘individual public’ when sharing is clearly accepted (or encouraged).

**Large group work (6+):** the students are working in groups of 6 or more people. Usually this follows the teacher saying the students are to work in groups or that they ‘can’; visually the children are observed to be sitting together as groups.

**Small group work (3-5):** the students are working in groups of 3-5 people. Usually this follows the teacher saying the students are to work in groups or that they ‘can’; visually the children are observed to be sitting together as groups.

**Pair work:** students are working in pairs. Usually this follows the teacher saying the students are to work in pairs or that they ‘can’; visually the children are observed to be sitting together as pairs.

**Free movement:** the students need to move or are free to move around the class while doing the tasks.

**Other:** you can choose this option and provide your description if the grouping in class does not fall into any of the suggested participation patterns.

**NOTE:** Group work and pair work assumes that the students are working together to complete the task/activity. It does not cover simply looking over at another’s work (see ‘individual public’) or sitting together. Code for pair/group work based on what the students are doing, not on the teacher instructions (e.g. the teacher might say to work together but the students work individually or vice versa). When groupings are not equivalent, determine pair, small or large group based on the dominant grouping pattern.

STUDENT ENGAGEMENT

**Rationale**

Skinner and Belmont (1993) have suggested that “[e]ngagement includes both behavioural and emotional components” (p. 572). They have argued that a child who is engaged in the class would show ongoing behaviour participation on given tasks while showing affirmative emotion. Thus in this coding scheme, student engagement includes visible displays of on-task behaviour by students and/or visible displays of student enjoyment.

**Instructions**

Code each sub-category separately based on your quantitative assessment.

---

2 Other suggestions for engagement include Fredericks, Blumenfied, and Paris (2004) who consider engagement to have three components: 1) behavioural engagement (i.e. participation in activity), 2) emotional engagement (i.e. positive attitudes and reactions toward activities) and 3) cognitive engagement (i.e. personal commitment in learning). Some scholars (e.g. Harris, 2008; Nystrand & Gamoran, 1991) have argued that cognitive engagement is the most important and most directly related to student. However, cognitive engagement is difficult to determine using observation coding. Thus, while realizing the importance of cognitive engagement, we base our coding on behavioural and emotional engagement using the categories ‘on-task behaviour’ and ‘enjoyment’.
Definitions/Descriptors

On-task behaviour
Percentage of students who show visible on-task behaviour throughout the PP:

1 = 0% - 25%
2 = 26% - 50%
3 = 51% - 75%
4 = 76% - 100%

Enjoyment
Approximate amount of time that student behaviour shows visible enjoyment throughout the PP:

1 = Almost never
2 = Infrequently
3 = Sometimes
4 = Almost always

CLASSROOM MANAGEMENT STRATEGIES

Rationale
Burden (2000) has defined classroom management as a teacher’s “actions and strategies that are used to maintain order in the classroom (p. 1). The literature of classroom management mainly includes two aspects of classroom practices: 1) those that are focused on improving students’ behaviour and discipline (e.g. Demir, 2009; Doyle, 1990; Leung & Lam, 2003; Smith & Laslett, 1993) and 2) those that are focused on enhancing students’ interest and motivation (e.g. Burden, 2000). In this coding scheme classroom management deals with only students behaviour and discipline aspects of classroom management as the latter is too broad and is dealt with in the “classroom engagement” (above) and “activity” sections (e.g. Knowledge manipulation, Artefacts/Tools).

Leung and Lam (2003) have divided teachers’ strategies for enhancing students’ behaviours into two. The first one is reward-based strategies in which teachers “tend to spell out positive consequences of desired behaviours” (pp. 1-2) and the second one is punishment-based strategies in which teachers “inform students of negative consequences of undesired behaviours” (p. 2). Thus in this coding scheme, classroom management includes reward-based strategies and punishment-based strategies.

Instructions
This category codes for the ways the teacher manages the class throughout the PP; separate from identification of a ‘classroom management activity’ (see ‘activity types,’ below). For the PP as a whole, code the classroom management strategies the teacher displays using the two sub-categories: uses reward-based strategies, and uses punishment-based strategies.

Definitions/Descriptors

Reward-based strategies
Smith and Laslett (1993) have suggested that the teacher should offer pupils “a regular opportunity of experiencing reward, whether in terms of self-esteem, with the regard of others, or the enjoyment of pleasant consequences” (p. 33). Thus rewards may be affective/abstract or physical/concrete (e.g. praise, encouragement, affirmation, prize). See Practice 4, PP1, Act 3.

Code for the approximate amount of time that the teacher seems to be rewarding students throughout the PP:

1 = Almost never
2 = Infrequently
3 = Sometimes
4 = Almost always

Punishment-based strategies
Doyle (1990) has noted that although there have been many negative sides of using physical (i.e. extra work, detention, standing) and non-physical (i.e. verbal) punishment, it has is still one of the
most common strategies used by teachers as it has an immediate impact on classroom control. See Practice2, PP1.

Type of punishment is not considered for this coding scheme. Instead, code for the approximate amount of time that the teacher uses punishment-based strategies throughout the PP:

1 = Almost never
2 = Infrequently
3 = Sometimes
4 = Almost always

ENVIRONMENTAL WARMTH

Rationale
This relates to the classroom environment and the affective ‘warmth’ in that environment. Burnett (2002) has suggested that “[a] warm, affective teacher–student relationship has also been associated with positive student attitudes towards school and engagement in the school environment” (p. 8). Environmental warmth types in the CIEPPS coding scheme are drawn from Wright and Gan (2006).

Instructions
Although features such as ‘physical, environmental warmth’ may be the same throughout the lesson, the CIEPPS coding scheme codes for PP and activity, not the lesson as a whole. Therefore, this category must be coded for each PP. If there is no variation from one PP to the other, you can simply copy your coding across PPs.

Definitions/Descriptors

Physical
The degree to which the physical environment of the classroom is warm and inviting (decorations on the walls, prominent display of student work, encouraging vs. discouraging signage, arrangement of space allows access to individual and teacher, etc.) or cold and sterile (no decoration, discouraging or punitive signage, rigid physical arrangements, etc.)

Code within the range of options:

1 = Always cold, sterile
2 = Sometimes cold, sterile
3 = Sometimes warm, inviting
4 = Almost always warm, inviting

Social
The degree to which the social environment of the classroom facilitates/encourages or impedes/discourages interaction (teacher-child or child-child)

Code within the range of options:

1 = Environment always discourages interaction or makes interaction difficult
2 = Environment sometimes discourages interaction or makes interaction difficult
3 = Environment sometimes facilitates and encourages interaction
4 = Environment almost always facilitates and encourages interaction

Psychological
The degree to which the psychological environment encourages students to take risks in their learning or discourages students from risk taking.

Code within the range of options:

1 = Teacher always discourages risk taking; children are fearful of risk taking
2 = Teacher sometimes discourages risk taking; children are fearful of risk taking
3 = Teacher sometimes encourages risk taking
4 = Teacher almost always encourages risk taking
Affective
The degree to which the affective environment takes into account and shows respect for children’s feelings and ideas.

Code within the range of options:

1 = Almost never
2 = A little
3 = Sometimes
4 = Almost always

PROMOTES LEARNING

Rationale
The teacher’s approach to promote pupils’ learning should be done in a way that “stimulates interest, creativity, and develop[s] skills in independent learning, problem-solving, and decision-making” (Ministry of Education, 2006, p. 25) of pupils. This can include the way the teacher interacts with the students, the way the students are encouraged to interact with each other and the materials, and the way the activity is structured.

Instructions
Code based on the extent to which the teacher promotes learning in each area. In this category, coding includes distinctions for quantity (1 – 3, almost never – sometimes) and quality (4 – explicit use). Thus, coding for 4 assumes that there is evidence of the feature (a little or sometimes) as well as explicit use or teaching.

For each category, there may be some variation from one activity to another within the same PP. However, on the assumption that activities do not stand alone within a lesson, we examine the PP as whole for this category. Therefore, code for the extent to which each feature is encouraged overall, throughout the PP.

Definitions/Descriptors

Encourages independent learning: Think in terms of evidence of students learning independently or of evidence of dependence on the teacher/other resources. If the activities in the PP are highly dependent on the teacher providing the learning structure or assistance for completion of the activities, code as 1 or 2. If, on the other hand, students are encouraged to work, think and/or explore independently, code for 3. If student are explicitly taught how to work, think or explore independently, code for 4. (e.g. Practice4, PP1).

1 = Almost never (highly teacher dependent)
2 = A little (largely teacher dependent)
3 = Sometimes (encouraged to work, think or explore independently)
4 = Almost always (explicitly taught and encouraged to work, think or explore independently)

Encourages collaboration: To what extent does the teacher (or the activities given by the teacher) encourage the students to collaborate with each other in their learning? If students are allowed to look at each other’s work or to help each other, but not required to collaborate, code as 2. If, on the other hand, the students must actively collaborate in order to successfully complete activities in the PP, code as 3. If students are taught to work collaboratively, code as 4.

1 = Almost never
2 = A little (allowed to collaborate but not required)
3 = Sometimes (must actively collaborate)
4 = Almost always (must actively collaborate and taught to actively collaborate)

Stimulates creativity: To what extent does the teacher or the activities in the PP stimulate creative thinking? For our purposes, ‘creative thinking’ refers to considering multiple and varied ideas, providing more details about ideas, and creating or using analogies and metaphors (Swartz & Parks, 1994). When students add more details or build on existing ideas and metaphors (extending the idea of other), code for 3. Code for 4 only if creative thinking is explicitly taught (See Swartz & Parks, 1994, pp. 288-312 for further discussion of explicit teaching of creative thinking).
Promotes problem solving: To what extent does the teacher or the activities in the PP stimulate clarification and understanding (through comparison and contrast, classification, sequencing), critical thinking (e.g., considering reliability of sources, using inferencing and deduction, checking accuracy of observation), decision-making and/or problem-solving (considering options, predicting consequences, choosing best solutions)? (See Swartz & Parks, 1994, p. 6, Figure 1.1 and p. 7, Figure 1.2). Code for 4 only if these skills are explicitly taught.

- 1 = Almost never
- 2 = A little
- 3 = Sometimes
- 4 = Almost always (only if creative thinking is explicitly taught)

**ACTIVITY**

**Rationale**

Activities are coded in order to determine common activity types used in P1 and P2 and how those correlate with policy goals related to classroom pedagogy. In addition, Nystrand and Gamoran (1990) have noted engagement cannot be easily discerned or quantified and suggest that classroom activities or tasks where students are engrossed should be explored. Thus, in this coding scheme activities are explored to seek any relationship between student engagement and activities in the class.

Activity types are drawn from Singapore teacher data in the Pedagogical Practices in English Language Education study (Silver & Kogut, n. d.) as piloted in Dixon et al. (2008) and adapted by the classroom observation team during analysis of sample classroom videos.

**Instructions**

For each activity, note the activity time end, type, and physical arrangement of the classroom during the activity. In general, do not code activities of less than minute duration. The only exceptions would be if something quite significant happens and you feel it should be recorded in order to understand the lesson (e.g., Practice2: 00:16:16 - 00:16:45). Otherwise, always code for activities lasting one minute or longer (e.g., Practice2: 00:17:00 - 00:21:00 is coded as T instructions although it also includes less than one minute of classroom management to start the lesson).

There may be several activities carried out during one participation pattern. Code each one in order so that the sequence is indicated by the Activity 1, Activity 2, etc. columns on the coding sheet.

Determination of the activity is based on what the teacher and students are doing (i.e., what is observable). When activities seem to cross over or combine more than one activity type within a short time (e.g., joint reading with interspersed teacher questioning) code for the dominant activity.

Comments and clarifications to any activity (e.g., students are giving instructions) can be written in the adjacent column. Activities are listed on the coding sheet with some of the most frequently used activities first. They are listed alphabetically in this manual.

**Activity Time End**

Key in the hour in the hour cell and the minutes in the minute cell. Round up or down the seconds to the nearest minutes (i.e., 1 min 29 secs = 1 min or 1 min 30 secs = 2 mins). Do note the international convention (13 hours 25 min).

<table>
<thead>
<tr>
<th>Activity time end</th>
<th>Hour</th>
<th>min</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>25</td>
</tr>
</tbody>
</table>

**Type**

**Definitions/Descriptors**

The options for activity types are listed below, followed by descriptors.
Admin matters: This is ‘School Administrative Matters’. It is only for administrative matters to do with the school as whole, not just this class. Examples include discussion of fun fair, announcement about fieldtrips, selling things, etc.

Classroom management: Activities focused on managing or controlling the class, maintaining the teacher authority, teaching correct classroom behaviour or aimed at improving class dynamics among students (e.g. students moving seats and desks to prepare for a new participation pattern, teacher organizing students to give presentations), use of classroom routines to transition between activities and/or provide framing for activities/the lesson as a whole. This is distinct from the classroom management strategies used throughout the PP or the lesson. When classroom management and instructions happen at the same time, for example, within 1-1.40 minutes and both these activities are less than 1 minute, code the dominant activity. For instance, code for ‘instructions’ if the teacher starts with the instructions which includes classroom management and then she/he goes back to instructions after the classroom management. If the teacher is mostly doing classroom management and interspersing additional instructions, code for ‘classroom management’.

Instructions: Teacher (or student) is giving or clarifying instructions. The main focus is on how to proceed/what to do in a specific activity. To count as an activity, instructions are usually the focus while other activities have stopped. Teacher instructions, comments that are interspersed with other, on-going activities would not constitute a separate.

T exposition: The emphasis is on the teacher explaining. It is generally monologic but might include some modelling or limited questioning. The main function is for the teacher to explain and/or elaborate on information.

T correction/answer checking: Activity in which the main focus is on the teacher correcting/checking student work. If the teacher is correcting/checking student work while the students are continuing to work, code for the activity the students are doing and make a note of the teacher’s activity under ‘comments’. This includes feedback which is not about answers that are ‘right’ or ‘wrong’ (e.g., feedback on group presentations).

T led elicitation and discussion: Teacher or student elicits a class, group or pair discussion. Including substantive and open ended questions. Discussion is free flowing, students are in dialogue with other students, teacher might make connections between comments, ideas or redirect the flow of discussion. Someone (teacher or student) might record or note student contributions verbally or on whiteboard.

T questioning: This is distinct from ‘elicitation/discussion’ in that T questioning involves short student responses to teacher questions. Think quick Q & A. In this case, the teacher questions are usually not open-ended and the discussion is not substantive. If the activity seems to overlap with T exposition, code for T exposition. Example, Practice4, PP1, Act 2 – two topics are discussed (# of books read and how to combine the responses) but for both topics the same activity is in place: to asking relatively closed or limited choice questions with short oral responses from students (factual info).
**Drill & practice:** the students are engaged in a repetitive drill or structured practice. Students do not need to generate new information or personal ideas; the focus is on ‘practicing’ what has been presented in the lesson (E.g. Practice2: 00:21.00-). Can be T led or in groups

**Brainstorming:** Free flowing elicitation of ideas around a particular topic, usually with short answers and none or very little evaluation of responses. Ideas are usually recorded by teacher or group representative for use in subsequent activity (e.g. brainstorming ideas for a composition). Can be T led or in groups

**Joint work (teacher and students):** the teacher and students work together, usually in turns with the teacher demonstrating something out loud and then the students (or an individual student) demonstrating/modelling/practicing. For example, students taking turns to demonstrate how to solve a math problem on the board while other students look on and comment; ‘book sharing’ lessons when first the teacher and then one student after another take turns to read out a page (E.g. Practice2: 00:03:00-00:07:20)

**Choral Reading/Recitation:** Students (with or without teacher) are reading aloud or reciting in unison. Can be T led or in groups.

**Reading Silent:** Students are reading silently, either the same text or different texts. Can be T led, in groups, or individual.

**Writing:** Students are writing. Usually compositions at their desks but might involve other writing such as ‘note taking’. Can be T led but most likely is in groups, or individual.

**Peer Editing/Correction:** Activity in which students are engaged in correcting their own or each others’ work at the direction of the teacher. Can be T led, in groups, or individual.

**Reporting:** Students/teacher report back on what students have done (might be a group or a representative of a group reporting to the class or just showing their work, e.g. visualiser). Teachers may refer to this as a ‘presentation’ but there is usually little preparation to present - students simply report what was done or what answer they got. May include some feedback or answer checking but the dominant focus is students reporting their work (usually with student(s) at the front of the room to display work produced). Always to the whole class.

**Game:** Activity which intentionally has an enjoyment as well as learning; usually with some competitive aspect (scoring points); usually in teams. Usually designated as a ‘game’ by the teacher though watch for activities which are said to be games but really are not. In this case, additional notes may be needed for later discussion with other coders. Can be T led or in groups.

**Sharing/Telling:** Describes group activities in which students are to share their ideas or tell each other their thoughts. The purpose is simply to hear/tell their thinking; there is no information gap. This might include students stating their opinions but unlike ‘Opinion/Debate’, the activity is not set up so that students do have different opinions. Always a peer activity (cf. reporting).

**Role play/Drama:** Dramatic or semi-dramatic activities in which students ‘read out’ from a text. or ‘act out’ a scenario. If the students are simply reading from a text, without any attempt to act it out or provide characterization, code for ‘choral reading’ if in unison or ‘other’. A reading can count as ‘role play’ if dramatization is done and/or expressiveness is highlighted (e.g. dramatic choral reading). Can be T led or in groups.

**Discovery or enquiry based:** students are engaged in experiments, investigations or enquiries to address their questions and ideas. Can be T led, in groups or individual.

**Opinion/Debate:** This is an activity in which the students are supposed to state their opinions and either persuade other to agree or debate with others who have a different opinion. It is not simply ‘sharing’ their opinions – when each one states what their opinion is but there is not discussion or argument about the opinions. The latter would be coded as ‘sharing/telling’. Opinion/Debate is intentionally set up so that students have different opinions and there is an element of persuasion or rationale argument. ). Can be T led or in groups but most likely T led.

**Information-gap task:** Activity in which all participants do not have the same information and thus, there is a ‘gap’ in what different participants know. Student must share their (individual) information in order to complete the activity. Always pair or group work. (The sole exception is if the teacher leads an info-gap activity with the class – either the teacher or the students having only part of the
necessary information. This might happen, for example, if the teacher is modelling how to do an information gap activity.) Always a peer activity.

**Decision-Making:** This is for activities that require the students to come to a decision together. They share the same information so there is no information-gap; the purpose is to come to an agreement. Can be T led in groups.

**Free-choice:** The children choose their own activity.

**Assessment:** Engagement in any formal assessment (e.g. taking a test, a mock test, or a spelling/dictation). This is largely defined by the teacher's definition of a task as an ‘assessment’ or ‘test’.

**Other:** Any other activity that is not listed. If the students are engaged in multiple, different activities at the same time (e.g. learning centres), use ‘Other’ and then in the comment, list the different activities that are being done.

**NOTE:** when working with several possible activities in ‘Other’, consider whether Knowledge Classification would change or not. If Knowledge Classification changes, list 2 (or more) ‘Other’ activities; If Knowledge Classification remains the same throughout, list only one ‘Other’ activity.

**PHYSICAL ARRANGEMENT DURING THE ACTIVITY**

**Rationale**
The definition and types of physical arrangement are based on Jordan and Henderson (1995) as previously discussed above.

**Instructions**
Code the physical arrangement during the activity so we will know if it varies during the lesson.

**Definitions/Descriptors**
Physical arrangement during the activity types are:

1 = Single Columns  
2 = Double Columns  
3 = Clusters  
4 = Floor Seating  
5 = Learning Centres  
6 = Laboratory Benches  
7 = Free Movement  
8 = Other (PLEASE SPECIFY)

**SKILL FOCUS**

**Rationale**
This category is based on an analysis of the recent syllabi (English, Maths, and Mother Tongue Languages) in primary school in Singapore. The main aim of Skill Focus seeks to understand how the teacher interprets top-down education policy (syllabi) and practices it within a classroom environment as related to skills taught (or intended). This category also seeks to capture the discipline specific characteristics.

**Instructions**
Code only when it is an instructional objective reflected in the teaching and the task given to students (this means, do not code for what students are doing but for what it seems the teacher is intending to teach).

**Definitions/Descriptors**
Linguistic Sub-Skills – for Language Lessons
The dominant skill used in this activity. Do not code based only on what students are doing but for what it seems the teacher is intending to teach or the focus of the activity that students are doing. For example, Practice3, PP2, Act1 the students are speaking, listening and looking at pictures but the dominant skill used is speaking. Cf. Practice3, PP5, Act2, students report/read out their work. Almost all of the students are ‘listening’ but the focus is on reading out student work. Therefore this is ‘reading’.

Linguistic Sub-Skills include:
Listening (e.g. listening to a CD or Shared Book session – story telling), speaking (e.g. students discussing issue/s with teacher, in pairs or in groups), reading (e.g. students reading a story book in
their own time), writing (e.g. students writing what they have done on weekends), vocabulary (e.g. students memorising vocabulary with pictures), grammar (e.g. students writing sentences using past tense) and word attack (e.g. sight word or graphic-phonemic recognition) are given choices.

1 = Nil
2 = Listening
3 = Speaking
4 = Reading
5 = Writing
6 = Vocabulary
7 = Grammar
8 = Word attack

Note: There may be a need to code MT lessons for ‘morals/values’ as a skills focus. While doing the classroom coding, please keep this in mind and add a comment if you think this is appropriate.

Mathematics Sub-Skills – for Mathematics lesson

Mathematics Sub-Skills include “procedural skills for numerical calculation, algebraic manipulation, spatial visualisation, data analysis, measurement, use of mathematical tools, and estimation” (Curriculum Planning and Development Division, 2007, p. 13).

1 = Nil
2 = Numerical calculation – listing information/multiplication tables, putting information into a table, performing four basic operations (+, - x and divide) /calculations in numbers and fractions, finding number patterns, mental calculations
3 = Algebraic manipulation
4 = Spatial visualisation – identifying, forming and copying 2-D and 3-D figures
5 = Data analysis – requires analysis of the data presented (eg. Analysis of the information in a table/picture graph, not simply putting information into a table, cf. numerical calculation), Creating keys/legend for picture graphs
6 = Measurement - measurement of length, mass, volume, time and money in non-standard and standard units (cm/m/km/g/kg)
7 = Use of mathematical tools - using ruler, compass, set squares and protractor
8 = Estimation - estimating length, mass and volume

ARTEFACTS/TOOLS/MATERIALS

Rationale

As Roth, McGinn, Woszczyna, & Boutonné (1999) have defined them, artefacts/tools refer to the resources through which text, image or knowledge are presented and handled for assisting students’ understanding or learning. They argue that artefacts are one of the factors that bring “different interactional spaces, participant roles, and levels of participation in classroom conversations and, concomitantly, to different discursive forms and content” (pp. 293-294).

Instructions

Code for both tools and materials used by the teacher and used by the students. Teacher and student tools can be the same or different. For students’ tools, it must be used by the majority of the class, not just a few students. If the teacher copies something from the textbook onto the whiteboard, overhead or PowerPoint – the item should be marked as PowerPoint.

Worksheets are individual sheets, not pages from the work book/activity book. If pages from the activity book are used, code as ‘textbook’. These are materials used by the students to do some work.
### Definitions/Descriptors

<table>
<thead>
<tr>
<th>Teacher’s Tools/Equipment</th>
<th>Teacher’s Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 = Nil</strong></td>
<td>1 = Nil (includes when T shows one static slide on projector, e.g. ‘round robin’, Practice Lesson 2)</td>
</tr>
<tr>
<td><strong>2 = Whiteboard</strong></td>
<td>2 = Textbook/Activity book/Workbook</td>
</tr>
<tr>
<td><strong>3 = OHT/Visualiser</strong></td>
<td>3 = Worksheet</td>
</tr>
<tr>
<td><strong>4 = Projector</strong></td>
<td>4 = PowerBook/Internet</td>
</tr>
<tr>
<td>(powerpoint/internet; not visualiser which is coded as 3)</td>
<td></td>
</tr>
<tr>
<td><strong>5 = Learning centre</strong></td>
<td>5 = Class produced materials: child or teacher produced during the class (this lesson or another) which is then used for other activities. These include writing on the whiteboard, showing student work on the whiteboard, etc.</td>
</tr>
<tr>
<td><strong>6 = Other (PLEASE SPECIFY)</strong></td>
<td>6 = Manipulatives – objects that you physically use, organize, manipulate, change as part of the learning activity (eg. organize pictures, classify physical object)</td>
</tr>
<tr>
<td><strong>Students’ Tools/Equipment</strong></td>
<td><strong>Students’ Materials</strong></td>
</tr>
<tr>
<td>1 = Nil</td>
<td>1 = Nil</td>
</tr>
<tr>
<td>2 = Whiteboard</td>
<td>2 = Textbook/Activity book/Workbook</td>
</tr>
<tr>
<td>3 = OHT/Visualiser</td>
<td>3 = Worksheet</td>
</tr>
<tr>
<td><strong>4 = Projector</strong></td>
<td>4 = PowerBook/Internet</td>
</tr>
<tr>
<td>(powerpoint/internet; not visualiser which is coded as 3)</td>
<td></td>
</tr>
<tr>
<td><strong>5 = Learning centre</strong></td>
<td>5 = Class produced materials: child or teacher produced during the class (this lesson or another) which is then used for other activities. These include writing on the whiteboard, showing student work on the whiteboard, etc.</td>
</tr>
<tr>
<td><strong>6 = Other (PLEASE SPECIFY)</strong></td>
<td>6 = Manipulatives – objects that you physically use, organize, manipulate, change as part of the learning activity (eg. organize pictures, classify physical object)</td>
</tr>
<tr>
<td><strong>Student Produced Work</strong></td>
<td></td>
</tr>
</tbody>
</table>

The type of work produced by the student. For major sustained text, it should be coded as sustained oral response or sustained written text. For work like mind-mapping on wide-paper in science, please code under 14, other.

1 = Nil – no work produced by students
2 = Short Oral Response – short answer, word, phrase, single or double sentence utterance
3 = Sustained Oral Response – extended utterance, explanation, verbal explanation beyond double sentences
4 = Written Multiple Choice/ Fill in the Blanks – word or tick box answer
5 = Written Short Answers – sentence or less writing
6 = Sustained Written Text – paragraph or more level written text
7 = Multimodal Text – combination of visual, digital, traditional print, spoken, music, and/or physical display. Multimodal texts always have a combination of modalities.
8 = Combination Written Text – text that mixes different writing requirements. This could be MCQ/Fill in the blank and short answer, sustained written and short answer, MCQ/Fill in the blank and sustained written.
9 = Picture/drawing/painting – visual arts (picture, drawing/painting)
10 = Cut and paste – cut and paste work
11 = Music – production of music
12 = Physical display – production of dance, physical demonstration, etc.
13 = Reading aloud
14 = Other (PLEASE SPECIFY)
**Student Product: Group/Individual**

Indicate if the work is done individually, by a group or a student choice. Choral reading or unison responses based on group decisions is coded as 'group'. Similarly, worked decided by the group but recorded by one group representative is group. Also, if a group works together, taking turns to produce, code it as group (see Practic1, PP2, Act1). However, if work is produced by a group but read out/presented by one group member or representative, code as individual.

1 = Nil
2 = Individual
3 = Group
4 = Student choice

**DOCUMENTATION**

*Rationale*

Forman and Fyfe (1993) have defined documentation as “any activity that renders a performance record with sufficient detail to help others understand the behaviour recorded” (p. 241). Documentation in the CIEPSS coding scheme is based on the coding scheme for Nurturing Innovation in Primary One Classrooms through Early Childhood Practices (Wright & Gan, 2006). This refers to whether documentation is taking place, not as an activity in its own right (see activity types) but in addition to the activity, complimenting the activity, or parallel to the activity. Documentation might be of work done, topics studied, or of student learning; however, it must be something that can be referred back to after the lesson (must be ‘durable’). This might also include video records of the lesson, audio recordings of student reflections, interviews with students about their learning, and student learning journals. In general ‘student produced work’ is NOT documentation (especially for product) because on its own it would not be sufficient ‘to help others understand the behaviour recorded’.

*Instructions*

Code for each sub-category.

*Definitions/Descriptors*

**Process/Product**

Documentation of what:

1 = Nil
2 = Of process
3 = Of product
4 = Both

**By whom**

Note who is doing the documentation:

1 = Nil
2 = Teacher
3 = Student
4 = Both

**Type**

Type of documentation that is done:

1 = Nil
2 = Text
3 = Photo
4 = Drawing
5 = Audio
6 = Video
7 = Object (3-D)
8 = Other (PLEASE SPECIFY)
Quality
1 = No documentation
2 = Superficial (e.g. ‘aren't they cute?’)
3 = Somewhat detailed and/or some description, related to what they are doing/feeling (e.g. this is us playing)
4 = Detailed and clearly descriptive, related to learning goal and/or engagement (we learned about ___; we enjoyed ___X___ because ___)

KNOWLEDGE CLASSIFICATION

Rationale
This section is based on the Singapore coding scheme for classroom knowledge discourse (Luke et al., 2005). They have argued that the ways that knowledge is produced and demonstrated in a classroom can be observed and recorded through inspection of discourse, behaviour and artefacts of the teacher and students.

Instructions
The focus here is on who presents and represents knowledge and how knowledge is presented and represented to students. The scales are coded on depth or complexity. Code for each sub-category.

Definitions/descriptors

Source of Authoritative Knowledge
Where does knowledge come from? What is referred to as the key or central source of knowledge? What sources are the ‘final arbiter’s’ of ‘truth’ or validity or value. Where does the ‘buck stop’? Unless the teacher explicitly refers to/uses another source, it is teacher. For example, where the teacher is using the textbook but does not explicitly refer to it as the source of knowledge/truth/authority, code the source as teacher. Where the teacher explicitly refers to the textbook as the source of knowledge, code as textbook. When students are working with materials distributed by the teacher, if the materials come straight from the textbook/activity book/T guide, code as ‘textbook’; otherwise, code as ‘Teacher’. Tick the major source of authoritative knowledge. Some examples are:

1 = Nil
2 = Student
3 = Teacher
4 = Test/Exam
5 = Textbook
6 = Internet
7 = Data
8 = Mass media
9 = Other (PLEASE SPECIFY)

Stated Teacher Rationale for Activity
Teacher’s verbal explanation explaining reasons for the activity, related to learning. This has to be explicitly stated by the teacher. It does NOT include “Later you will show this to your friends” – which is merely a statement of the sequence of activities. Rationale must be a rationale related to learning.

1 = Nil
2 = Intrinsic Rewards - Knowledge or learning is valuable in and of itself.
3 = Institutional Performance - Reasons related to school performance, e.g., test, examination, overall performance
4 = Disciplinary Knowledge - To improve understanding of the subject or to be a practitioner of a field or discipline, e.g. Science, and Maths. Prerequisite knowledge
5 = Functional Use - For use in society, at work, and in everyday communication, etc
6 = Moral and Ethical Values - To make student a better person. May be related to family, religious and cultural values
7 = National Interest - For the good of the nation, state, government, economy
KNOWLEDGE MANIPULATION

Rationale
Knowledge Manipulation is taken from the Singapore coding scheme for classroom knowledge discourse (Luke et al., 2005). They have addressed that the way that the produced knowledge is demonstrated in a lesson can be examined through inspection of interactions and discourses between the teacher and students.

Instructions
The focus here is on how knowledge is presented and represented to students. Coding is based on teacher-led observable behaviour. The scales are coded on depth or complexity.

Code for each sub-category. Note that these categories are quantitative – to what extent is knowledge manipulated as described in each sub-category? Therefore, at least hypothetically, coding might be reproduction = 3; interpretation = 2; application = 1; and generation of knowledge new to students = 1.

Definitions/Descriptors
Student handling, construction and deconstruction of knowledge. (What do the students have to do with the knowledge that is being presented, constructed, developed?)

Reproduction
Regurgitation/Copying/Repeating of what was taught.

1 = Almost never
2 = A little
3 = Sometimes
4 = Almost always

Interpretation/Reasoning
Creating a plausible explanation among choices, giving reasons for possible actions and answers.

1 = Almost never
2 = A little
3 = Sometimes
4 = Almost always

An example would be:

Teacher: Why are they going to sit under the banyan tree?
Student: Because it is hot.
Student: Because
Student: Because
Student: Teacher
Student2: (Inaudible)
Teacher: [If you shout now..]
Student: [Shadow]
Teacher: TN if you shout now, if you say hot, what does it mean, is the banyan tree hot or what?
Student: The sun is very hot.
Student: Sun.
Teacher: RD say.
Student: It is sunny.
Teacher: What if it is sunny?
Student: Then, they will be tired
Student: Tired
Teacher: They are tired. Why they say that they are going to sit under the banyan tree? In that place?
Student: Because the banyan tree is blocking, blocking.
Teacher: You don’t shout.
Student: Aa.. banyan tree, if they sit under the banyan tree, it will be cool.

(Excerpt from OER 47/08 MS, CIEPSS_COC_SST32TR_TL_Tamil_P1_AV_16.09.09. Translated by Alamu Venkatachalam)
Note

Only if the students are not reproducing relationships that were taught in earlier lectures or readings. If the students are reproducing, these should be coded as Interpretation.

Application

Taking the knowledge and applying appropriately across contexts.

- 1 = Almost never
- 2 = A little
- 3 = Sometimes
- 4 = Almost always

Generation of Knowledge New to Students

Students generate findings, claims, insights, perspectives new to them and their peers.

- 1 = Almost never
- 2 = A little
- 3 = Sometimes
- 4 = Almost always

Specialised Language

This refers to the degree of discipline-specific language and/or advanced terms used and/or explained for students at this level. In English and MT, this might foreground grammar in language teaching (or ‘language about language’), culture, language specific skills. In other disciplinary fields this involves technical terminology, e.g. “In Maths, we call this ______” or “In Physics terms, this is known as ______”. Note that terminology does not have to be discipline-specific; it can include terminology that is relevant for the activity but not the discipline (e.g. Practice 1, PP1, Act3)

- 1 = Not used
- 2 = Used but not explained
- 3 = Used and explained briefly
- 4 = Used and explained in-depth and explicitly

OPTIONAL ADDENDA

You can write here things which are important to the classroom observation but which do not figure in the coding instrument. Write anything which is interesting or unusual about the class.

ADDITIONAL FIELD PROTOCOLS

GENERAL

Professionalism: Remember that you are representing a research centre that strives to be best in class. In all our contacts with stakeholders and the general public, we need to exhibit our expertise and professionalism. This includes:

Being Informative - Make sure you are confident in your knowledge of what we are doing and why. If you are not sure of some information, do not hesitate to say that you want to first check with the project PI. Then, be sure that you do check on the information and get back to the school, teacher, parent with the appropriate information.

Being Courteous - Treat everyone you meet with the utmost courtesy. Be punctual and follow through on your commitments. Listen actively to stakeholder concerns and be sensitive to their needs.

Looking Smart - Dress professionally (business casual) when interacting with stakeholders or representing CRPP to the general public. You only have one chance to make a good first impression.

Being Respectful - The people we will work and interact with are professionals in their field - treat them as such. When we visit schools, remember that they are the hosts and it is a privilege for us to be allowed into their schools.
Minimizing Disruption - Data collection will interfere with planned activities and add work to people who are already very busy. Be aware of this and try to minimize interference.

If we leave our partners with a good impression, they are more likely to be willing to help us in the future. If we leave them with a bad impression that reputation will spread throughout the school system and make all subsequent work that much more difficult.

FAQS

Here are some possible responses to questions from teachers and school administrators

What is the purpose of the study?
The purpose of this study is to find out more about how schools and teachers are implementing the numerous and diverse policies on education for P1 and P2. Specifically, we are looking at how policies are being, can be, might be, or cannot be implemented at the classroom level. We are interested in learning more about the teacher's perspective on policy implementation in the classroom: the problems and the possibilities.

What is CRPP?
The Centre for Research in Pedagogy and Practice is a research centre established by NIE and funded by MOE to study, prototype and innovate a strong futures-oriented agenda in Singapore schools. It provides an opportunity for researchers, teachers and administrators to work together to develop and implement new ideas in the schools to better educate students for the challenges in the decades ahead.

Why are you collecting this data?
In this case, we are interested in gathering data in at least 100 classrooms with lessons at P1 and P2 and in all the core subjects (EL, MT, Maths). We hope this gives us a more comprehensive view of P1 and P2 education.

Will the performance of teachers be evaluated?
No data on individuals will be reported to the principal or MOE. There is no evaluation of teaching, of teachers, of schools, or of specific policies in this study. All personal details will remain confidential to the research team. No individuals will be identified in any published data or recordings.

What is the benefit to me as a teacher?
We would be happy to give you copies of the data collected for your own purposes. You can use the data (video and audio recordings) for action research, course work (with the instructor's permission), or other professional development. You can include this in an annual teaching portfolio if you wish but the research team will NOT give copies to other – not the school, not MOE officials. Copies will be made only for the individual teacher who is engaged in the research.

CONTACT

A copy of the excel coding sheet used with this manual is available upon request. For questions or further information about the coding scheme, contact Dr. Rita Silver at rita.silver@nie.edu.sg.

ACKNOWLEDGEMENTS

The CIEPSS project for which this coding scheme was developed was funded through the Centre for Research in Pedagogy and Practice (CRPP), National Institute of Education (NIE), Singapore. Some of the categories used in this study are based on the Singapore Coding Scheme for Classroom Knowledge Discourse (SCS) (Luke, Freebody, Cazden, & Lin, 2005), the Peer Work and Peer Talk (PWPT) coding scheme (Silver & Kogut, n. d.), the coding scheme for Nurturing Innovation in Primary One Classrooms through Early Childhood Practices (Wright & Gan, 2006), and the coding scheme developed for ‘A Study on the Implementation of Strategies for Effective Engagement and Development (SEED): Pilot’ (Silver & Wright, 2008), all projects funded through CRPP. Our thanks to these researchers and to the Centre for their support – intellectual and fiscal.

Our thanks as well to Galyna Kogut and Huynh Thi Canh Dien for their input as well as Wartik Hassan, Cai Li, Tan Ying Quan and Alamu Venkatachalama for their work with the coding scheme and subsequent questions which helped us clarify the categories, definitions and examples.
All information presented in this manual is the responsibility of the authors and does not represent the view of the Centre or the NIE.

REFERENCES


Example of the CIEPSS coding sheet

<table>
<thead>
<tr>
<th>A1</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Framing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reproduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The CIEPSS coding sheet is used to code various aspects of an educational setting. The columns include framing, content, activity, and other relevant details.