Appendix A

TIMSS 1999 Video Study Transcription/Translation Manual

TIMSS
VIDEO STUDIES

Third International Mathematics and Science Study

TIMSS 1999 Video Study

TRANSCRIPTION/ TRANSLATION MANUAL

Overview of the TIMSS 1999 Video Study

This manual describes the protocol used for transcribing/translating the video data collected for the Third International Mathematics and Science Study, known as TIMSS 1999 Video Study.

TIMSS 1999 Video Study is a cross-national study of eighth-grade mathematics and science classrooms. The study involves videotaping and analyzing teaching practices in more than one thousand classrooms in six countries.

The study is funded by the U.S. Department of Education and the National Center for Education Statistics (NCES) and conducted by LessonLab, Inc. of Los Angeles, California.

Goals of the Study

The TIMSS 1999 Video Study has the following six goals:

- To investigate mathematics and science teaching practices in U.S. classrooms.
- To compare U.S. teaching practices with those found in high-achieving countries.
- To discover new ideas about teaching mathematics and science.
- To develop new teaching research methods and tools for teacher professional development.
- To create a digital library of images to inform U.S. educational policy.
- To stimulate and focus discussion of teaching practices among educators, policy makers, and the public.

To achieve our goals we will collect data from 100 randomly sampled schools in each participating country. There are three sources of data: videotaped lessons, teacher and student questionnaires, and supplementary materials (e.g. worksheets, copies of textbook pages) used by the teacher and students during the videotaped lessons.

Data collection. From each of the 100 schools, we will videotape one mathematics and one science lesson. All are eighth-grade lessons. Each lesson will be videotaped using two digital camcorders by one videographer, one focusing mainly on the teacher and the other on the students.

Data processing. Both videotapes will be digitized and burned onto CD-ROM. The tapes that focus on the teacher will be copied to VHS tapes and sent to transcribers/translators. The lessons will be transcribed from the original language into English, and sent back to LessonLab as Microsoft Word files. The transcripts will then be timecoded, linked to the video footage, and stored in a multimedia database.

Data analysis. The video data will be reviewed by our research group who will code various aspects of lessons to describe mathematics and science teaching in each country, and the results of the coding will be analyzed statistically and reported to NCES by LessonLab.

The Importance of Standardized Transcription Procedure

The transcript is not intended to be a replacement for the viewing of the actual videotaped interaction; however, the transcript will serve as an aid in the coding and subsequent analysis of classroom interactions. Therefore, the transcription of the videotaped data should reflect, as accurately as possible, the words spoken by both teachers and students alike. It is imperative that this process be executed in a careful and consistent manner, as it is crucial to the success of the entire project. Therefore:

Do not summarize or paraphrase what the participants are saying.
Do not translate/transcribe the data to interpret what the speaker "meant to say."

Chapter 1: Transcription/Translation Procedure

In dealing with face-to-face interaction between teachers and students, various issues will arise that may, at first, seem insignificant. However, phenomena such as overlapping talk and pauses will have an impact on how the data will be coded and analyzed.

Though every classroom interaction will have its own unique qualities and attributes, there is sufficient similarity between these interactions to create a consistent system for the representation of the interactions in a transcript. This manual details this system and explains all of the transcription conventions you will be using in your work.

Identifying the Speaker

In a normal situation, there is one teacher and a group of students in a classroom who are doing most of the talking. The teacher's voice will be captured by a radio microphone that will be wired to the teacher. The microphone sends a mono-signal to the first camera. This radio mike will also capture the students' voices who are a few feet away from the teacher. A stereo microphone mounted on the same camera will capture the voices of students who are farther away from the teacher. This stereo microphone sends another mono-signal to the camera. When you listen to the dialogue with a headphone, you will hear the audio from the teacher's radio mike on one side and the camera-mounted mike on the other side of the headphone. When the audio from the two sources is confusing, you may need to listen to one side of the headphones at a time.

Speaker Codes

The following five speaker codes have been developed to try to deal with, as reasonably as possible, the discourse of the classroom:

T	Teacher
S	Single student
SN	Student-new**.** A single student whose identity differs from the last student to speak
S?	When the identity of the student (whether the speaker is S or SN) is unclear
Ss	Multiple students, but not the entire class
E	Entire class (or sounds like the entire class); used to indicate choral responses
O	Other; used to indicate speech by a non-member of the class, such as school personnel, office monitors, or talk from public address systems

While it is generally easy to distinguish the teacher's voice from that of the students', it is not always possible to distinguish between individual student voices. Thus, there will be no attempt to track the voice of any individual student in the ongoing discourse (e.g., marking Student 1, Student 2, Student 3, etc.).

- Whenever *more than one student* (but not all) speak simultaneously, the code **Ss** is entered.

- In order to keep track of a single student's continued speech, an **S** should be used to indicated a given student's speech until another student begins to speak. The next student should be indicated with **SN** (Student-new). If the new student continues to speak, an **S** should be used to mark their next turn. **SN** is always used to indicate that a new student (i.e., a student whose identity differs from the previous student speaker) is speaking. The very first student to speak in a lesson is identified with the **SN** code.
- Whenever it sounds as if *the entire class* speaks simultaneously (i.e., a "choral" response), the code **E** is entered.

It is important at this point to understand what is meant by "simultaneously" in this particular setting. Simultaneous talk refers to those occasions when more than one student is speaking (1) *the exact same word(s)* (2) *at the exact same time*. Both of these conditions must be met in order to use either the Ss or the E speaker code.

Blackboard

There is one additional code used to mark material written on the blackboard:

B Blackboard; used to indicate the translation of foreign words/phrases written on the blackboard

The code B is used to indicate the translation of foreign words/phrases written on the blackboard. Only those **words** or **phrases** that cannot otherwise be recovered from the ongoing discourse are to be translated and added to the transcript.

For example, if a teacher writes a word problem on the blackboard but does not say the word problem out loud or otherwise indicate what the problem is about, then this should be translated and added as a separate turn in the transcript.

If, however, a teacher writes a word problem (or other phrase) on the board and then says it out loud to the class, the translation of the written word(s) should not be added to the transcript as it is fully understandable by following the transcript of the teacher's discourse.

Formulae written on the blackboard which contain only numbers or other mathematical notations (e.g., x, y, ß,__) should be added as a separate entry into the transcript (e.g., 2x+3=10 does not need to be "translated") ONLY the first time a problem is discussed. After the initial reference to a problem, it is not necessary to transcribe it again. Numerical problems that are not discussed do not need to be transcribed.

Transcription Conventions

Take a look at the sample transcript below. The letters to the left of the text are the speaker codes. Notice in the text various symbols are used.

T So by looking at- this one is ... eight square units this one is twelve square units this one's twenty-four square units how do I find the area of a rectangle? Now find me a mathematical way of doing it. So I don't have to count all the time. BRIAN?

S Multiply the vertical squares times the horizontal squares.

T That's exactly correct … Who could state it in another way?

T Anyone //else?

S //Well maybe…

Besides using the same speaker codes to transcribe the videodata, it is necessary that all transcribers use transcription conventions in a standardized manner so that they convey the same meanings. This section explains all the conventions that are to be used in transcribing the videodata for our project.

Overlapping Speech

Each speaker contribution is to be entered as a separate turn at talk if two speakers are speaking at the same time, but they are saying two different utterances.

Likewise, if two speakers are saying the exact same thing, but are not speaking at the exact same time (e.g., one student begins to speak in the middle of the other student's utterance), this does not constitute "simultaneous" speech. Although the two speakers are saying the exact same words, such moments will be treated as cases of "overlap," and each speaker contribution is to be entered as a separate turn at talk.

In the transcription system adopted here, moments of overlapping speech will be indicated by double backslashes (//) to indicate where the overlap begins, as in the following example:

T All right giggle boxes. What is so silly?

S When you //were holding up a ten Jordan was holding up a ten.

SN //When you were holding up a ten Jordan was holding up a ten.

The double backslashes should always come in a set. The point where the two speakers begin to talk over each other should always be marked in both the overlapped turn (the one who began speaking before being overlapped, as in the second line above) and in the overlapping turn (the one who began speaking during the talk of another, as in the third line above).

One Exception to the Simultaneous Speech Code

Since the speaker code **Ss** does not include the teacher, the teacher's talk should always be treated as a new and separate turn, regardless of whether the teacher overlaps or speaks simultaneously with another interactant.

One important exception to the "simultaneous speech" rule concerns when the teacher and a student (or students) speak the same words at the same time (a very rare occurrence). In such a case, the teacher's utterance should ALWAYS be entered as a separate turn from the student's turn. Double backslash (//) should be used to show that the teacher and student overlapped in speech.

For instance, in the following example, although the teacher and the student are saying the exact same words at the exact same time, their respective turns at talk should not be combined as one turn, but as two separate turns:

T What's five plus one?

S Seven.

T //No.

S //No.

Entering a New Speaker Code: Lengths of Pauses and Activity Shifts

Pauses.
If a pause lasts longer than three seconds, a new speaker code should be entered, even when the same speaker resumes speaking. Organizing the speech in this manner will allow timecodes to correspond with the actual utterances in the video.

In the following utterance, a new speaker code should be entered after the pause:

T: If you turn to page five, you will see…[4 seconds]

T: This page has several problem sets that relate to your homework.

Activity Shifts.
Several activities occur in the classroom, for example: the teacher's lecture, student group work, question and answer, students at the blackboard, etc. If such a shift occurs during an utterance, a new speaker code should be entered.

T: So that's how you would solve such a problem.

T: Now, please take out your worksheets and get into your groups.

Punctuation, Diacritical Marks, and Other Conventions

The use of punctuation marks (such as a comma, period, colon, etc.) in the transcription of videotapes in this study will follow the normal rules used in written English. In addition the following conventions will be used as part of the transcribing system:

[Bell.] Please indicate when the bell rings at the very beginning of the and at the end of each lesson by putting the word "bell" in brackets**.**

PROPER NAMES Proper names of teachers, students, and school personnel must be changed due to confidentiality issues.

The transcripts currently use real names, which are in all CAPS:

T Okay, for the perimeter you add up the sides. How many sides are there? JESSICA?

Change the name using the same first letter, if possible, and delete all caps:

T Okay, for the perimeter you add up the sides. How many sides are there? Jane?

- (HYPHEN) A hyphen indicates that a speaker has "cut-off" (or self-interrupted) his/her speech.

T So, I- if I wanted- if you wanted to give me nine of those

? (QUESTION MARK) A question mark indicates that the utterance is to be understood as a question (usually determined through intonation), as in the following.

T Why can't the five unifix cubes be stuck together?

S Uh cause they're one.

T What?

. (PERIOD) A period marks the end of a phrase, a sentence, or a turn at talk that is NOT to be understood as being a question.

T Ah ha. Okay. I'd like you to put all of your unifix cubes on your name tag. So your place value chart should be empty.

When a period is placed in the middle of a turn, insert two blank spaces after the period.

OTHER PUNCTUATION MARKS Other punctuation marks such as commas, exclamation points, semi-colons, and colons may be used when appropriate.

T Be quiet!

. . . (THREE DOTS) A series of three dots, separated by a blank space before and after, is used to indicate a pause.

T So if you had ... is this your hand?

( )	Empty parentheses indicates that some speaker has spoken, but the words cannot be made out.

T When you measure these two points, can you then figure out the direction?

S Yes. ( ).

(a word or words)	Word(s) surrounded by parentheses indicate that the transcriber has made a best guess at what the speaker has said, but cannot guarantee it.

T The fixed amount is one hundred. What are they paying a day?

S Ah, (I don't know).

(word A/word B)	If there are two alternative hearings, both of these should be included within single parentheses separated by a single backslash.

T This is seven thousand. So this line is?

S (Sixty/sixteen).

T Good.

Numerals	Numbers should always be written out as words, in the way in which they are said (e.g. "two" instead of "2").

T How many did we start with?

S Two.

Capital	Capital letters should only be used with proper nouns (names, cities, countries, languages, etc.), at the beginning of a new turn at talk, or after a period or question mark.

T Remember your test is on Friday? After your field trip to Palm Springs. Okay?

(**Exception**: For first pass translation, remember to put the names of the teachers and students in ALL CAPS.)

ALL CAPS	When speakers refer to points, lines, angles, etc. by their alphabetical label, these labels should be transcribed in capital letters, even if it would otherwise appear as a lowercase letter.

T So this triangle ABC, write a little A here. Between the angle A and B.

C-A-P-S	When speakers spell out words, each letter should be placed in capital letters, with a dash between each letter.

T How do you spell triangle?

S T-R-I-A-N-G-L-E

[Transcriber's Note]	In cases where a bracketed comment is essential to the understanding of an utterance, the transcriber may enter a note, in brackets. This convention should only be used in cases that have been discussed with the translation managers, such as ironic or sarcastic phrases, or code-switching from one language to another. No non-verbal actions should be indicated in notes.

Common Backchannels

Throughout their talk, the speakers make use of "backchannel" devices, “discourse markers,” and “hesitation indicators” to show that they are, for example, paying attention (e.g., mm hm, uh huh), agreeing (e.g., yeah, yep), hesitating (e.g., uh, mm), showing surprise or displaying some new understanding (e.g., ah ha, oh, ah). In order to be relatively consistent throughout the transcription, these should always be transcribed as follows:

- Ah; Uh; Um, Oh
- Ah-ha; Uh-huh; Nn-hnh; Mm-hm
- Yeah; Yep
- Okay

Foreign language equivalents should be similarly transcribed in order to remain consistent.

Cantonese examples*:*

Backchannels:	Discourse Markers:	Hesitation Indicators:
Mm – Mm hm/Uh huh	dak/ho la – okay	uh/er – uh
Ho yeh – yeah	gam le/gam a – well	Um/ee - Um
Hai – yep	sho yee le – so	o go yi shi hai –I mean
Hai la – Ah ha	kei ming/lei ming la – y’know	

Czech examples:

Backchannels:	Discourse Markers:	Hesitation Indicators:
Mm hm	no jo – alright	Ehm - Um
Uh huh	sup – hurry	tim myslim – I mean
Jo, Tak jo - Yeah	dobre – okay, well	
Jo, Tak jo – Yep	no – well	
	tak/tak jo – okay, well	
	tak, takze - so	

Dutch examples:

Backchannels:	Discourse Markers:	Hesitation Indicators:
Mm hm	Ja maar – Yes, but	Um
Uh huh	Heh – Right	ik bedoel – I mean
Goh – wow!, oh!, gosh!	Nou – Well	
	Dus – So	

Italian examples:

Backchannels:	Discourse Markers:	Hesitation Indicators:
E poi – And then	Vero -- Right	Eh -- Uh
Be(h)	Allora, Quindi – So	Chioè – I mean
	Insomma – y'know	
	Dunque – So	

Japanese examples:

Backchannels:	Discourse Markers:	Hesitation Indicators:
M; N (↘) – Yeah	Ja/Soreja - Well then	Ee (→) - Well; Uhh
So-so-so – Right	Ano ne - Well/Let me see…	Etto - Um
Ee (↘) – Yes	Ne – Right/isn't it?	
Ee (↗) - What?	Sorede - So	
Iya – No		

Swiss German examples:

Backchannels:	Discourse Markers:	Hesitation Indicators:
Eh hn, Ae-aeh – Uh huh Ei, [or]	Dann -- well	ehm, eh – um, uh
Ehm, eh -- Uh	Also -- Okay	
	Oder? -- Right? Isn't it?	
	Hä – right?, okay? or huh?	

Chapter 2: Second-Pass Transcription Procedures

The videodata are transcribed in two phases: first pass and second pass. Most of our first pass work is done by our subcontractors, who use VHS copies of the videos to translate the lessons from the original language into English. The lessons are then sent back to LessonLab as Microsoft Word files. In the second pass, the transcripts are linked to the video footage in a multimedia database, and are then reviewed, corrected, and timecoded by the translator/transcribers.

In this section, the second-pass transcription/translation process will be explained. This process includes keeping track of problems, glossary terms, and transcribing hours. The following instructions will assume that training has already taken place. Please read through this section carefully and thoroughly.

Items You Will Need to Transcribe/Translate/Timecode the Videodata

- Work station (i-Mac)
- Lesson Folder from the Lesson Files
- Forms: Checklist, Translation/Transcription Log, Glossary/Problem Form, Name Change Form

Step-By-Step Procedures

Step 1: Sign Up for Lesson in the Sign Out Book

Rather than pre-assign lessons to particular individuals, we ask that transcribers check the Sign Out Book to find the lessons available for second-pass work. This book is kept on top of the file cabinet and contains lists separated according to country (i.e., US, the Netherlands, the Czech Republic). Transcribers should work on the next available lesson (as noted on the Lesson List), and write their names and the date next to the lesson identification number to indicate that it is being worked on.

Step 2: Access the file

All second-pass transcription/translation and timecoding will be done at a computer work station using **vPrism** software. Videos of the lessons have been digitized and stored on the server as Mpeg files. Transcripts completed by first-pass reviewers are imported into the **vPrism** database and linked to the Mpeg files on the server. You can access the **vPrism** database that is stored on the **4-D** server from your work station by opening **4-D Clien**t from the Apple Menu. Detailed instructions about **4-D Client** and **vPrism** are provided separately.

Step 3: Review Transcription/Translation

Review first-pass transcripts and make corrections following the system outlined in the first section. Additional materials have been collected along with videotapes, (i.e., copies of worksheets, textbook pages, and overhead projection materials used in the videotaped lessons), so use them to clarify or confirm the content of conversations.

Transcript 1 and Transcript 2 Text Fields

The **vPrism** software allows you to transcribe in two fields: Transcript 1, and Transcript 2. All material should be transcribed in Transcript 1, with the following exception: Two simultaneous conversations where the camera is on a student to student conversation but the teacher, who is speaking to a student in another part of the classroom is still audible and overlaps with the student-student conversation. In these cases, the teacher-student talk should be transcribed in Transcript 1, while the student-student conversation should be transcribed Transcript 2.

Problems

While working on second-pass transcription, you may encounter some technical or translation problems. Problems can include, but are not limited to, difficulty in hearing, finding English language equivalencies for translation, or translating idiomatic expressions. Whenever you encounter a problem, please make note of it on the Glossary/Problems form. Please fill out these forms *neatly* and note the screen time before continuing with your 2nd pass work. These forms will help us keep track of problematic areas and issues for discussion. This will also help you keep track of those portions of the videotape that you were unable to translate/transcribe and that need to be re-examined once you have consulted with others.

Editing

Three Line Segments

As part of the 2nd pass. Long turns should be divided into segments of three lines or less. This is because completed transcripts are later displayed as subtitles on the video, and the video frame can only contain three lines of text. In the following example, the teacher's original utterance (a) is displayed as two separate turns in the transcript (b):

(a) Before editing:

T So by looking at- this one is ... eight square units this one is twelve square units this one's twenty-four square units how do I find the area of a rectangle? Now find me a mathematical way of doing it so I don't have to count all the time. You can look at your notes from yesterday to review the methods we discussed. Any ideas? BRIAN?

(b) After editing:

T So by looking at- this one is ... eight square units this one is twelve square units this one's twenty-four square units how do I find the area of a rectangle?

T Now find me a mathematical way of doing it so I don't have to count all the time. You can look at your notes from yesterday to review the methods we discussed. Any ideas? BRIAN?

The above text is organized into two separate turns by determining an appropriate break in the text while keeping each turn within three lines. Appropriate breaks can be made at the end of an utterance that is syntactically and/or intonationally complete.

Time Coding

Once a lesson has been completely transcribed/translated, speaker turns will need to be time coded. It is important that the time coding procedures occur as the *last* step of the second pass, rather than a *simultaneous* step, since it provides a final chance to review the transcript. This is a separate procedure that will be explained in detail during a training. The process involves placing time codes on each turn segment. More details will be provided in the training session.

Logging Hours

There is one other form that should be filled out whenever you begin to transcribe/translate: Transcription/Translation Log. This form is used to keep an accurate record of the amount of time it takes you to transcribe or translate each lesson.

Whenever you sit down to work, make a note of your beginning time and the time you finish working. This information will be used to help us predict how many hours it will take to transcribe or translate each lesson. This information is crucial for establishing our project timeline and budget allocations.

Both forms, "Glossary/Problems" and the "Translation/Transcription Log", should be kept together in a single file folder labeled with the name code of the lesson you have been working on (e.g., US-0004). This file should be kept in the filing cabinet in the main transcription area. You will be requested to turn these forms in along with the lesson folder once you have finished transcription/translation.

Completing a Lesson

The second pass of the transcription/translation is finished when you have completely reviewed the entire lesson. If there are sections of the lesson that you cannot transcribe or translate, this matter should be brought up in an individual meeting with the transcription supervisors. All issues noted on the Glossary/Problems form should be resolved before you move on to the next tape. *Please make sure you print out a hard copy of the transcript for the lesson file.*

- Use checklist to make sure all forms are complete
- Print out transcript
- Put all forms and transcript in lesson folder
- Place lesson folder in "In Box" on file cabinet

Chapter 3: Transcription/Translation Issues

The discourse of both the teachers and students should be reflected in the transcription as accurately as possible. Given that the study includes videodata from seven countries, the process of transcription will vary depending on the language of the classroom. In the American context, standard spelling conventions of American English will be followed. Regional accents should not be reflected in the transcription, but production problems, such as mispronunciation, are to be reflected in the transcription.

In the other linguistic contexts, translators should attempt to capture, as accurately as possible, the meaning of the original language terms in English, without sacrificing readability. There will always exist a tension between a literal translation and a readable (i.e., "flowing") text. Translators must, therefore, make on-going decisions, in consultation with other members of the team and the transcription supervisor, concerning such issues.

T/T Meetings

Regular group meetings will be scheduled to deal with problematic issues regarding translation and transcription. During these meetings, the translators and the transcription supervisor will discuss and agree upon standard translations for mathematical and non-mathematical terminology and phrases. Translators should use the glossary forms that are provided to record any technical terms used in the data, along with the English translations they use when transcribing. The translators' glossary will be assembled, continually updated, and distributed to the members of the translation teams *so that consistency and uniformity can be achieved in the transcription/translation of the videotapes*. If members of the translation teams cannot readily agree on succinct translations of terms or phrases, members of the larger mathematical education community will be consulted for their input.

Some dictionaries and mathematics and science textbooks are provided in the main transcription area for your use, though we do request that you return them to their proper place after you have finished using them. If you feel that there is any other resource (or resources) that would make translation easier, please make your request known. We are open to any suggestions and look forward to a highly interactive and highly collaborative approach to the translation of the videodata.

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Appendix B

Information Given to U.S. Superintendents, Principals, and Teachers Prior to Videotaping

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Information for District Superintendents

I am writing to ask your permission to include one of the schools in your district in a major cross-national investigation of mathematics and science teaching. The study, the TIMSS-R (Third International Mathematics and Science Study-Repeat) Video Study, which is being conducted by the National Center for Education Statistics, U.S. Department of Education, involves videotaping one eighth-grade mathematics lesson and one eighth-grade science lesson from each participating school. The study is part of a follow-up to the Third International Mathematics and Science Study (TIMSS).

The TIMSS-R Video Study builds on an earlier study, the TIMSS Video Study that compared mathematics teaching in the U.S., Japan, and Germany. The earlier study was the first ever to collect video records from nationally-representative samples of classrooms. Since the fall of 1996 when the TIMSS Video Study was released, there has been much interest and speculation among educators regarding its implications for mathematics teaching in the United States. Profiles of eighth-grade mathematics classrooms that resulted from the study, validated by objective coding methods, continue to play a prominent role in current policy discussions.

The new video study will improve on the earlier one in several ways. It will include more countries; altogether we will be videotaping over a thousand lessons in the United States and various countries spanning Europe and Asia. Data on science teaching as well as mathematics teaching will be collected. For your information we have enclosed a brochure that describes the new TIMSS-R Video Study, and an article reprinted from *Phi Delta Kappan* (September, 1997) that presents some of the results of the earlier video study.

Selection of Teachers and What They Would Do

The specific teachers to be included in the study (one mathematics and one science) will be selected by a random process in collaboration with the school principal.

Each participating teacher is videotaped a single time teaching a lesson in his or her classroom. Our goal is to see what typically happens in U.S. eighth-grade mathematics and science classrooms. Although teachers are contacted ahead of time to schedule a time for videotaping. Teachers are asked to not make any special preparations for the day our videographer comes to their classroom. Whatever lesson the teacher had planned will be appropriate – whether it is introducing new material or reviewing old. Participating in the project should have no effect on the curriculum provided to students.

After the videotaping, the teacher will be asked to fill out a questionnaire about the lesson, and to collect very brief questionnaire responses from the students in the class. The teacher will be provided a prepaid envelope in which to mail back the questionnaires, along with copies of worksheets, test pages, etc. that are relevant to the lesson.

Confidentiality

The tapes we collect in your district will be used for research purposes only. Access will be restricted to researchers analyzing the tapes; no one else will be allowed to view the tapes. The results of this study will be reported as averages across a large number of classrooms, never as information about a single classroom, school, school district, or state. The identities of the teachers, schools, and districts will be kept in locked storage; even persons hired to code and analyze the tapes will not have access to this information.

Teachers will be asked to sign a form indicating their agreement to participate in the study. In some districts it may also be necessary to secure written permission from parents. If a school chooses to require such releases we will assist the school in wording the documents.

Benefits of Participation

We are offering each teacher $300 in appreciation for his or her participation. Use of these funds is at the discretion of the teacher, unless there is a district policy that takes precedence.

While we know of no special benefit to teachers who participated in the earlier video study, we have documented many instances in which educators have used the video results to focus attention in their district on new approaches to mathematics teaching. Because a part of our project's work is to disseminate widely the results of the new study, we will make the findings accessible through various means, including electronic access via the Internet.

What's Next?

Within the next few days someone from the TIMSS-R Video Study will contact you to answer questions and to discuss further details regarding the aforementioned school's participation in the study. If you have any immediate questions please do not hesitate to contact me by phone (310-820-6612 ext. 230), fax (310-820-6619), or email (jims@lessonlab.com).

Information for Principals

I am writing to ask your permission to include your school in a major cross-national investigation of mathematics and science teaching. The study, TIMSS-R Video Study, is being conducted by the National Center for Education Statistics, U.S. Department of Education. It involves videotaping one eighth-grade mathematics lesson and one eighth-grade science lesson from each participating school. The study is part of a follow-up to the Third International Mathematics and Science Study (TIMSS). Your Superintendent has given us permission to approach you concerning participation in the study.

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The specific teachers to be included in the study (one mathematics and one science) have not yet been selected. They will be selected by a random process in collaboration with you.

Each participating teacher is videotaped a single time teaching a lesson in his or her classroom. Our goal is to see what typically happens in U.S. mathematics and science classrooms. Although teachers are contacted ahead of time to schedule a time for a videotaping, teachers are asked to not make any special preparations for the day our videographer comes to their classroom. Whatever lesson the teacher had planned will be appropriated- whether it is introducing new material or reviewing old. Participating in the project should have no effect on the curriculum provided to students.

After the videotaping, the teacher will be asked to fill out a questionnaire about the lesson, and to collect very brief questionnaire responses from the students in the class. The teacher will be provided a prepaid envelope in which to mail back the questionnaires, along with copies of worksheets, text pages, etc. that are relevant to the lesson.

Confidentiality

The tapes we collect in your school will be used for research purposes only. Access will be restricted to researchers analyzing the tapes; no one else will be allowed to view the tapes. The results of this study will be reported as averages across a large number of classrooms, never as information about a single classroom, school, school district, or state. The identities of the teachers, schools and districts will be kept in locked storage; even persons hired to code and analyze the tapes will not have access to this information.

Teachers will be asked to sign a form indicating their agreement to participate in the study. In some districts it may also be necessary to secure written permission from parents. Procedures for securing permission will be carried out by project personnel, in consultation with the teacher and principal.

Benefits of Participation

We are offering each teacher $300 in appreciation for his or her participation. Use of these funds is at the discretion of the teacher, unless there is a district policy that takes precedence.

While we know of no special benefit to teachers who participated in the earlier video study, we have documented many instances in which educators have used the video results to focus attention in their district on new approaches to mathematics teaching. Because a part of our project's work is to disseminate widely the results of the new study, we will make the findings accessible through various means, including electronic access via the Internet.

What's Next?

Within the next few days, someone from the TIMSS-R Video Study will contact you to answer questions and to discuss further details regarding your school's participation in the study. If you have any immediate questions please do not hesitate to contact me by phone (310-820-6612 ext. 230), fax (310-820-6619) or email (jims@lessonlab.com).

Information for Teachers

I am writing to invite you to participate in a major new study of mathematics and science teaching in different countries. The study is part of a follow-up to the Third International Mathematics and Science Study (TIMSS) and is being conducted by the National Center for Education Statistics, U.S. Department of Education. It involves videotaping eighth-grade mathematics and science lessons in more than one thousand classrooms in six countries. We are hoping you will agree to be one of the teachers we videotape.

The new study, TIMSS-R Video Study, builds on an earlier study, the TIMSS Videotape Classroom Study, which compared mathematics teaching in the U.S., Japan and Germany. The earlier study was the first ever to collect video records from nationally-representative samples of classrooms. Since the fall of 1996 when the TIMSS Video Study was released there has been much interest and speculation among educators regarding its implications for mathematics teaching in the United States. Profiles of eighth-grade mathematics classrooms that resulted from the study, validated by objective coding methods, continue to play a prominent role in current policy discussions.

The new video study will improve on the earlier one in several ways. It will include more countries (the U.S. and nations spanning Europe and Asia) and will collect data on science teaching as well as mathematics teaching. For your information we have included a brochure that describes the new TIMSS-R Video Study, and an article reprinted from *Phi Delta Kappan* (September, 1997) that presents some of the results of the earlier video study.

What You Will Be Asked to Do

Each participating teacher is videotaped a single time teaching a lesson in his or her classroom. Our goal is to see what typically happens in U.S. mathematics and science classrooms. Although you will be contacted ahead of time to schedule a time for videotaping, you will be asked to not make any special preparations for the day our videographer comes to your classroom. Whatever lesson you had planned is appropriate- whether it is introducing new material or reviewing old. Participating in the project should have no effect on the curriculum you provide to your students.

After the videotaping, you will be asked to fill out a questionnaire about the lesson, and to collect brief responses from the students in the class through a questionnaire that we will provide. You will be provided a prepaid envelope in which to mail back the questionnaires, along with copies of worksheets, text pages, etc. that are relevant to the lesson.

Confidentiality

The tapes we collect in this study will be used for research purposes only. Access will be restricted to researchers analyzing the tapes; no one else will be allowed to view the tapes. The results of this study will be reported as averages across a large number of classrooms, never as information about a single classroom, school, school district, or state. The identities of the teachers, schools and districts will be kept in locked storage; even persons hired to code and analyze the tapes will not have access to this information.

Payment

You will be paid $300 as an expression of our appreciation for your help. Use of these funds is at your discretion, unless there is a district policy that takes precedence. (Please discuss this with your school principal.)

If You Are Willing to Participate

If you are willing to participate in this study, please fill out and sign the enclosed form. You will soon be contacted by Mardi Gale (her card is enclosed) to discuss the details of the study, and to schedule your videotaping.

Appendix C

U.S. Teacher and Parent Consent Forms

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TIMSS-R Teacher Consent, Waiver and Release

I accept the invitation to participate in the Third International Mathematics and Science Video-Repeat Study (TIMSS-R Video Study) by permitting you to videotape my class one time in the next 12 months.

I understand that the videotape you will be recording will be made available only to researchers, that school, teacher, and student identity will remain confidential, and that you or the United States government itself may not make and distribute copies of the tapes to anyone without my explicit written permission.

I consent to the taping of my class. I also waive and release you—as well as anyone working with you on this study, the United States government and all of its employees—from claims I otherwise might have for defamation, invasion of privacy, infliction of emotional distress, violation of the right of publicity (which is the right to control the use of my name, likeness and other personality characteristics for commercial purposes), and all other claims of a similar sort, by whatever name such claims may be identified.

Name of School_____

City _____State_____

Name (please print)_____

Signature_____

Date_____

Please return this release to: Brenda Krauss
LessonLab, Inc.
12436 Santa Monica Blvd
Los Angeles, CA 90025

Date Received by TIMSS-R _____

Dear Parent:

Your child's school has accepted an invitation to participate in the Third International Mathematics and Science Video-Repeat Study (TIMSS-R Video study). The TIMSS-R Video study is part of a larger study of students and teachers in more than 40 countries. The TIMSS Video-R Study is videotaping over 1,000 eighth-grade mathematics and science lessons in Europe, Asia, and the United States. We want to collect lesson tapes that show what typically happens in mathematics and science classrooms around the world. The purpose of the TIMSS-R Video study is to improve the teaching of these subjects. The TIMSS Video-R Study will be a major resource to the U.S. in monitoring performance of its education system by gathering videotaped records of what actually happens in nationally-representative samples of classrooms and to compare these records across countries.

What We Have Asked of Your Child's Teacher

One mathematics and one science teacher in your child's school have agreed to allow a trained TIMSS-R videographer to film in their classrooms. Because your child is in one or both of these classes, the school has given us permission to contact you. Before we proceed with the videotaping, we want to make sure that you do not have any objections to your child's participation. No instructional time will be lost; we have requested that the teachers continue with the planned activities on the day of the taping. The primary focus of the videotape will be the teacher. However, students who interact with the teacher will also appear on the tape. A copy of the videotape will be given to the teacher.

Potential Uses of the Videotape

The tapes will be used for research purposes only. Access will be restricted to researchers analyzing the tapes. Neither your child's name, nor the school's name, nor any identifying characteristics will appear in any materials or reports that result from this study. All of the videotapes we collect are treated as highly confidential. We shall not disclose the school's, teacher's, or students' identity. We are legally bound to use the videotapes only for purposes of research on mathematics and science instruction.

We also are asking your child to complete a brief questionnaire describing such background information as age, gender, birthplace, and parents' level of education. Your child will <u>not</u> be asked to put his or her name on this questionnaire, so it is entirely anonymous.

What We Are Asking You To Do

If you are willing to permit your child to participate in the lesson that will be videotaped, please sign the attached form and return it to your child's teacher.

If you do not sign the attached form we will make arrangements to ensure that your child is not included in any part of this videotape study.

Thank you very much for your consideration.

Sincerely,

James Stigler, Ph.D.
Director, TIMSS-R Video Study

Mardi A. Gale
U.S. School Liaison

PLEASE SIGN AND RETURN THIS FORM TO YOUR CHILD'S SCHOOL IF YOU ARE WILLING TO ALLOW HIM OR HER TO PARTICIPATE IN THE TIMSS-R VIDEOTAPING.

CONSENT, WAIVER and RELEASE

I have been informed of the nature of the Third International Mathematics and Science Video-Repeat Study and I hereby give permission for my child to participate.

I understand that the videotapes collected are treated as highly confidential and will be used only for purposes of research on mathematics and science instruction unless "I" and the other students' parents grant separate, written permission for other uses.

I understand my child will be asked to complete a brief questionnaire describing such background information as age, gender, birthplace, and parents' level of education. I understand my child will ***not*** be asked to put his or her name on this questionnaire, so it will remain anonymous.

I hereby waive and release you -- as well as anyone working with you on this study, the United States Government and all of its employees -- from claims I or my child otherwise might have for defamation, invasion of privacy, infliction of emotional distress, violation of the right of publicity (which is the right to control the use of one's name, likeness and other personality characteristics for commercial purposes), and all other claims of a similar sort, by whatever name such claims may be identified.

I hereby consent to my child participating in the study, and the taping of my child's class. I sign this Consent, Waiver and Release on my own behalf, as well as on behalf of my child.

_____
(name of child for whom consent is given)

signature of parent :_____

name _____
(print please)

date: _____

Appendix D

TIMSS 1999 Video Study Data Collection Manual

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TIMSS
VIDEO STUDIES

Third International Mathematics and Science Study

TIMSS 1999 Video Study

DATA COLLECTION MANUAL

Overview

TIMSS 1999 Video Study

This manual describes data collection procedures for the video component of the Third International Mathematics and Science Study- Repeat, known as TIMSS 1999 Video Study.

TIMSS 1999 Video Study is a cross-national study of eighth-grade mathematics and science classrooms. The study involves videotaping and analyzing teaching practices in more than one thousand classrooms in six countries.

The study is funded by the U.S. Department of Education and the National Center for Education Statistics (NCES) and conducted by LessonLab, Inc. of Los Angeles, California.

Goal of the Study

The TIMSS 1999 Video Study has the following six goals:

- To investigate mathematics and science teaching practices in U.S. classrooms.
- To compare U.S. teaching practices with those found in high-achieving countries.
- To discover new ideas about teaching mathematics and science.
- To develop new teaching research methods and tools for teacher professional development.
- To create a digital library of images to inform U.S. educational policy.
- To stimulate and focus discussion of teaching practices among educators, policy makers, and the public.

Method of the Study

Samples. To achieve our goals we will collect data from 100 randomly sampled schools in each participating country. There are three sources of data: videotaped lessons, teacher and student questionnaires, and supplementary materials used by the teacher and students during the videotaped lessons.

Data collection. One videographer will be sent to each school to videotape both mathematics and science lessons and to hand questionnaires to the teacher after the videotaping. Supplementary materials will either be given to the videographer after the class or sent back to LessonLab by the teacher.

Video cameras. Two digital video camcorders will be used to videotape each lesson. One camera will be operated by the videographer to document mainly the teacher, and the other camera will be used as a stationary camera to document mainly the students. In the rest of this manual we will call the first camera the "teacher camera" and the second camera the "student camera."

Videotapes. Each tape used to videotape the lesson will be labeled and shipped back to LessonLab by the videographer. To avoid accidental loss of the tapes, the videographer should ship the tapes after every two schools via FedEx or another similar shipping service with a reliable tracking system.

Data processing. The tapes shipped back to LessonLab from the videographers will be digitized and burned onto CD-ROM. All the lessons will be transcribed/translated into English and timecoded. The teacher camera videos will be linked to the transcripts and stored in a multimedia database.

Data analysis. The video data will be reviewed by our research group who will code various aspects of lessons to describe mathematics and science teaching in each country, and the results of the coding will be analyzed statistically and reported to NCES by LessonLab.

Importance of Standardized Camera Procedure

As a videographer you must make many decisions about where to point the camera. At any given moment you might focus on the teacher, the students, or the chalkboard. You might frame the shot close-up or wide.

It is of critical importance that these decisions be made in a standardized way so that the tapes we collect are comparable across different countries and different classrooms. Not following standard procedures could bias our view of what is happening in the lesson, or it could keep us from seeing some aspect of the lesson that is important for our analysis.

Chapter 1: Data Collection Procedures

To line up each taping requires a tremendous amount of work and represents a huge expense so it is of extreme importance that the videographer attend to every detail of the job in order to avoid mistakes or oversights. Often the videographer will be working under extreme time pressure and therefore it is essential that he or she be very organized and methodical. Below is a step by step description of everything the videographer will need to do before, during, and after every taping. A series of checklists are also provided with this manual and should be used each and every time that the videographer goes out into the field.

Before Going to the School

Charge Batteries

- Make sure that all of your camera batteries have been recharged.
- Both the transmitter and the receiver of the lavaliere radio microphone use 9-volt batteries. Put a fresh 9-volt battery in both the receiver and transmitter before each taping.
- Remember also to always carry plenty of spare batteries with you.

Check Equipment

- Pack all your equipment using the checklist provided in the appendix. Always use this checklist. There are lots of little pieces of equipment that are of crucial importance but which nevertheless are easily forgotten.

Check Directions to School

- Make sure you have gone over the directions to the school and that it is clear to you how to get there and where to park your car.
- Pack these directions as well as the school phone number. Also make sure that you pack the name of the principal of the school or of your official contact person, as well as the name of the teacher you will be taping.

Pack Questionnaires

- The videographer will also be responsible for delivering questionnaires to the teacher. The questionnaires will be used to help interpret the video and must be completed soon after the taping. Make sure that you pack a box/envelope that contains teacher and student questionnaires, several barcode labels and instructions to the teacher. The questionnaires with labels will be shipped back by the teacher in the self-addressed mailing envelopes to LessonLab or to our country collaborator in each country.

Arriving at School

Arrive One Hour Early

- Make sure you arrive at school one hour before the scheduled shooting. A lot of work will go into scheduling a taping. If you get there late it will be a minor tragedy, so plan to get there an hour before the taping is scheduled.

Meet First with School Officials

- When you arrive at school, go to the school's main office and meet the contact person. You should never go directly to the teacher's classroom. Always go to the main office first and meet with the principal or the person who has been assigned as your official contact person. In many schools you will be expected to make a stop by the office on your way out to sign out or report back to your contact person. Find out exactly what they want you to do after you are done taping.

Once in the Classroom

As soon as you get to the classroom where you will shoot the lesson, two factors will help you determine where to position the camera: 1) information about what will happen during the lesson, and 2) the physical arrangement of the classroom.

Ask the Teacher about the Lesson

- Try to find out from the teacher about what will happen in the lesson. Often there will be little time for you to talk to the teacher because even though you arrive early, he or she might be busy teaching. However, if you have a chance, ask the teacher and find out as much as possible about the lesson.
- The information you want to find out is:
    - roughly how long the lesson will last (longer than 60 minutes?)
    - general outline of the activities of the teacher and students that will take place during the lesson
    - whether the chalkboard will be used
    - which chalkboard, if there are more than one, will be used
    - whether AV materials will be used and where they will be placed
    - whether there will be a homeroom meeting before the lesson starts (Note: do not tape homeroom activities)

Choose Camera Positions

- Try to set up the cameras with the windows at your back, thereby avoiding back light problems.
- Close windows, doors, and blinds as needed to adjust the light and reduce noise. Make sure the teacher doesn't mind before you do any of this.
- Find the location of the nearest electrical outlet. If at all possible you will want to plug your camera into this outlet so that in the unlikely event of a battery failure you can use electricity as a back up while you replace the battery.
- Move student desks as needed to set up the cameras. We are interested in how desks in classrooms are arranged so you should not ask the teacher to significantly alter the lay out of the classroom. However, it is fine to scoot a few desks over in order to have better visibility. Before you move any desks make sure that the teacher doesn't mind.

Attach Barcode Stickers to the Tapes

- Before you put the tapes in the cameras, make sure you attach a barcode sticker to each tape.

Shoot Time Clock

- Shoot the time clock with each camera. This will help us to synchronize the tapes later.

Class Cancellation

- If class is canceled, please contact your country's scheduler for further instructions. Elizabeth Tully, Phone: (323) 512-5130 or Cell Phone: (310) 210-2860.

Fire Drill

- If a fire drill interrupts class, leave the equipment and follow the class outside.

After Taping the Lesson

Give the Questionnaire Packet to the Teacher

- After you are done taping you will give the teacher the box or envelope that contains teacher and student questionnaires, instructions for the teacher, and mailing envelopes for the teacher to use. Remind the teacher that it is essential that he/she completes the teacher questionnaire before the day is over.

Pack Up

- All equipment should be packed using the equipment checklist so that nothing is forgotten.
- If you used more than one tape per camera to shoot a long lesson (more than 60 minutes), make sure you attach a barcode label to each tape before the tapes get mixed up.

Completing the Log Sheet

- The tapes collected must be accompanied by a log sheet that you fill out. This log sheet should be completed while the taping session is still fresh in your mind (i.e. no later than the evening of the taping). Log sheets should be returned to LessonLab with the tapes. Make sure that each log sheet has the barcode sticker attached that is the same as the ones on the tapes.

Shipping the Videotapes

- To ship the videotapes into the United States, you will have to fill out various shipping forms. Please refer to Appendix E for more instructions.

A Note on Behavior and Dress Code

Always try to be polite and considerate.

- You should always remember that teachers have volunteered to let us video tape their classrooms. So please be polite and considerate and thank the teacher profusely. In addition some teachers will be very nervous so try to make them feel comfortable. In

general you should try to not be a burden and make your presence felt as little as possible. However, make sure you collect all the materials teachers have agreed to give us.

Dress appropriately.

- You are visiting schools not as an individual videographer but as a representative of TIMSS 1999 Video Study. Always dress appropriately based on the standard in your culture.

Do not eat, drink, or chew gum while in the classroom.

Chapter 2: Documenting Lessons

Classrooms are complex environments where many things are occurring at once. In this chapter, we describe which aspects of the classroom environment we want to document. We discuss how to locate the two cameras in the classroom, one stationary and the other operated by you. And, we present some general rules, as well as some specific guidelines, designed to help the camera operator make consistent decisions about where to point the camera and how to shoot the action being documented.

Goals of Videotaping

As mentioned earlier in this manual, the main objectives of this project include investigation of mathematics and science teaching in the U.S. and in other countries and the comparison of classroom instruction across countries. The goal of videotaping lessons is, therefore, to document what is happening in the classroom. The objectives of the study will not be achieved if videotaping of lessons is done inconsistently across countries and videographers. It is of crucial importance to the project that all the videographers strictly follow the procedures developed for this project.

Shooting in Real Time

Because we want to see each lesson in its entirety, all videotaping will be done in real time. The camera will be turned on at the beginning of the class and not turned off until the lesson is over. This means that we can study the duration of classroom activities by measuring their length on the videotape. Obviously, this would not be possible if there are any gaps in the recording.

The tapes will not be edited, but viewed from beginning to end in real time. This means that you must attend to what is being captured on the tape at all times. Nothing will be deleted. If you are used to editing, taping in real time will take some getting used to.

What to Document

Classroom lessons are complex. What kinds of things need to be captured in the videotape? To answer this question, imagine you are an observer. You walk into the classroom to see what is going on. What do you look at? You cannot look at everything; decisions must be made from moment to moment about what to include and what to leave out.

When you are in a mathematics or science classroom observing the lesson and trying to understand what is happening, you will probably attend to three things: the teacher, the students, and the tasks. These are the three things we want you to document.

Document the Teacher

During the lesson, teachers engage in a variety of activities. For example, they explain concepts and procedures, pose problems, assign tasks, ask questions, write information on the chalkboard, walk around the classroom and assist individual students, etc. Because the main goal of this

project is to study teaching in different countries, it is necessary that we thoroughly and carefully document the teacher's activities and behaviors during the lesson.

Make sure that you capture what the teacher is doing, what he/she is saying, and what information he/she is presenting to the class.

Document the Students

When you are observing a lesson in a classroom, you would not only look at the teacher all the time but look at the students as well so that you understand what goes on in the classroom. Make sure that you capture what students are doing and saying during the whole-class interaction, when they are working in groups and on their own. Focus mainly on the activities and behaviors of the students who are interacting with the teacher, but turn to other students as well from time to time because students might be doing different things when the teacher is and is not with them. Of course you cannot document everything that every student says and does. The goal is to sample student behavior so that what is portrayed in the videotape is representative of what actually happened in the lesson.

Document the Tasks

During mathematics and science lessons, teachers assign various tasks to students. Normally the teacher presents the task to students clearly enough that students understand what they are supposed to do, and it is usually not hard to see in the video what the task is. This is not always the case, however. If the task is ambiguous or poorly described, many students will be uncertain how to proceed. Or, if the class is broken into small groups, each group may be working on a different task.

In all cases, what we want to see on the video is the task that students are actually engaged in doing, whether or not it is what the teacher intended. To see clearly what students are doing it is often necessary to zoom in close enough to capture what at least a few of the students are working on. Make sure you document how students are actually doing the assigned tasks.

Placing the Cameras

The Two Camera Strategy

We are using two cameras in this study. One will be stationary. It typically will be placed up high on a tripod along a side wall near the front of the room, set to the widest shot possible, and used to capture as many students in the classroom as possible. We will refer to this as the "student camera."

The videographer will operate the second camera. It, too, will be placed on a tripod, but will also be removed from the tripod whenever it is necessary to document the lesson. It will generally be placed between 1/3 and 1/2 of the way back from the front of the class, and will more often than not focus on the teacher and his or her zone of interaction. We will refer to this camera as the "teacher camera."

The physical arrangement of classrooms and the activities that take place within them vary greatly. The videographer must decide where to place the cameras so that the documentation requirements outlined above can be met to the greatest possible extent. It is helpful, if possible, to talk with the teacher before the class begins to find out generally what is going to happen, and where the action will take place. The camera should be placed so that it can easily tape the main chalkboard or audiovisual device, the teacher, and some of the students in a single master shot. The position should also allow for easy panning to other areas of the classroom.

Rationale for Camera Placement

It is not possible, due to varying classroom configurations, to define a single best position for the teacher camera. However, we have found that placing the camera along the side, 1/3 to 1/2 way back, works best in most classrooms.

This position allows good views of the board in medium and close-up shots, as well as good shots of the teacher's and students' faces in a wide master shot. This position also allows for quick panning to the front and rear of the room as well as an ideal view of the opposite side of the room especially if there is a supplementary chalkboard in that location.

Why not set up in the rear of the room? Although setting up in the rear of the room offers a good view of the entire classroom it also has two major disadvantages. The students are only seen from behind, and the camera will most likely have to zoom in to frame the front of the room, which will tend to accentuate camera movement.

Why not set up in the front of the room? Setting up too close to the front of the room results in oblique angles that make it difficult to see what the teacher is doing and to read the board.

The student camera should be mounted as high as possible so as to give the least obstructed view of what the most students are doing. Placing it on the side, a few feet from the front, will usually work best, and it should usually be on the same side as the teacher camera. This is important because it reduces the likelihood that the student camera will be included in the teacher camera's shot.

Light Sources

Both cameras should be set up on the same side of the classroom as the largest set of windows, thus keeping the major light source at the camera operator's back. This orientation will minimize overexposure due to backlighting. This position also allows a good view of the supplementary chalkboard that is often on the opposite wall from the windows.

If the classroom has windows on both sides of the room, choose the side that looks best overall. Be sure to maintain, however, careful manual exposure of the foreground. In any case, the camera's exposure should be set to manual and adjusted according to the situation (See "Exposure" below).

Also keep in mind that it often is possible to pull window shades if you feel positioning the camera opposite the windows would be a better alternative. In fact, often you will need to pull the blinds even if the windows are behind you so as to avoid reflection on the board or other equipment.

Tripod versus Hand-Held

Whole Classwork. It is preferable to keep the camera on the tripod during periods of whole classwork (when the teacher and/or a student is at the board). Circulating through the classroom can be distracting and can make the camera the center of attention.

Independent Work. If independent seatwork occurs for more than 2-3 minutes, it is preferable to handhold the camera, so that you can more closely capture individual interactions and students' work. Below are some examples of seatwork:

- When the teacher assists students individually or as a small group.
- When students break into groups and work on assigned tasks.
- When students gather to work around a computer

During these activities, take the camera off the tripod, handhold it, and walk around the room for the duration of the seatwork period. Try to remove the camera smoothly from the tripod so that you will not lose the action you are documenting. Then, at the end of the seatwork period, put the camera back on the tripod as smoothly as possible.

Keeping track of the teacher. It is very important to keep track of the teacher during periods of independent work. If the teacher is interacting with students, it is particularly important to capture these interactions. Most likely, during periods of independent seatwork you will be filming the teacher interacting with students, using a medium or wide shot. However, you should also try to periodically capture students' work, including what they have written on their paper, the materials they are using, and their textbooks.

Finding opportunities to shoot students' work. Shooting students' work means getting close-ups that are readable to a viewer. Try to get at least one good shot of a student's work. Ideally try to shoot as many different students' work as possible, without losing track of the teacher. One opportunity for shooting students' work is when you are filming the teacher providing assistance. Another opportunity is when the teacher is not doing anything, and you see a student whose work you could easily shoot.

The close-up shot. Getting a good close-up shot of students' work presents a somewhat difficult situation for the videographer. In order for the shot to be effective, the viewer must be able to read what the student has written. Such shots are critical for the viewer to know exactly what work students are doing, or have done, at their seats. However, getting this kind of shot can be disruptive to the student. Therefore, you will have to use your judgement as to when it is appropriate to attempt these close-ups.

For the ideal close-up shot, you should stand behind the student (or possibly to their side), zoom in, focus carefully, and film everything they have written. Please be aware that the camera only

needs to be in this position long enough to zoom in and focus, because viewers can easily freeze this frame of video.

> Practice removing the camera from the tripod and placing it back on the tripod while you maintain a shot. This needs to become a smooth and automatic movement.

Other Issues to Consider in Placing the Cameras

There are still some other issues you will need to consider when choosing the camera positions in a classroom.

- Overhead projectors, slides, multiple AV presentations.

You should take into account the audiovisual materials that will be used so as to position yourself at a vantage point from which you can best capture see them.

- Direction in which students are facing.

Try to position the teacher camera so that you can see the faces of at least some of the children (if not the majority). This will reduce the chance that you have to remove the camera from the tripod.

- Clear view.

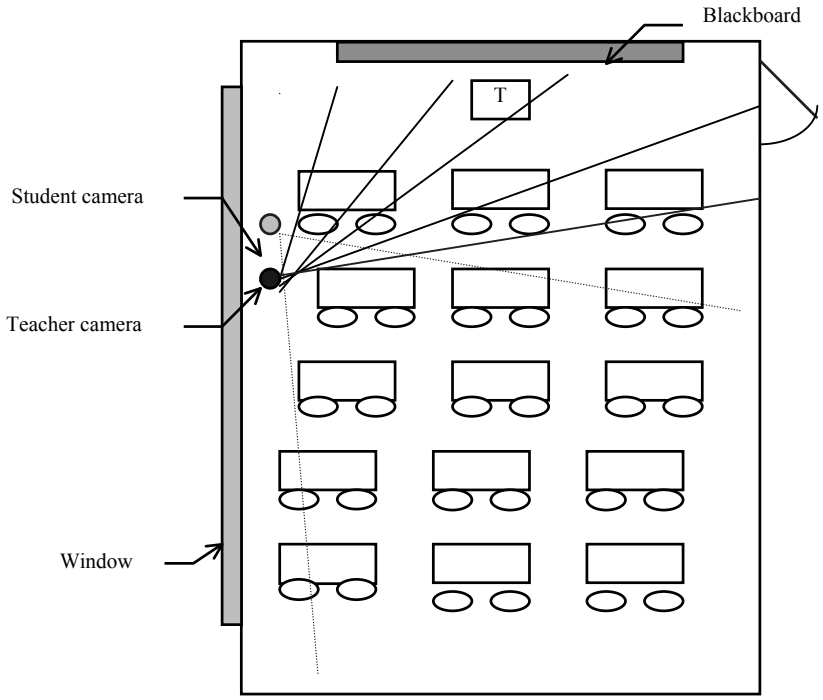
You want to avoid having students sitting directly in front of the camera because they will block your view. If you find a very good position but a student is in your way, you might want to consider asking the teacher if it is OK to ask the student to move.

Some Common Situations, and Where to Place the Cameras

In this section we will illustrate where to place cameras in a variety of classroom settings with different instructional activities. In general you may find mathematics lessons easier to videotape than science lessons because science lessons are often held in a lab, which tends to be much larger than a regular classroom, and desks are often built-in so that you cannot move them to secure the camera positions. Also science lessons involve demonstrations and experiments that often require a videographer to handhold the camera and move around in the room to document what the teacher and students are doing. In any event, you should always keep in mind in making your decisions of where to place cameras and what to videotape the principles and guidelines described above.

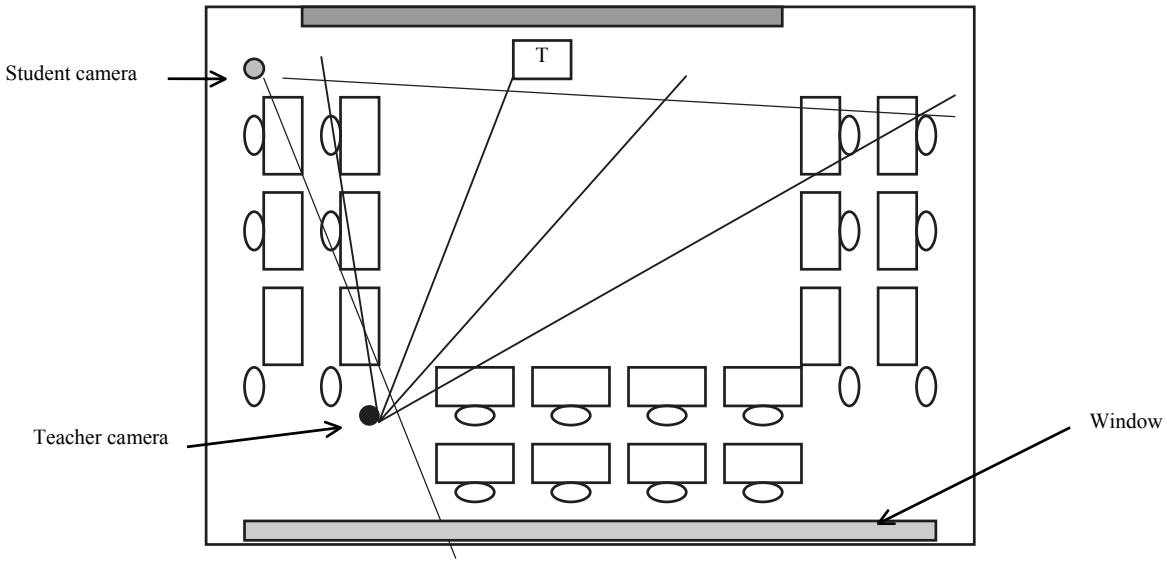
Situation 1: Window Opposite from the Door, Chalkboard at the Front, Movable Student-Desks Facing the Front

This situation is probably the most common classroom setting. You can place the teacher camera by the window, 1/3 of the way from the front, and the student camera near you, leaving it aimed at the students behind the camera. Keep the teacher camera on the tripod as long as you can document what the teacher and students are doing.



Situation 2: Chalkboard at the Front, Window On the One Side, Student Desks Arranged in a U-Shape

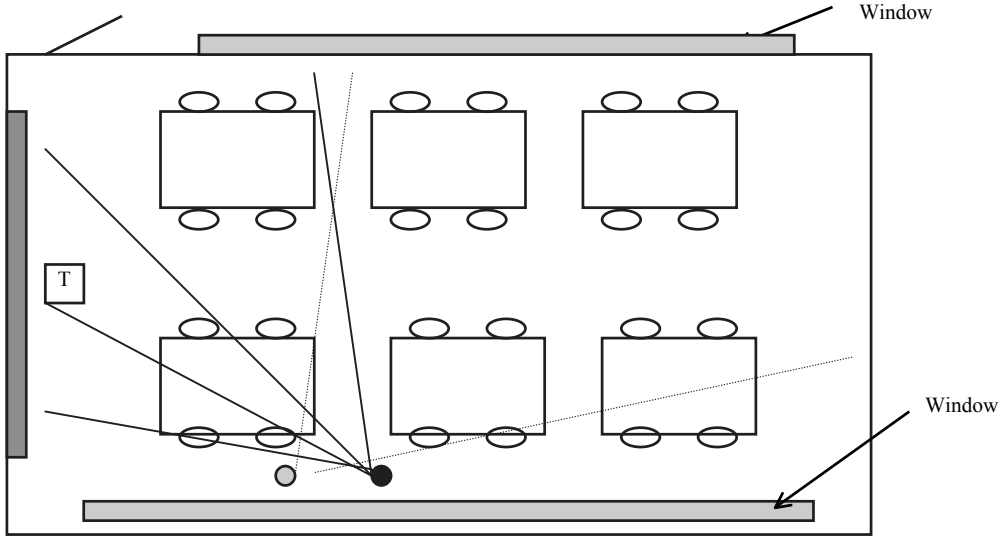
This situation does not allow you to apply the 1/3 view rule. You should place the teacher camera where you have a good view of the teacher and the chalkboard, and students are not blocking your view. Place the student camera in the front corner where the camera is not in the view of the teacher camera.



Make sure that you set up the student camera as high as possible to avoid students' heads blocking its view.

Situation 3: Students Sit in Groups, Windows on Two Sides of the Room

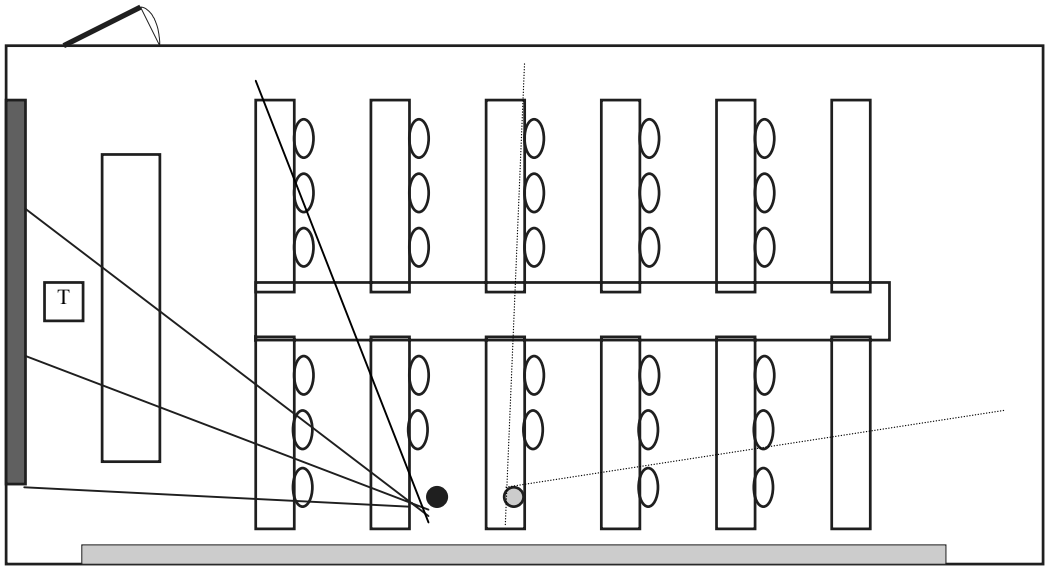
In this situation 1/3 view may apply. Again place the teacher camera so that you have a good view of the teacher. Try to avoid backlighting situation. If possible, close the blind of the window that is in your view.



Situation 4: Large Science Lab, Student-Desks Not Movable

Often science labs are much larger than normal classrooms, and student-desks are built-in so that you cannot move them. Because the room is large, often there are enough rooms for students to sit even if you occupy few seat spaces (see the diagram below). However, make sure you ask the teacher if it does not cause any problem. When group experiment starts, you may need to lower

the angle of the student camera slightly so that it captures the group in front of the camera while documenting other groups' activities as well.



Audio Recording

We are using three microphones to capture audio in the classroom. One is the built-in microphone on the student camera. The other two are fed into the teacher camera through a mixer, mounted underneath the camera. One of these is a wireless microphone worn by the teacher; the other is a small microphone attached to the top of the camera. Be sure to familiarize yourself thoroughly with the use of these microphones.
Always wear headphones while you are taping so you can monitor what the camera is picking up at all times.

Deciding Where to Point the Teacher Camera

Once you begin videotaping classroom lessons you will see that it is not enough simply to know what needs to be documented. It is impossible to simultaneously capture teacher, students, and tasks. You must decide, at any given moment, where to point the camera, and what to include in the shot.

One thing to keep in mind is that the student camera will always be taking a wide shot of the students. So, although you must sometimes get close-ups of students and their work, the primary focus of the teacher camera will be the teacher and the tasks.

The Perspective of the Ideal Student

Most of the time you can decide where to focus the camera by taking on the perspective of an ideal student in the class. Given what is going and what the teacher is trying to accomplish, where would the ideal student's attention be focused? This is usually where you want to focus the camera.

If the teacher is lecturing and the students are listening, you probably should focus on the teacher since that is where the ideal student would be looking. But you also should move now and then to get a close-up of what students are writing in their notebooks. If the students have been assigned to work on a task at their seat while the teacher walks around and helps students who are having difficulty, you should probably put most of your focus on the actual task that students are working on, while still keeping track of the teacher.

Keep Track of the Teacher at All Times

Because the teacher is an extremely important part of the lesson, we want to keep track of the teacher at all times. This does not mean, however, that you must always have the teacher in the camera view. We will have audio coming from the teacher's wireless microphone, so as long as you pan back to the teacher frequently we will be able to find out what the teacher is doing. If the teacher engages in a long interaction with a single student we want to capture it, but also we want to see what the other students in the class are doing.

Some Difficult Situations and Their Solutions

In general, you find it difficult to decide where to point the camera when: 1) separate activities are occurring at the same time, and 2) when events change very quickly. Here are the rules to keep in mind when you encounter those situations:

When Separate Activities are Occurring at the Same Time
If students are working on their own on an assigned task while the teacher prepares materials on the board, it is difficult to document both what the teacher is doing and what the students are working on.

The general solution to this situation is to focus on the teacher for a while, then pan slowly away from the teacher to document what the students are doing. It may be necessary to zoom in to see the task that students are working on. Then move back to the teacher.

Rule: Keep the shot mainly on the teacher but tape students activity from time to time to understand what task they are working on.

When Events Change Very Quickly
Sometimes things change constantly during the lesson. You must listen carefully to what is happening and try to predict what might happen next. This is the only way to be ready to react in time. However sometimes changes will occur very quickly and you are likely to miss what has happened.

If events change quickly and it is clear that the change is only a brief one, it is often impossible to catch the change in time and it is better to let it go. In general you should avoid moving the camera to capture brief events. We are likely to miss them anyway, and rapid moves compromise the quality of our tapes. It is not only the brief event that is missed, but parts of the

more enduring event would be missed as well as you try to find your way back to the original event.

Rule: avoid moving the camera to capture brief events.

In the table below we describe some difficult situations that are likely to occur in mathematics and science classrooms and what to do when they occur and why.

Some possible situations

	Descriptions of possible situations	What to do	Why
1	• Teacher at the front talking • One student is at the board working on a problem and talking publicly • Rest of the class working individually at their seats	Focus on the teacher and the student at the board, but find a chance to document what other students are doing	Because we want to document: 1) the teacher, 2) teacher-student interaction, 3) new information on the board, and 4) students' task
2	• Teacher walks around assisting the students privately and talks to the whole class from time to time • One student at the board working on a problem • Rest of the class working individually	Document how the teacher instructs individual students, but document the student at the board and the information on the board when there is a chance	Because we want to document: 1) the teacher, 2) new information on the board, and 3) students' task
3	• Teacher stays at the teacher desk assisting students privately • Rest of the class working on their own	Document how the teacher instructs individual students (move close to them) and document what other students are doing	Because we want to document: 1) the teacher, 2) teacher-student interaction, and 3) students' task
4	• Every group works on the same task; • Teacher walks around assists each group	Document how the teacher assists individual groups (follow the teacher) and also document some groups when teacher is not with them	Because we want to document: 1) the teacher, 2) teacher-student interaction, and 3) students' task
5	• Every group works on different tasks; • Teacher walks around and assists each group	Document how the teacher assists each individual group (follow the teacher) and also document every different group work	Because we want to document: 1) the teacher, 2) teacher-student interaction, and 3) students' task
6	• Every group works on a different task, • One group works outside the classroom • Teacher walks around and assists each group	Same as #5 but find a chance to document the group outside	Because we want to document: 1) the teacher, 2) teacher-student interaction, and 3) students' task
7	Whole class leaves the classroom and work outside	Follow the class and videotape outside; but do not turn off the student camera	Because we want to document: 1) the teacher, 2) teacher-student interaction, and 3) students' task

How Close to Frame the Shot on the Teacher Camera

The Zone of Interaction (ZOI)

A space within which the action to be documented is occurring is called the zone of interaction (ZOI). For example, if one student is at the board writing something and the teacher is standing beside the student and asking questions to him/her, the ZOI includes the teacher, student, and the board (see the example below).

There are two types of ZOI: central and split. The ZOI is called *central* when it can be framed within a single shot. When it cannot be captured within a single shot, it is called *split.* Below are some examples of difficult situations of ZOI and the general rules to follow in those situations.

Aside from making sure that all videographers point the cameras at comparable things, we also need to make sure that their shots are framed in comparable ways. An extreme close up of the teacher talking would provide a very different sense of the action taking place than a wide shot where the teacher is seen in the context of the classroom.

The Master Shot

In general, we want the widest shot possible because that gives us the most information. And in general that means that you will use a shot called the Master of Scene (MOS) or, more simply, the "master shot. "

The master shot is achieved by zooming the lens out completely, allowing for the widest most encompassing view of the whole scene. By using a master shot we will be able to get as complete a picture as we can of the activity taking place in the lesson.

For example, a central ZOI, which encompasses the teacher talking to the class, could be captured with a zoomed in shot of the teacher's face or of the teacher from the waist up; this would probably be the nicest shot from an aesthetic point of view. However, from our point of view the preferred shot is still the master shot because it is the one that will give us the most information about the context within which the action is occurring (see the picture below).

Also, the master shot is less prone to bias because it does not artificially focus the viewer on whatever aspect of the lesson the videographer judges to be most interesting.

The Medium Shot

This shot frames a single individual or large object. The medium shot is not a close-up and not very wide (although in certain circumstances you will need to zoom all the way out to achieve a medium shot). For our purposes framing the teacher or any other individual from the thigh or waist up to six inches above his or her head will be called a medium shot.

The Close Up

This shot closely frames anything or anyone. For instance, if the teacher holds up a manipulative or refers to something small, and it is important that we see it, you should zoom in and tightly frame that object. (Note that this will affect focus.) In other situations it may be necessary to take a close-up of what a student is doing at a desk or an item on the chalkboard.

The Group Shot

This shot frames the teacher and a group of students, or any relevant group of individuals. Note that this shot can be achieved by either a wide-angle zoom or a longer focal length zoom, depending on the camera's distance from the group. (If the camera is handheld it is wise to keep the lens as wide as possible while adjusting the frame by moving closer or farther away from the group. This maximizes the depth of field, and minimizes camera movement making it easier to keep more in focus.)

The Two Shot

This shot frames any two individuals, most typically the teacher and the student that he or she is talking to. Again, the focal length of the zoom lens is determined by the distance the subjects are from the camera. (In handheld situations, it should remain medium to wide, adjusting the frame through camera to subject distance).

Some Example Situations and How to Handle Them

Situation 1: When Two Speakers Will Not Fit in a Single Shot

When the ZOI is split between different speakers, then you should move the shot from speaker to speaker as they take turns talking. There is however, an exception to this rule. If one of the speakers is taking such brief turns of speech that you do not have enough time to go to this speaker before his turn is over, just keep the camera on the person doing the most talking.

Rule: move from speaker to speaker as they take turns talking if the turns are long enough.

Situation 2: When the Speaker is Far from the Object Being Discussed

This situation happens frequently for instance when a student in the back of the classroom is talking about things written on the chalkboard. In this situation, the general rule is to keep the shot on the speaker. But before settling on the speaker you must first move the shot over to the object and document it long enough to provide the visual information needed to make sense of the talk. For example, if the teacher is talking about a problem on the chalkboard or a geometric shape, first tape these objects and then move to the speaker.

Rule: keep the shot mainly on the speaker but capture the object first.

Situation 3: When the Speaker is Close to the Object Being Discussed but They Will Not

Fit in a Single Shot: For example, the teacher is holding up an object and describing it, but in order to see the object clearly you need to zoom in closely and thus exclude the teacher from the frame. The ZOI presents a split because the teacher and the object cannot be captured in the same shot.

Also, if the speaker is pointing to specific features of the object as she talks, and if the direction of the points must be seen in order to understand the talk, then you must zoom in on the object to understand the teacher's talk.

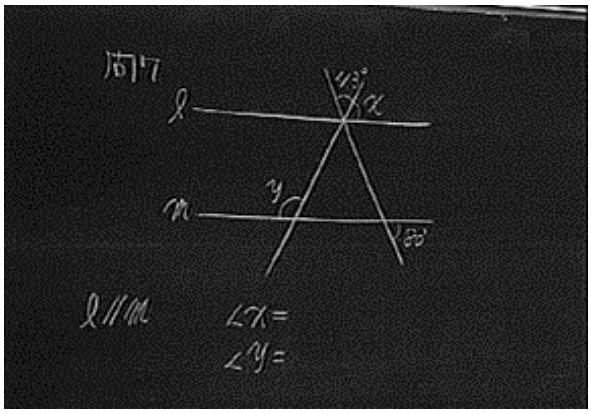
Rule: keep the shot mainly on the speaker but capture the object first or whenever the speaker points to specific features of the object.

Taping the Chalkboard and Overhead Projector

Because teachers often use the chalkboard or an overhead projector we will discuss in some detail how to handle these situations using the guidelines that were discussed above.

Chalkboard

Things written on the board during lessons are treated the same as other objects that get talked about. The camera usually has to zoom in tighter than a master shot in order to capture the information being presented. In fact, writing on the board is often so small that you will find yourself in a split situation where to read the writing you will lose the teacher from the shot. In any case, it is important to zoom in close enough--and for long enough--so that the writing on the board is clearly legible on your small, 4-inch LCD monitor.



Getting closer to read the chalkboard.

On the other hand, it is not necessary to stay in close for very long in most instances. We always prefer the master shot. So if something is being written on the board, and if it seems to take a while for the person to finish writing, stay on the master shot until the person is finished writing rather than immediately going in to capture what is being written. Then zoom in and capture what is on the board. The exception to this rule would be if in order to understand what is being

said, you need to see what is being written as it is being written. (This often happens when the teacher is talking about what she is writing as she is writing it.)

One common mistake is to zoom in too close and for too long on the chalkboard. Often you can read what is on the board with a medium shot and you do not need a close up. Or, if you do need a close up you do not need to hold it for very long. Once you have captured what is on the board you can often understand a discussion of its contents without zooming back in. If you can remember enough of what is written to easily follow the discussion from a wider shot, the viewer probably will be able to also.

When the contents of the board changes you must zoom back in to document the change. We must be able to know what is on the board at all times.

Overhead Projector

Teachers use overhead projectors (OHP) in much the same way as they use the chalkboard. Generally speaking, the OHP should be photographed in the same way as the chalkboard. However, overheads present a special difficulty for the cameraperson because the aperture has to be changed in order to see what is being projected. Because zooming in and out of an overhead projection presents a challenge for the cameraperson; we allow the camera to remain more static when shooting overhead projections than when shooting the chalkboard or other objects. In general, you can forgo returning to the master shot if it is clear that the OHP will be modified soon. This will help you avoid a lot of zooming in and out while adjusting the aperture.

> Be sure to practice smoothly and quickly changing the camera settings so as to capture the OHP projection. This happens frequently, and it is essential that you not miss what is being projected.

Chapter 3: Camera Work

Now that we have discussed what you are expected to tape, we will give a more detailed description of the basic camera moves that you will be asked to carry out. It is important that the viewer's attention be directed towards events in the classroom and not the actions of the camera or the camera operator. If your images are jerky or if they do not follow certain basic cinematographic conventions, they will look strange and the focus will be taken away from the classroom events.

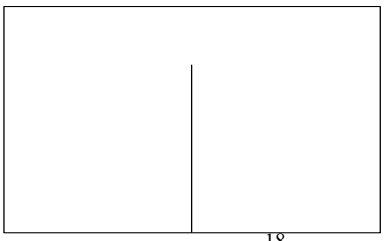
Below we will discuss some basic principles and conventions that should guide how you frame and compose your shots. We will also briefly discuss some tips for achieving smooth camerawork.

Framing and Composing

Basic Principles

In composing your shots you should be guided by the notion of visual weight. If your shot is not balanced it will produce a sense of unease in the viewer, which can be quite distracting.

When something appears in the image frame, it draws our attention and we look at it more than we would look at an area that contains "nothing". If something draws our attention it is said to have visual weight. Certain things carry more visual weight than others. Large items draw more attention than small ones. Moving, energetic elements have more weight than static elements. Complicated shapes draw more attention than simple shapes. People usually carry more visual weight than file cabinets. Also certain areas of the frame carry more visual weight than others. Elements in the center of the frame tend to exert less visual weight than elements at the edge of the frame. In fact the closer an element gets to the edge of the frame and the further it gets away from the "felt axis"(see figure below), the more visual weight it will have.

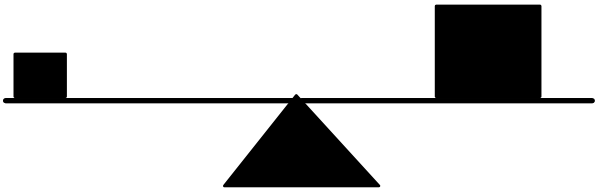


The "Felt Axis"[18]

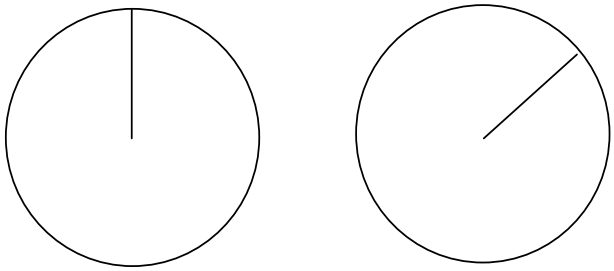
In addition, equilibrium is our strongest visual reference and greatly influences our sense of visual weight. All visual patterns have a center of gravity that is immediately intuited. The horizontal-vertical construct is the basic relationship between our environment and us. Our internalized awareness of steady uprightness is always in relationship to a stable base. If we are thrown off our center of gravity, we push an arm or leg out to regain our balance. As picture

[18] Figure taken from Dondis, Donis A. (1977), *Primer of visual literacy.* Cambridge, Mass.: MIT Press.

elements move away from the felt center of gravity, they carry more visual weight as shown in the figures below.

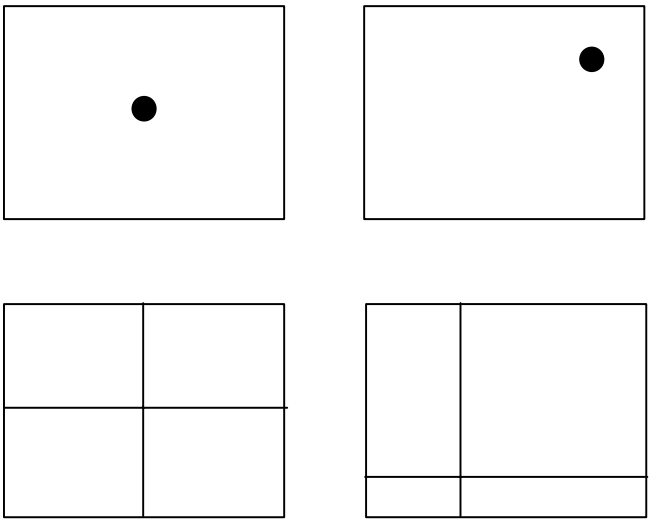


Something small and near an edge carries more weight than something larger at the center[19]



The circle with the "tipped" or non-conforming radius attracts the most attention. [20]

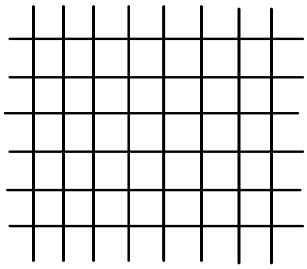
In composition, harmony and stability are the opposite of the visually unexpected and stressful. For instance, the placement of a dot in the center of the frame feels balanced and harmonious. By contrast, a dot or line placed off the felt axis carries more stress and more visual weight. To balance it, you must place another picture element opposite it (see Figure below).



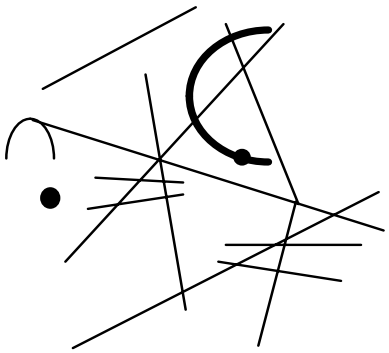
[19] Figure taken from Dondis, Donis A. (1977), *Primer of visual literacy.* Cambridge, Mass.: MIT Press.
[20] Figure taken from Dondis, Donis A. (1977), *Primer of visual literacy.* Cambridge, Mass.: MIT Press.

Comparison of balanced and un-balanced compositions due to differences in visual weight.[21]

Compositions that are bilaterally symmetrical do this well and harmoniously. However, compositions can also be balanced asymmetrically by combining image elements of different visual weights in different areas of the composition. The point is to move the viewer's eyes throughout the composition, favoring the image elements that are most important.



Symmetrical



Asymmetrical

Examples of symmetrically and asymmetrically balanced compositions

Most of the time you will be balancing the teacher and something else such as the chalkboard or a student. This means that generally you will be working with asymmetrical compositions. Your goal should be to make these compositions balanced and to make sure that they direct our attention to the most important elements in the frame. In other words you do not want a filing cabinet to carry more weight than the teacher instructing the class. In balancing your shots it will also be useful to keep in mind that the direction of the principal actor's gaze also carries visual weight. Sometimes called a vector, the direction of a gaze can be thought of as a powerful line that is irresistibly followed by the eye. Because of this, the direction of this vector must be balanced by the rest of the composition. For instance, if the teacher is looking at the students toward frame right, you will probably need to position the teacher to the left of the frame just enough to balance the weight of his or her gaze.

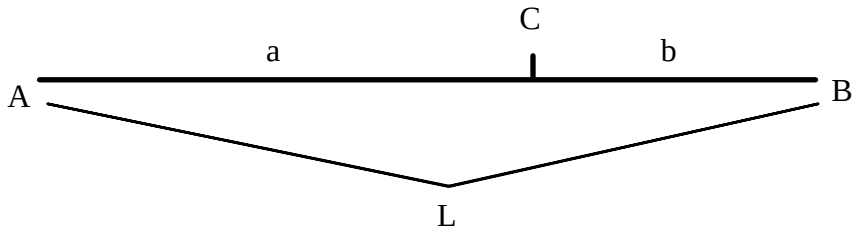
Composing Along the Golden Section Lines

As mentioned earlier, if you do not follow certain conventions you can create images that feel strange and call attention to themselves. One of these conventions is known as the Euclidean "Golden Section" (from Euclid II, 11). This method of cutting a line or other geometric form into "golden" proportions has been known and used in western art, mathematics and architecture for over 2000 years and is still evident today. The Golden proportion was used by the Greeks to design much of what they built from the classic Greek Amphora, to the floor plans of temples and their elevations. Although we do not have the space here to discuss this further, suffice it to

[21]Figure taken from Dondis, Donis A. (1977), *Primer of visual literacy.* Cambridge, Mass.: MIT Press.

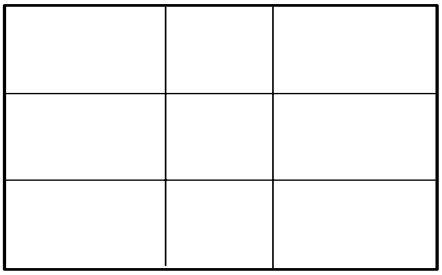
say that the Golden Proportion has had much influence over the organization of aesthetic production in Western history, and it should serve us adequately as a standard.

Euclid first demonstrated this proportion by cutting a line L, into two segments **a** and **b**, so that b/a = a/L, or BC:AC=AC:AB This makes C the "golden cut" of AB or line L.



The golden cut

If we segment each of the four sides of the rectangle of a video image according to the golden cut, and subsequently divide the rectangle with four lines running across to the section cuts on each side, we will have divided the video image as shown in the figure below. Our general rule of composition suggests that prominent features of the composition should be placed on one of these section lines, or on one of their four intersections. (Applying this rule to a 35mm frame results in section lines that divide the frame roughly into thirds. Hence the compositional rule known as the "Rule of Thirds").



Section lines for both horizontal and vertical axes for a 4:3 video aspect ratio

By this method it would be incorrect, save for an extreme close-up, to put the teacher in the middle of the frame; he or she should be placed slightly to the left or the right. When the teacher is writing on the chalkboard, it would be best to balance the teacher, on one side, and his or her writing on the other. Which side the teacher is placed on depends on his or her orientation. For example, should the vector of the teacher's gaze go off screen right, placing the teacher on the section line screen left would balance the weight of his or her gaze. In more complicated situations where there are more than two things in the frame, or a split of two items, it is still preferable to balance everything in the frame around the section lines, distributing the visual "weight" of the picture elements in relation to the section lines.

A Technical Note about Composition

Be careful not to be too tight with your framing. Use the safe line inside the camera viewfinder to ensure that relevant information will be seen on the edges. Compose your image within the safe lines. Remember that you are looking at a small camera monitor and the image will be displayed larger. Of course, vertical and horizontal lines in the image should be parallel with the edges of the frame.

Camera Moves

If the camera moves or zooms smoothly, infrequently and in reaction to events in the classroom, it will not draw attention to itself. If, however, it is moving constantly, zooming in and out, re-framing, and focusing, the viewer will be distracted and the camera work could conceivably interfere with the evaluation of the data. This is another reason why we have opted for a master shot as the preferred shot. If the lens is zoomed out as wide as possible, camera movement will be minimized, the increased depth of field will keep the image in focus, and less camera panning and tilting is necessary to cover events in the classroom. Conversely, if the lens is zoomed in close, the camera must move constantly to keep a moving subject in the frame; thus, focusing will become more difficult. Below we will briefly discuss some guidelines to follow for achieving camerawork that does not call attention to itself.

Achieving Smooth Camera Movement

In order to achieve smooth camera movement panning, tilting and zooming must be carried out in a coordinated and integrated way rather than as three separate moves. As you zoom out, you must tilt down to retain the same framing. As you zoom in, you must tilt up. In addition, some shots require simultaneous zooming, panning and tilting. For example, a common shot will be to zoom out from a medium shot of the teacher at the chalkboard to a master shot of the teacher and classroom. In this maneuver, you must zoom out, pan (say) right, toward the students, keeping the teacher at the left edge of the frame, while you simultaneously tilt down, keeping the image exquisitely composed throughout.

Wide angle panned images cause less apparent camera motion than zoomed in pans. Fortunately, since our preferred shot is the MOS, you will often already be at a wider focal length when doing a pan. However, if for example you are zoomed on the chalkboard and need to pan over to a student in the back of the room, you should zoom out before panning to make the move less distracting.

Also, slower zooms are less distracting and are more desirable than fast ones. The EVW 300 has a variable speed automatic zoom. We suggest you always zoom with the automatic feature located on top of the right hand grip. The harder you press the zoom button, the faster it will move; the lighter your touch, the slower it will move. If you must make a quick close-up, or quickly zoom out to show something happening in the wider field, you should zoom at full speed so as to avoid missing the event you are trying to record.

Keeping Objects in Focus

It is extremely distracting to the viewer if the objects being taped are out of focus or if blatant readjusting of the focus takes place. In order to avoid this, you can define a field of focus by zooming in and focusing on an object or wall that you wish to be at the far edge of that field. As you zoom out, the increased depth of field from shorter focal lengths will keep your image focused. After this initial zoom in, there will be no need to refocus unless you zoom in on a plane other than your initial point of focus. Remember longer focal lengths have inherently less depth of field.

Chapter 4: Equipment

Canon Optura Digital Camcorder

The Canon Optura is a small, high quality digital camcorder using the mini DV format. It was chosen because of its lightweight, its image quality (500 lines in NTSC) and its ability to progressive scan. However, because the Optura is a consumer camera there are some restrictions that we have had to overcome by using separate hardware. These restrictions are covered under "Microphones and Audio Connections".(See Section 4.2) Please read the Optura instruction manual thoroughly to become familiar with the camera and its functions.

Video Color Systems

There are currently three analog video systems in the world. NTSC, PAL, and SECAM. The United States, Canada, Japan, and a few other countries use NTSC. Europe and the rest of the world use PAL. France invented SECAM and it is used there although France also uses PAL. Because our video data will be digitized onto CD-ROM in Los Angeles, we use NTSC video. NTSC scans at 30 frames per second and uses a different color system than PAL and SECAM (PAL scans at 25 frames per second and uses 50 cycles per second AC power). All of our videographers will shoot with NTSC cameras regardless of their location.

Proscan

The Optura offers a progressive scanning CCD chip. This chip scans every line each 1/60th of a second. In effect it delivers 60 frames per second rather than the 30 frames per second and 60 fields (1/2 frame) per second of an interlaced scan. With this chip we have the option of recording video either as an interlaced signal or a progressive scanned signal. Since our final product is destined to be displayed on a progressive scanning computer monitor, progressive scanning will give us a sharper image (particularly when we sample stills from our video data). See page 33 of the Optura manual.

Note: Because the monitor mounted on top of the Optura is an interlaced video monitor, moving images on this monitor may appear "jerky" when the camera is set to progressive scan.

Video Recording and Still Image Recording

The Optura can be used as a digital still camera. The recording button is located on the upper right hand corner of the camera. Around this red button is a switch that can be turned to "Movie", "Photo" or "Lock". When set to "Movie", the camera records video when the red button is pressed. When set to "Lock", the camera is in standby mode. When set to "Photo", the camera will take single frame digital stills. (See page 12 of the Optura manual).

Be sure you have set this switch to "Movie" mode so that the camera will record video and not stills.

Camera Video Exposure

The Optura has good automatic exposure as well as an automatic video gain switch that works together with the auto exposure. We recommend that you use an automatic exposure mode. The automatic settings are located on “program selector” (the large knob on the left side of the camera). For automatic exposure AND progressive scanning, you must NOT use the "Easy Recording" program. Use the auto recording program "A" in the US,Japan, and NTSC countries. In Europe, Hong Kong, and PAL countries use the “Tv” program mode (shutter priority).

In 95% of our applications these automatic settings will make proper exposures. The major exception is a wide shot in a dark room with a bright projected image (slides, opaque projector, film, etc.). In this case we recommend that you zoom into a close-up of the projected image (so that the auto exposure can adjust to the correct exposure for the projected image) or retain a wide shot and push (once) the exposure wheel. Next, turn the exposure wheel manually to adjust exposure for the projected image by turning the exposure knob. To return to auto exposure, push the exposure knob again.

In Europe, Hong Kong and other PAL countries you must use the “Tv” automatic setting and pre-set the shutter speed to 100 by turning the exposure wheel. If the exposure wheel is pushed in once, the aperture can be set manually while retaining the shutter speed of 100. Push the exposure wheel again to return to automatic aperture exposure while retaining the pre-set shutter speed. Please see the section on the next page.

We suggest that you set up both cameras with the classroom windows behind them. This will avoid backlit subjects that can cause trouble with the automatic exposure control. If this is not possible and you have backlit subjects you will have to set the exposure to manual and to adjust it during recording. Backlit subjects (even if properly exposed) are undesirable because we cannot see everything in the foreground and background.

NOTE: Relying on the small, low resolution LCD monitor for exposure is not desirable and should be done so only if necessary.

Camera Focus

The Optura has good auto focus. We recommend that you use it most of the time. However, it does not "know" what you are aiming at. It is also slow to react in certain situations. There will be rare situations when the auto focus will not focus on what you want and you will have to adjust the focus manually. (Low light and low contrast situations can especially cause problems with auto focus). The focus wheel is located on the lower left side of the camera (next to the exposure wheel). Like the exposure wheel, it will shift into manual focus when pushed once. You can control the focus manually by turning the focusing wheel up or down. Press again to return to auto focus.

Shutter Speed

NTSC Video is scanned at 30 frames per second. This is compatible with the frequency of alternating current in the United States (60 cycles per second). However, when an NTSC camera shoots under artificial light in a PAL country (with alternating current at 50 cycles per second), the image flickers. This is caused by the frequency difference between the scan rate of the camera and the frequency of the lights (ac current). This flicker can be corrected if the camera's shutter (which opens and closes before the scanning chip) is set to a multiple of 50. We recommend that you use a shutter speed of 100 in PAL countries. This means that in PAL countries, you must set the automatic program mode to "Tv" rather than "A". When in the "Tv" mode, adjust the shutter with the Av/Tv control wheel (the exposure wheel). As mentioned above, you can push the exposure wheel once and manually adjust the aperture while retaining a shutter speed of 100. (See page 37 of Optura manual).

In the United States and Japan (NTSC countries), shutter speed is not an issue. We recommend you use the "A" auto exposure program. The shutter speed and aperture will be set automatically. See page 36 of Optura manual.

Optical Image Stabilizer

The Optura is a small camera and it is virtually impossible to hold it steady particularly when the lens is zoomed in. It has a very good optical image stabilizer that will take the shake out of most movement. Keep the image stabilizer set to ON. However, it is still necessary that you handle the camera as smoothly as possible especially when it is off the tripod.

Camera Menu Settings

The camera has a programmable menu for various functions. There are two main menus. Set them as shown below: You may need to use the camera's remote control to set some of these functions. (See page 25 of the Optura manual.)

Camera Menu: Set the power switch to Camera and the standby lever to "Movie". Press the "Menu" button.

Digital zoom: ON
Wind screen: OFF
White Balance: AUTO
16:9 : OFF
Movie Mode: Pro Scan
Sensor: ON
Tally: ON
Audio Mode: 16 BIT
Record Mode: SP
Date/time set: Set Date and time
VCR Menu: Set the power switch to VCR. Press the "Menu" button.
Tally Lamp: ON

Sensor: ON
Rec Mode: SP
Mix Select: FIXED
Data Code: CAM
Volume: Medium
Date/time set: Set date and time

Camera Cleaning

It is important to keep the cameras clean on the inside and out. A can of Dust Off and an anti-static cloth are provided to keep the outside clean. Lens tissue is also provided. Breathe on the lens to create a small amount of moisture and clean the lens with one flat piece of lens tissue. Clean the lenses on both cameras before every taping.

Clean each camera's video heads every month using the head-cleaning cassette provided. Insert the cleaning cassette into the camera and press play for 10 seconds. Eject the cassette.

Humidity and Condensation

If the camera is moved from a cold place to a warm place condensation may form on the video heads and other camcorder parts. This can cause damage to the tape and the camera. This is especially true in hot humid climates where air-conditioning is used (in Hong Kong, for instance). But it can also happen if it is cold outside and the camera is brought into a heated building.

IF CONDENSATION IS LIKELY TO BE A PROBLEM, unload the cassette and put the camera in a plastic bag. When the camera reaches room temperature, remove it from the bag. A warning sign will appear in the viewfinder of the camera when condensation is detected and the camera will not operate. You cannot load a cassette when condensation is detected. See page 61 of the Optura manual.

Microphones

The only audio source for the student camera is the ZM-100 zoom microphone. Mount this microphone on top of the camera and plug it into the camera. The teacher camera needs both the teacher's wireless microphone and Sennheiser ME-6 shotgun microphone mounted on top of the camera. Both these sources are mixed and balanced via the XLR Pro mixer mounted at the bottom of the teacher camera. Plug the output of the wireless receiver (XLR male) into the SOURCE 1 XLR (female) input of the mixer. Plug the Sennheiser ME-6 cable into the SOURCE 2 input of the mixer.

Source 1: Teacher’s microphone (wireless receiver output)
Source 2: Student’s microphone (Sennheiser ME-6 shotgun mounted on camera)

Studio Pro XLR Mixer

The mixer is mounted between the camera and the tripod. Mounted below the mixer should be the tripod's quick release plate. The mixer allows two separate grounded audio sources to be mixed though the (mini) stereo input on small camcorders.

Plug the cable from the Sennheiser ME-6 into SOURCE 2 (XLR jack) of the mixer. Plug the XLR cable from the Lectrosonics radio receiver into SOURCE 1 (XLR jack) on the mixer. Plug the output cable of mixer into Mic In plug on teacher camera.

Select "Stereo" from the switch on the front of the mixer. Listening via headphones, switch the ground switch to the best position so there is no hum. Switch both Source 1 and 2 switches to the "mic" (up) position. Finally, adjust the volume of each microphone source on the mixer. SOURCE 1's volume (the wireless teacher's mic) should be set at either 3 or 4. SOURCE 2's volume (the Sennheiser ME-6) should be set at ten. You should hear the teacher's mic coming through one ear of the headphones, and the camera mic coming through the other ear of the headphones. (Remember, the camera mounted mic will pick up any sounds you make).

In field tests a volume level of 3 or 4 for the teacher's mic (SOURCE 1) and 10 for the students' mic (SOURCE 2) seemed right. This will vary depending on the size of the classroom and the teacher's voice.

Note: The instructions for the XLR mixer state the following:

"If you are using two mics and your camera has AGC (Automatic Gain Control) for the audio levels, whichever mic is the loudest will end up setting the level. Use the audio level controls to turn down the loudest mic to match the audio level to the weaker mic."

In other words, if the teacher talks very loudly, this will affect the automatic audio gain on the Optura, bringing the level of both audio channels down which can make the level for the zoom (student's) microphone too low. Should this appear to be the case, you can adjust the volume control for the teacher's mic on the mixer LOWER than 4. This will have the effect of adjusting the zoom mic level higher.

Volume Settings/Ratio on Mixer:
Teacher Mic/Source 1: 3 or 4
Student Mic/Source 2: 10

Lectrosonics Wireless Radio Microphone

There are three parts to this microphone: a transmitter (M187), a lavaliere microphone (M150) that plugs into the transmitter (M187) and a receiver (CR 175).

Lavaliere Microphone:
Plug this into the transmitter. Be sure that the connector locks in. (Disconnect the lavaliere and store it in the case when it is not in use.)

The Transmitter:
Insert a new 9v battery BEFORE each taping. The transmitter has an on/off switch. Be sure to switch it on when it is in use. The power on/off LED should glow brightly.

Turn the power switch to the MUTE position on transmitter. Position the microphone to the appropriate location on the teacher. Keeping the power switch to MUTE ask the teacher to speak as he or she normally would in front of a class. Rotate the MIC LEVEL so that the LEVEL LED flickers or stays lit as you speak. The LIMIT LED should light up on loud peaks. Occasional lighting of the LIMIT LED indicates proper operation and optimum signal-to-noise ratio. Even when limiting is occurring, little or no distortion will occur.

(Be sure to set the transmitter mic levels BEFORE you go to the school. When you wire the teacher with the microphone, do a quick test to see that the levels are set correctly for the location. If the mic level is too high, the LIMIT LED will light frequently or stay lit. If this occurs, lower the mic level. If the mic level is too low, neither LED will light or the LEVEL LED will light dimly. This condition may cause noise in the signal.)

Do not forget to move the power switch to ON when you are ready to tape. Please refer to the Lectrosonics M187 transmitter instructions. Information about this system can also be seen on the internet at www.lectro.com.

The Receiver:
Insert a new 9v battery BEFORE each taping. The receiver has an antenna which must be attached for reception. Before proceeding, make sure the antenna is locked in place. Turn the receiver ON and check to see that the red POWER LED lights up.

Set the OUTPUT control to the 2 o'clock position or 3/4 full. If you hear distortion from the microphone, adjust the OUTPUT control to the left. If you hear a hiss coming from the microphone adjust the OUTPUT control to the right. (Be sure to test and adjust the receiver output BEFORE you go to school. Check the LED levels on location to insure they are set optimally.)

Radio Frequency on Receiver:
This LED lights up when the transmitter is turned on and working properly. Make sure this green light is on.

Power:
This LED lights up when the receiver is properly connected to a power supply and switched on. It indicates proper voltage when the receiver is using a battery.

Modulation:
The "-20" LED lights up when the audio signal from the transmitter is present at an adequate level to produce a good signal to noise ratio. The "0db" LED lights when the audio level is high and the signal is being compressed in the transmitter. It is normal to see and occasional flick of the 0db lamp. An extremely high audio level may cause distortion.

Plug the line out of the receiver into XLR SOURCE 1 of the mixer using the six foot XLR male to XLR female cable provided. Please refer to the Lectrosonics receiver instructions. Information about this system can also be seen on the internet at www.lectro.com.

Frequencies:
The radio frequency of the Lectrosonics microphone is set at the factory and cannot be adjusted. Be sure that the frequency of your transmitter (written on the transmitter) is legal for the country you are operating in. Be sure to communicate with us as to whether your transmitter has the proper frequency.

Canon ZM-100 Zoom Microphone

This microphone is for the student camera. Mount the ZM-100 on the "shoe" on top of the student camera. Plug both microphone cables into the student camera. The audio plug (with two black stripes on the plug) plugs into the "mic in" jack. The microphone needs no battery as it gets its power from the camcorder. The power plug (with one black stripe) plugs into the "DC" jack (next to the mic in jack). Set the ZM-100 stereo/zoom switch to "ZOOM." DO NOT USE "STEREO." Set the zoom knob to 90 degrees.

Sennheiser ME-6 Shotgun Microphone

The ME-6 comes in two parts; the microphone capsule and the power supply module. The microphone capsule screws into the power supply. You should have received this microphone with both parts screwed together. You must unscrew the capsule in order to change the microphone's AA battery. Be sure to insert a fresh AA battery into this microphone before every taping. When you turn the microphone ON, the LED light should blink once if the battery is good.

This microphone inserts into its "shock mount" and the mount attaches to the "shoe" on top of the teacher camera. The one foot microphone cable provided plugs into the microphone at one end and into SOURCE 2 of the XLR pro mixer at the other end.

Adjust the shotgun so that it points at about a 30 degree angle toward the students in the classroom. This mic should favor the students over the teacher.

Bass Roll Off Switch
Located in front of the on/off switch is the bass roll off switch. It has two settings represented by a flat line and a curved line. If set to the bass roll off position (curved line) the microphone will minimize the gain on lower (bass) frequencies. If set to the normal position (flat line) the microphone will deliver all frequencies evenly (20-20,000 Hz at 0 dB). In the classroom you will not ordinarily encounter loud bass frequencies. Accordingly, set this switch to the flat line position.

Digital Watch

Use this watch to record time on both cameras just prior to taping a lesson. This time reference will aid in synchronizing both cameras in playback. Try to get the largest image of the watch as possible in the viewfinder. It may help to angle the watch so that light will better illuminate the time.

Tripods

You are provided two tripods. Use the Matthews fluid head tripod with the teacher's camera and the Pro Master non-fluid head tripod with the student's camera. After it is set, the student's camera does not need to be moved and therefore does not need the smoother fluid head tripod. The Pro Master tripod extends higher than the fluid head tripod. Be sure to extend this tripod to its maximum height after attaching the student camera.

Power/Batteries

Whenever possible, the student camera should be powered by AC current. Insert the "fake" battery (DC-900 DC adapter) into the Optura's battery compartment and connect its cable to the ac adapter/battery charger. Plug this unit into the wall. We have provided a 15 foot extension cord as well as current and plug adapters for your location. The NTSC Optura runs on 110 volts/60 cycles ac power.

Because the teacher camera must be able to move around the classroom it must be battery powered. Provided are two large Bescor 3 hour batteries. Insert the "fake" battery (DC-900 DC adapter) into the Optura's battery compartment and connect its cable to the plug on top of the large Bescor battery. These batteries do not have "memory" and should be charge every night before a taping.

Videographer's Vest

The vest is provided to give you a place to carry the battery and the wireless microphone receiver. From the vest pockets will come cables attaching these things to the camera. We suggest you also carry the second Bescor battery and an additional mini DV videotape in the vest pockets in case a battery or tape runs out before the lesson is over.

Chapter 5: Checklist

Regular Maintenance

- Read the Canon Optura instruction manual thoroughly.
- Read the microphone and mixer instructions thoroughly.
- Set date and time on both cameras. See page 29 of Optura manual.
- Clean cameras and camera lenses regularly.
- Clean video heads every month with cleaning cassette.
- Change camera's CR2025 Lithium battery if its icon flashes in the monitor display. It should last one year. See page 56 of the Optura manual.

Before you go to the School

- Make sure both Bescor batteries and the small Canon battery (BP-914) are charged.
- Put fresh 9v battery in wireless mic transmitter.
- Put fresh 9v battery in wireless mic receiver.
- Put a fresh AA battery in the Sennheiser ME-6 Shotgun.
- Insert "fake" batteries (DC-900 DC adapter) into both cameras for later connections to ac adapter or the large batteries.
- Review and pack directions for school.
- Label tapes now if you wish. (Be sure not to use the wrong tape if a class is canceled.)

On each camera:

- Set camera program mode: "A" Auto. (NTSC Countries)
- Set camera program mode: Tv" and set shutter speed to 100 (PAL countries) (See page 46 in Optura manual.)
- Set Image Stabilizer to "ON" (See page 24 in Optura manual.)
- Set record button switch to "MOVIE"
- Set monitor switch to "EXTERNAL"

On camera menu settings:

(See page 25 of the Optura manual.)

- Digital zoom: ON
- Wind screen: OFF
- White Balance: AUTO
- 16:9 effect: OFF
- Movie Mode: ProScan
- Remote sensor: ON
- Tally lamp: ON
- Audio mode: 16 BIT
- Record mode: SP

- Data /time set: Set Date and time

On VCR Menu Settings:

- Tally lamp: ON
- Sensor: ON
- Rec Mode: SP
- Mix Select: FIXED
- Volume: OFF
- Record Mode: SP
- Data Code: CAM
- Date/time set: Set Date and time

Mixer and Stereo microphone:

- Set switches and controls on mixer and zm-100 in proper position.
- Line/mic: MIC
- Stereo/Mono: STEREO

Other:

- Pack equipment using checklist "equipment to take to school".
- Pack material packets (copies of questionnaires and return envelope) for teachers.

Equipment to Take to School

Video camera hard case

1	Canon Optura "Teacher" Camcorder
1	Sennheiser ME-6 Microphone
1	Shockmount for Sennheiser Microphone
1	Canon Optura “Student” Camcorder
1	Canon ZM-100 zoom mic
1	Studio Pro XLR Mixer
1	Lectrosonic transmitter M187
1	Lectrosonic receiver CR175 with antenna
1	Lavaliere Mic M150
1	extra tie clip for lavaliere
1	Sound Isolating stereo headphones
1	foot XLR to XLR microphone cable for Sennheiser microphone
1	6 foot XLR male-XLR female shielded audio cable (for use between Lectrosonics receiver and XLR mixer)
2	9v batteries for wireless mic system
4	Blank Mini DV tapes (Videographer should always have 4 extra tapes)
1	AA battery for Sennheiser microphone

Gadget bag/ Tamrac 787

1 Canon WL-D66 camera wireless remote
1 STV-250 stereo video cable
1 A/C adapters for camcorders (CA-900)
2 "fake" batteries (DC-900 DC adapter)
2 small Canon camera batteries (BP-914)
6 9v batteries for Lectrosonic receiver and transmitter (2 installed in case)
4 AA Batteries for Sennheiser microphone and WL-D66 wireless remote
2 Bescor batteries (use the DC-900 DC adapter with these batteries)
2 Bescor battery rechargers
1 15' extension cord
4 Packs of lens tissue
1 Can Dust Off
1 Anti-static cloth
1 Masking tape
1 Current converter and/or adapter (US excluded)
1 Roll gaffer's tape
2 Canon video/audio proprietary cables for Optura (supplied with camera)
1 Data Collection Manual, Optura camera instruction manual, transmitter/ receiver instruction manual, and zoom mic instruction manual
2 Cleaning cassettes for mini DV
1 Digital wristwatch (to be used as stopwatch)
1 Tamrac photographer's vest
4 Blank DV tapes
1 Tamrac photographer's vest

Tripods

1 Matthews THM-20 fluid head tripod (teacher camera)
1 ProMaster 6400 Photography tripod (student camera) (extend this as high as possible)
1 Padded Tripod Case

In the Classroom

- Put ID Labels on video tapes if you have not already done this.
- Load video tapes into cameras if you have not already done this.
- Ask the teacher about the lesson.
- Choose camera positions.
- Move student desks if necessary.
- Close blinds if necessary.
- Set up student camera on Pro Master tripod.
    - Remove lens caps.
    - Set VCR switch to camera/record.
    - Mount zoom microphone on camera.

    - Plug zoom mic into camera.
    - Connect ac adapter or Bescor battery to the camera.
    - Set microphone zoom knob to zoom.
    - Turn camera on.
    - Check audio with headphones.
- Set up teachers camera on Matthews fluid head tripod
    - Remove lens caps.
    - Connect Bescor battery to camera using the cable from the "fake" battery DC-900 DC adapter.
    - Insert Sennheiser microphone into the shock mount.
    - Mount Sennheiser microphone on camera.
    - Turn the Sennheiser microphone ON.
    - Plug the Sennheiser microphone audio cable into mixer CHANNEL 2.
    - Turn Camera ON. (Set the VCR switch to camera/record)
    - Set the mixer stereo/mono switch on mixer to STEREO.
    - Set the mixer line/mic switches on both channels to MIC.
    - Set Channel 1 (Teachers) volume to 3 or 4.
    - Set Channel 2 (Zoom mic) volume to 10.
    - Plug output cable of mixer into camera's "MIC IN" plug.
    - Attach antenna to wireless receiver.
    - Plug Lavaliere mic into transmitter and turn the transmitter to MUTE.
    - Wire the Teacher with the microphone and transmitter and ask for a voice test.
    - Monitor the MIC LEVEL LED on transmitter.
    - Turn the transmitter ON.
    - Plug wireless receiver into mixer CHANNEL 1 using XLR cable.
    - Turn wireless receiver ON.
    - Turn Teacher's Camera ON.
    - Plug headphones into camera's headphone jack.
    - Monitor audio levels from both microphone on teacher camera.
    - If there is audio hum check ground switch on mixer.
    - Temporarily disconnect battery and receiver cables from the teacher's camera.
    - Start Student Camera and make a close-up of the digital watch.
    - Reconnect the battery and receiver cables to the teacher camera.
    - Check that you can remove the camera from the tripod and move about freely.
- Record lesson

After Taping the Lesson

- Remove the teacher's microphone and transmitter
- Turn off transmitter and receiver
- If there is video tape time remaining, collect supplementary video documentation (allow pan of classroom, close-ups of manipulatives, etc.)
- Rewind and remove tapes
- Make sure bar code labels are on all tapes
- Lock record tab on tapes
- Give teacher the questionnaire packet

- Pack equipment using checklist "equipment to take to school"
- Complete log sheet and affix ID label to it

Appendix D.1: TIMSS 1999 Video Study Data Collection Procedures for Videographers

Materials provided to videographers before the shooting

Before going to the school to collect data, videographers will be provided with the following two kinds of materials: (1) lesson information and (2) a material packet.

Lesson information

A document describing where each lesson is to be videotaped will be mailed/faxed to videographers as soon as the lessons are scheduled with the school and teacher. The information will include:

- School name and location
- Contact person and phone number
- Teacher name
- Time, date, and location of lesson to be taped

A material packet

The videographer will be shipped a supply of packets which will be used for each classroom taping session. Each packet contains materials for either a mathematics or a science lesson. They have **not** yet been assigned to a particular school. Each packet includes:

- 1 teacher questionnaire with a bar-code label attached
- 1 set of student questionnaires each with a bar-code label
- 1 teacher instruction sheet
- 1 materials list included and returned by teacher
- 1 sheet of bar code labels for teacher to attach to additional materials being used during the lesson
- 1 sheet of bar code labels to be attached by the videographer to the videotapes and additional classroom materials after the videotaping
- 1 log sheet with a bar code label attached
- 1 FAX sheet for videographer to send tracking information
- 3 FedEx pouches and air bills (two for the teacher; one for the videographer)

Procedures for collecting data

Once videographers receive the above items, they can go to the schools and collect the data. The data collection procedures for videographers to follow are listed below.

Before going to the school

- Verify that you have the correct type of packet.
- If you are taping a mathematics lesson, you should have a mathematics packet.
- If you are taping a science lesson, you should have a science packet.

- Include the packet with all the other necessary video equipment.

After taping the lesson

- Remove the teacher's materials from the packet and instruct the teacher on what to do with them.
- Attach bar code labels to the tapes and to any additional classroom materials handed to you by the teacher.
- Fill out the log sheet and attach a bar code label to the log sheet.
- Send the tapes and the log sheet back to LessonLab. We strongly encourage you to use Federal Express. If you travel to an area that does not have Federal Express, we suggest you wait until reaching one of their branches at a large city.
- After materials have been shipped, send a completed FAX sheet to LessonLab including the tracking number and a description of the materials. If a FAX is not available, please phone in this information.

Appendix D.2: Videographer's Class Log Sheet

TIMSS
VIDEO STUDIES

BAR CODE

CAMERA OPERATOR: _____

SCHOOL NAME: _____

LESSON: MATH _____ SCIENCE _____

DATE & TIME OF LESSON: _____

MATERIALS COLLECTED AND RETURNED WITH THIS LOG SHEET

	TYPE:	QUANTITY
☐	Videotapes	_____
☐	Copies of Textbook pages	_____
☐	Copies of Workbook pages	_____
☐	Overhead Projections	_____
☐	Handouts	_____
☐	Other	_____

WERE THERE ANY PROBLEMS ENCOUNTERED DURING VIDEOTAPIING?

_____

_____

_____

ANY OTHER COMMENTS THAT MIGHT BE USEFUL FOR UNDERSTANDING THE VIDEOTAPE?

_____

_____

_____

Appendix D.3: Instructions for teachers

TIMSS
VIDEO STUDIES

In order for us to have a more accurate understanding of the lesson just videotaped, it would be helpful if you could provide copies of written documents such as handouts, lesson plans, tests, quizzes, etc.

Please follow the instructions for each item listed below and fill out the second page of this form. Send the form, and all items that apply, back to us in the pre-addressed, pre-paid envelopes. Please affix an ID label to each of these documents.

If you will not have a lesson or unit assessment ready until later, send the rest of the items NOW in the first envelope, and send the assessment later in the second envelope.

Your payment will be processed upon receipt of the materials.

☐ Teacher questionnaire	**Please fill out this questionnaire as soon as possible after the videotaping is completed – preferably on the same day as the videotaping- and send to LessonLab.**
☐ Student questionnaire	**Please ask each student to fill out a questionnaire and collect them as soon as possible.**
☐ Additional materials	**Please include a copy of every written document used during the lesson (e.g., worksheets, copy of textbook pages, overhead transparencies).**
☐ Lesson plan or notes	**Please include a copy of your lesson plan or notes for the videotaped lesson if available.**
☐ Lesson or unit assessment	**Please include a copy of your lesson or unit assessment (e.g., test, quiz, report or portfolio guidelines) with your questionnaire.**

Thank you very much for your cooperation and thoughtfulness!

Appendix D.4: Additional Material List

BAR CODE

MATERIALS INCLUDED AND RETURNED WITH THIS SHEET

	ITEM	QUANTITY	PAGES
☐	Teacher questionnaire	_____	
☐	Student questionnaires	_____	
☐	Handouts	_____	
☐	Copies of overhead projections	_____	
☐	Copies of Textbook pages	_____	_____
☐	Copies of workbook pages	_____	_____
☐	Copies of pages from other books	_____	_____
☐	Copies of your lesson plan	_____	
☐	Copies of lesson assessment	_____	
☐	Copies of unit assessment	_____	
☐	Other	_____	

Appendix E

U.S. Mathematics Teacher Questionnaire

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MATHEMATICS TEACHER
Questionnaire
GRADE 8

VIDEOTAPE I.D. #: ☐☐☐☐☐☐☐☐☐☐☐☐

TIMSS Videotape Study Center

James Stigler- Study Director
LessonLab, Inc.
12436 Santa Monica Blvd.
Los Angeles, CA 90025

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is _____. The time required to complete this information collection is estimated to average 50 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collected. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to U.S. Department of Education, Washington, D.C. 20202-4651. If you have comments or concerns regarding the status of your individual submission of this form, write directly to: National Center for Education Statistics, 555 New Jersey Avenue, N.W., Washington, D.C. 20208.

DIRECTIONS:

• Please fill out this questionnaire **as soon as possible after the videotaping is completed** – preferably **on the same day as the videotaping**.

• Please include a copy of your lesson plan or notes for the videotaped lesson if available (**see Question 5)**

• Include a copy of your lesson or unit assessment (e. g., test, quiz, report or portfolio guidelines) with your questionnaire (**See Question 20).**

• Mail the completed questionnaire, your lesson plan (or notes), and your unit assessment in one of the envelopes provided as soon as possible.

• If you will not have a lesson or unit assessment ready until later, send the questionnaire NOW in one envelope, and send the assessment later in the second envelope.

• Your payment will be sent upon receipt of the materials.

ORGANIZATION OF THE QUESTIONNAIRE:
This questionnaire is divided into 7 sections, which ask about:

A. **THE VIDEOTAPED LESSON:** The lesson we videotaped and the students in this classroom
B. **THE LARGER UNIT:** How this lesson fits into a larger unit or sequence of lessons
C. **HOW TYPICAL?** How this lesson was typical or not of what usually happens in your classroom
D. **YOUR IDEAS ABOUT TEACHING** asks about the ideas that influence and guide your mathematics teaching
E. **YOUR BACKGROUND:** Your teaching and educational background and teaching load
F. **YOUR SCHOOL:** Demographic data about your school
G. **ATTITUDES:** Your attitudes about mathematics teaching

TIMSS-R
VIDEOTAPE CLASSROOM STUDY

MATHEMATICS TEACHER QUESTIONNAIRE GRADE 8

Thank you for participating in this study. Both the videotape and the questionnaire will be used only for research purposes, unless you have signed an agreement that states otherwise. All persons with access to this information will be licensed to protect your privacy.

Thank you for your careful attention to this questionnaire. We appreciate the time you are taking to help us better understand mathematics teaching.

Your name: _____ ☐ Male ☐ Female

School's name: _____ Date: _____

Name of videotaped course: _____

City/State_____

Number of times videotaped class meets each week _____

For how long? _____ minutes per meeting

Grade level(s) of students in videotaped class: _____; # of girls enrolled in class ____
# of boys enrolled in class ____

(Write zero if there are none for that sex)

Phone number where we can reach you should any questions arise (_____)_____-_____

Best time of day to call you _____AM / PM

E mail address _____

A. THE VIDEOTAPED LESSON

1. Please describe the subject matter content of the videotaped lesson. *Check as many as apply*.

- ☐ 1. Whole number computation
- ☐ 2. Common fraction computation
- ☐ 3. Decimal fraction computation
- ☐ 4. Properties of whole numbers and fractions
- ☐ 5. Integers
- ☐ 6. Percent
- ☐ 7. Estimation and number sense
- ☐ 8. Linear measurement
- ☐ 9. Area
- ☐ 10. Volume
- ☐ 11. Shapes and angles
- ☐ 12. Geometric congruence and similarity--applications
- ☐ 13. Geometric congruence and similarity--proofs
- ☐ 14. Symmetry, translations, rotations
- ☐ 15. Ratios and proportions
- ☐ 16. Functions, relations, and patterns
- ☐ 17. Equations and inequalities
- ☐ 18. Data and statistics
- ☐ 19. Probability
- ☐ 20. Sets and logic
- ☐ 21. Other (please specify

_____

2. Which of the following played a role in your decision to teach this content?
Please check one item in each row.

	No Role	Small Role	Major Role
a. National, State, District, or School curriculum guidelines	☐	☐	☐
b. External examinations or standardized tests	☐	☐	☐
c. Mandated textbook for your grade level	☐	☐	☐
d. Your comfort with or interest in the content	☐	☐	☐
e. Your personal assessment of the students' interests or needs	☐	☐	☐
f. Collaborative work with other teachers or consultants	☐	☐	☐

3. If you marked "Major role" for choice (a) in question 2 above, please list the curriculum guidelines or documents that you use:_____

_____

4. To what extent did you use the following when planning this lesson, (not necessarily materials you used during the lesson)…

	Not At All	A Little	Some	Quite A Lot	A Great Deal
a. a lesson plan that you had prepared and used before	☐	☐	☐	☐	☐
b. lesson or unit plans developed by other educators	☐	☐	☐	☐	☐
c. a lesson you planned in collaboration with other teachers or mathematics specialists	☐	☐	☐	☐	☐
d. student textbook	☐	☐	☐	☐	☐
e. Teacher's Guide version of textbook	☐	☐	☐	☐	☐
f. replacement unit teacher guides (e.g., kits, modules, activity manuals)	☐	☐	☐	☐	☐
g. resource books (e.g., trade books, reference books, other texts)	☐	☐	☐	☐	☐
h. multimedia resources (video, laser disc, TV, etc)	☐	☐	☐	☐	☐
i. the Internet	☐	☐	☐	☐	☐
j. ideas from a workshop	☐	☐	☐	☐	☐
k. knowledge about your students' interests, thinking, or difficultie	☐	☐	☐	☐	☐
l. local curriculum guidelines (e.g., school, district)	☐	☐	☐	☐	☐

m.	state or national curriculum guidelines or standards	☐	☐	☐	☐	☐
n.	external examinations or standardized tests	☐	☐	☐	☐	☐
o.	Other (please describe)_____	☐	☐	☐	☐	☐

5. For us to understand the videotaped lesson, we need to know which ideas and skills had been previously taught to this class and which were new. For each idea or skill taught in the videotaped lesson, please indicate whether it was:

- mainly review
- mainly new.

If you need more space, continue on the back of the paper. **Please Note:** If you have a written lesson plan or notes for the videotaped lesson, we would like a copy. Please enclose a copy in the envelope provided for return of the questionnaire.

Ideas and skills in videotaped lesson that were mainly review to students:

Ideas and skills in videotaped lesson that were mainly new to students:

6. What was the main thing you wanted students to learn from the videotaped lesson?

7. Are you satisfied that the videotaped lesson achieved that purpose? ☐ YES ☐ NO

Explain why you were or were not satisfied.

8. Think about how you taught the videotaped lesson compared to how you would ideally like to teach this lesson. To what extent did any of the following limit you from reaching your ideal in this lesson?

	Not At All	A Little	Some	Quite A Lot	Great Deal	Does Not Apply
a. Official curricular guidelines and/or standardized tests	☐	☐	☐	☐	☐	☐
b. Requirements to teach many topics	☐	☐	☐	☐	☐	☐
c. Insufficient student motivation or readiness to learn	☐	☐	☐	☐	☐	☐
d. Class size (If a limitation please describe nature of limitation) _____	☐	☐	☐	☐	☐	☐
e. Insufficient time for lesson planning	☐	☐	☐	☐	☐	☐
f. Insufficient time to work with colleagues on lessons	☐	☐	☐	☐	☐	☐
g. Not enough books (textbooks, trade books, reference books, etc.)	☐	☐	☐	☐	☐	☐
h. Insufficient time to finish what I planned to teach	☐	☐	☐	☐	☐	☐
i. Lack of or obsolete computers	☐	☐	☐	☐	☐	☐
j. Lack of appropriate software for computers	☐	☐	☐	☐	☐	☐
k. Lack of needed instructional equipment (VCR, overhead projection equipment etc.).	☐	☐	☐	☐	☐	☐
l. Lack of needed multimedia materials (videotapes, transparency sets, slides, and laser disks)	☐	☐	☐	☐	☐	☐
m. Insufficient mathematics teaching materials and supplies, (hands-on materials, calculators, etc.)	☐	☐	☐	☐	☐	☐
n. Inadequate physical facilities (room size or layout, furniture, etc.)	☐	☐	☐	☐	☐	☐
o. Insufficient training or support for using new technologies in your classroom	☐	☐	☐	☐	☐	☐
p. Presence of the video-camera and videographer	☐	☐	☐	☐	☐	☐

9. How long did you spend planning for the videotaped lesson? _____ minutes

9b. How long do you usually spend planning for this type of mathematics lesson? ____ minutes

10. Did your students work in groups for any part of the videotaped lesson?

☐ YES ☐ NO

11. If yes, please describe the basis by which students were assigned to groups (e.g., academic ability level, gender, student choice, other).

12. Think about the availability of the following items at your school. To what extent do you have sufficient access to this items for use in your mathematics classroom?

	Enough	**Too few or too little**	**Not at all**
a. Computers			
b. Computer software			
c. Computers with internet connections			
d. A/V equipment (TV, VCR, overhead projectors			
e. Teaching supplies/materials (e.g. hands-on materials)			
f. Calculators			
g. Reference materials (books, journals, magazines)			

13. Do all students in the school take this course?

☐ YES (skip to 15) ☐ NO

14. If **no**, is curriculum in this course more challenging or less challenging than the typical 8th grade mathematics course in this school? Mark one of the three choices below:

☐ More challenging ☐ A typical 8th grade curriculum ☐ Less challenging

15. Did you previously assign mathematics homework that was due for the day of the videotaped lesson?

☐ YES ☐ NO (skip to 19)

16. Please describe <u>what students were expected to do</u> for this homework.

17. Was the assigned homework related to this lesson or to the prior lesson?

☐ The videotaped lesson ☐ Prior lesson ☐ Both

18. How long would it have taken the typical student in your class to complete this homework?

_____minutes.

19. Will students be formally evaluated on the material they studied in the videotaped lesson (e.g., a quiz, unit test, project, etc.)?

☐ YES ☐ NO

20. If yes, how will they be assessed? (Also, please enclose a copy of the assessment you will use for the lesson or unit. Enclose this assessment in the return envelope).

B. THE LARGER UNIT OR SEQUENCE OF LESSONS

21. Was the videotaped lesson planned as part of a larger **unit** or **sequence of related lessons**, or was it a stand-alone lesson?

☐ stand-alone lesson
(If stand-alone, please explain why & skip to 26)

☐ part of a unit or sequence

22. Describe the unit or sequence of lessons with a short phrase or title:

23. What is the main thing(s) you want students to learn from the whole unit or sequence of lessons?

24. Approximately how many lessons are in the entire sequence or unit? _____

25. Where did the videotaped lesson fall in the sequence or unit
(e.g., number 3 out of 5)? _____

26. To help us understand what we will see on the videotape, please provide information about the videotaped lesson and about the 2 lessons before and 2 lessons after the videotaped lesson.
    - Please describe the main thing you wanted students to learn from the lesson
    - Please choose 1 or 2 words that most teachers in you country use to describe each type of lesson. (e.g.., review lesson, introductory lesson, etc.)

	Main thing you wanted students to learn from the lesson	Type of lesson
2 lessons Before		
1 lesson Before		
Videotaped Lesson	**DO NOT FILL IN THIS BOX**	
1 lesson After		
2 lessons After		

C. HOW TYPICAL WAS THE VIDEOTAPED LESSON?

27. For this study, we are interested in capturing your typical mathematics teaching. It is important for us to know in what ways the teaching in the videotaped lesson might not have been typical.

    How often do you use the teaching methods that are in the videotaped lesson?

    ☐ seldom
    ☐ sometimes
    ☐ often
    ☐ almost always

28. What, if anything, was different in the videotaped lessons from how you normally teach?

29. How would you describe your students' behavior and participation during the videotaped lesson?

- ☐ better than usual
- ☐ about the same as usual
- ☐ worse than usual

30. What, if anything, was different about the nature of the students' behavior and the amount of student participation during the videotaped lesson? Briefly describe any differences.

31. Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?

- ☐ more difficult for students than most lessons
- ☐ about the same as most lessons
- ☐ less difficult for students than most lessons

32. Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?

- ☐ better than usual
- ☐ about the same as usual
- ☐ worse than usual

D. IDEAS THAT GUIDE YOUR TEACHING

33. List the three most important things you would like your students to learn from studying mathematics **this year.**

1. _____

_____

2. _____

_____

3. _____

_____

34. In general, I feel comfortable trying new techniques for teaching mathematics in my classroom.

- ☐ I agree
- ☐ no opinion
- ☐ I disagree

35. In general, I feel I keep up with current ideas in mathematics teaching and learning.

- ☐ I agree
- ☐ no opinion
- ☐ I disagree

36. How do you usually hear about current ideas about the teaching and learning of mathematics?

37. What written materials are you aware of that describe current ideas about the teaching and learning of mathematics? Please list up to three, and indicate whether you personally have read each one.

_____ I have read: ☐ all of it ☐ most of it ☐ some of it ☐ none of it

_____ I have read: ☐ all of it ☐ most of it ☐ some of it ☐ none of it

_____ I have read: ☐ all of it ☐ most of it ☐ some of it ☐ none of it

38. To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?

- ☐ a lot
- ☐ a fair amount
- ☐ a little
- ☐ not at all (skip to 41)

39. Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics and explain why you think it exemplifies these ideas.

40. As part of professional development activities, how often in the past year has a teacher colleague observed you teaching an entire mathematics lesson? (**do not include observations made in team teaching situations or as part of a formal evaluation).**

Circle a, b, c, or d

a. never
b. once or twice
c. every other month
d. once a month or more

41. As part of professional development activities, how often in the past year have you observed a teacher colleague teaching an entire mathematics lesson? **(do not include observations made in team teaching situations or as part of a formal evaluation)**.

Circle a, b, c, or d

a. never
b. once or twice
c. every other month
d. once a month or more

E. YOUR TEACHING BACKGROUND AND TEACHING LOAD

42. What was the highest level of formal education you have completed?

- ☐ Teacher training without completing high school
- ☐ High school
- ☐ High school with 1 or 2 years of teacher training
- ☐ High school with 3 or 4 years of teacher training
- ☐ BA or equivalent with no teacher training
- ☐ BA or equivalent with teacher training
- ☐ Masters or doctoral degree with no teacher training
- ☐ Masters or doctoral degree with teacher training

43. In what subject areas and grade levels are you certified to teach?

Subjects	Grade level

44. What was your undergraduate major field of study? _____

45. What was your undergraduate minor field of study (if any)? _____

46. What was your major field of study in graduate school? _____

47. What was your minor field of study in graduate school (if any) ? _____

48. Counting this school year, how many years in total have you been teaching? (include part-time teaching, but not substitute teaching)
Please round to the nearest whole number. _____years

49. Counting this year, how many years in total have you taught mathematics? (include. part-time teaching, but not substitute teaching).
Please round to the nearest whole number _____years

50. During the last two years, how many college or university courses have you taken in mathematics or mathematics education? (Circle one letter.)

A. none
B. one
C. two
D. three
E. four or more

51. During the last two years, have you participated in professional development activities or taken courses in any of the following? (Circle **all** letters that apply).
A. use of technology, such as computers
B. mathematics instructional techniques
C. cooperative group instruction
D. interdisciplinary instruction
E. teaching higher-order thinking skills
F. teaching students from different cultural backgrounds
G. teaching limited English proficient students
H. teaching students with special needs (e.g. visually impaired, gifted and talented)
I. standards-based teaching
J. classroom management and organization
K. other professional issues
L. none of the above

52. In a typical week, I spend:

a) _____Hours at school teaching mathematics classes. Titles of mathematics classes: _____

_____

_____

b) _____ Hours at school teaching other classes. Titles of other classes: _____

_____

_____

c) _____ Hours at school meeting with other teachers to work on curriculum and planning issues.

d) _____ Hours at school doing work related to teaching mathematics (e.g., lesson planning, grading papers, etc.).

e) _____ Hours at home doing work related to teaching mathematics (e.g., lesson planning, grading papers, etc.).

f) _____ Hours at home or school doing other school-related activities.

F. QUESTIONS ABOUT YOUR SCHOOL.

53. List the grade levels that are taught in this school:_____

54. What type of school is this?

Identify any special status or purpose of your school: ***Check as many as apply***.

- ☐ Academic accelerated school
- ☐ Vocational school
- ☐ Magnet school (Describe type:_____)
- ☐ Charter school
- ☐ Partnership with a university
- ☐ Laboratory School
- ☐ School within a school
- ☐ Religious or sectarian school
- ☐ Private (non-religious) school
- ☐ Single sex school
- ☐ Other (Please describe:_____)

55. How are students admitted to this school? (e.g., neighborhood residence, entrance test, lottery, all who want to come, other)?

56. Approximately how many mathematics teachers are in this school this year ? _____

G. ATTITUDES ABOUT TEACHING.

57. Please respond to each statement.	strongly agree	some-what agree	some-what disagree	strongly disagree
a. I am enthusiastic about teaching mathematics.	☐	☐	☐	☐
b. I enjoy teaching students of this age level.	☐	☐	☐	☐
c. I have adequate materials and facilities to support my teaching of mathematics.	☐	☐	☐	☐
d I actively pursue opportunities to learn how to improve my mathematics teaching.	☐	☐	☐	☐
e. I read journals and books about mathematics teaching.	☐	☐	☐	☐
f. I have adequate opportunities during the school day to collaborate with colleagues about mathematics.	☐	☐	☐	☐
g. I enjoy working with colleagues about mathematics curriculum and teaching, even if it means after-school meetings.	☐	☐	☐	☐
h. I enjoy attending mathematics teacher conferences to learn about new ideas in mathematics teaching.	☐	☐	☐	☐
i. The number of students in my class is appropriate to support good mathematics teaching and learning.	☐	☐	☐	☐
j. I teach in an environment where I feel physically safe.	☐	☐	☐	☐
k. If I had to choose I would become a teacher again.	☐	☐	☐	☐
l. I have a strong mathematics background in the subject areas I teach.	☐	☐	☐	☐
m. I pursue mathematics interests or issues in my personal life.	☐	☐	☐	☐
n. I like to watch TV programs about new developments in mathematics.	☐	☐	☐	☐
o. Teaching mathematics is hard work.	☐	☐	☐	☐
p. Teaching mathematics is rewarding work.	☐	☐	☐	☐
q. I am proud of the quality of my teaching.	☐	☐	☐	☐
r. I enjoy students' questions about mathematics even when I do not know the answer.	☐	☐	☐	☐
s. Girls in this school are encouraged to develop a mathematics interest.	☐	☐	☐	☐
t. I work hard to get girls involved in mathematics.	☐	☐	☐	☐
u. I especially prefer teaching high-ability students.	☐	☐	☐	☐
v I especially prefer teaching low-ability students.	☐	☐	☐	☐
w. I prefer to teach a class that has students of all different ability levels.	☐	☐	☐	☐
x. I am often impressed with the quality of thinking my students can do.	☐	☐	☐	☐
y. My work as a mathematics teacher is appreciated by my students.	☐	☐	☐	☐
z. My work as a mathematics teacher is appreciated by my students' parents.	☐	☐	☐	☐
aa. My work as a mathematics teacher is appreciated by my teacher colleagues.	☐	☐	☐	☐

bb. My work as a mathematics teacher is appreciated by administrators.	☐	☐	☐	☐

58. How knowledgeable are you about the National Council of Teachers of Mathematics (NCTM) *Curriculum and Evaluation Standards for School Mathematics*? (Circle one letter)

    A. Very knowledgeable
    B. Knowledgeable
    C. Somewhat knowledgeable
    D. I have little or no knowledge

59. What type of professional development activities have you participated in that have provided you with strategies for implementing the 1989 NCTM *Curriculum and Evaluation Standards for School Mathematics*? (Circle **all** letters that apply.)

    A. Local workshop
    B. Regional NCTM meeting
    C. National NCTM meeting
    D. Other
    E. None

THANK YOU!!!
for your cooperation and thoughtfulness

Please put this questionnaire, your lesson plan or notes for the videotaped lesson, and your lesson or unit assessment in the mailing envelope and return it as soon as possible.

Appendix F

U.S. Student Questionnaire

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STUDENT QUESTIONNAIRE
GRADE 8

VIDEOTAPE I.D. #: ☐☐☐☐☐☐☐☐☐☐☐☐

TIMSS-R Video Study

James Stigler- Study Director
12436 Santa Monica Blvd.
Los Angeles, CA 90025

According to the paperwork reduction act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is _____. The time required to complete this information collection is estimated to average 12 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collected. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: U.S. Department of Education, Washington, D.C. 20202-4651. If you have comments or concerns regarding the status of your individual submission of this form, write directly to: National Center for Education Statistics, 555 New Jersey Avenue, N.W., Washington, D.C. 20208.

TIMSS-R
Videotape Classroom Study

STUDENT QUESTIONNAIRE

Thank you for participating in this study. Both the videotape and the questionnaire will be used only for research purposes, unless you have signed an agreement that states otherwise. All persons with access to this information will be licensed to protect your privacy.

Thank you for your careful attention to this questionnaire. We appreciate the time you are taking to help us better understand mathematics teaching.

School's Name: _____

1. On what date were you born?
   Write in the month, day, and year

   ___ ___ MONTH ___ ___ DAY ___ ___ ___ ___ YEAR

2. Are you a girl or a boy?
   Circle either A or B.

   Girl……..A
   Boy……..B

3. Which best describes you?

   What is your ethnicity?

   Hispanic or Latino ……A
   Not Hispanic or Latino……. B

   What is your race?
   (Choose one or more)

   American Indian or Alaska Native…….C
   Asian……. D
   Black or African American…….E
   Native Hawaiian or Other Pacific Islander……F
   White…….G

4. Were you born in the United States or its territories (such as Puerto Rico, U.S. Virgin Islands)?

Circle either A or B

Yes……..A

No……B

5. If you were not born in United States or its territories (such as Puerto Rico, U.S. Virgin Islands), how old were you when you came to the United States?

Write in your age at the time.

I was _____ years old when I came to the United States.

6. How often do you speak English at home?

Circle one of the following.

Always or almost always……..A

About half of the time……...B

Rarely or never ……C

7. Altogether, how many people live in your home?

Write in total number of people.

_____ *(Don't forget to include yourself.)*

8. How far in school did your mother and father go?

Circle ONE letter in each column

	Mother	Father
a. Finished elementary school……	A	..A
b. Some high school……	B	..B
c. Finished high school……	C	..C
d. Some vocational/technical school after high school…….	D	..D
e. Some community college or university course work……...	E	..E
f. Completed a bachelor's degree at college or university……...	F	..F
g. I don't know…….	G	..G

9. How far in school do ***you*** expect to go?

a. Finish elementary school.....	A
b. Some high school.....	B
c. Finish high school.....	C
d. Some vocational/technical school after high school.....	D
e. Some community college or university course work.....	E
f. Complete a bachelor's degree at college or university.....	F
g. I don't know.....	G

10. Was your mother born in the United States or its territories (such as Puerto Rico, U.S. Virgin Islands)?

Circle either A or B

Yes……..A

No…….B

11. Was your father born in the United States or its territories (such as Puerto Rico, U.S. Virgin Islands)?

Circle either A or B

Yes……..A

No……B

12. About how many books are in your home? (Do not count magazines, newspapers, or your schoolbooks). *Circle only one letter A-E*

None or very few (1-10 books)……...A

Enough to fill one shelf (11-25 books)…….B

Enough to fill one bookcase (26-100 books)……....C

Enough to fill two bookcase (101-200 books……...D

Enough to fill three or more bookcases (more than 200 books)…….E

Thank you!

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Appendix G

TIMSS 1999 Video Study Mathematics Teacher Questionnaire Coding Manual

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LESSONID Alphanumeric lesson identification		
Code	**Example**	**Description or item option**
MAU001	Math, Australia, Lesson 001	Example; column 1 identifies subject, columns 2 and 3 identify country, columns 4 to 6 identify class.

CASEID Numeric lesson identification		
Code	**Example**	**Description or item option**
13001	Math, Australia, Lesson 001	Column 1 identifies subject (1=math; 2=science). Column 2 identifies country (AU=3, CZ=2, HK=6, JP=5, NL=4, SW=7, US=1). Columns 3 to 5 identify class.

CTYALPHA Country identification		
Code	**Country name**	**Description or item option**
10	Australia	
20	Czech Republic	
30	Hong Kong SAR	
40	Japan	
50	The Netherlands	
60	Switzerland	
70	United States	

SUBJECT Lesson subject		
Code	**Country name**	**Description or item option**
1	Mathematics	
2	Science	

LANGUAGE Questionnaire language		
Code	**Country name**	**Description or item option**
1	Cantonese	
2	Czech	
3	Dutch	
4	English	
5	French	
6	German	
7	Italian	
8	Japanese	

TGENDER Teacher gender		
Code	**Response**	**Description or item option**
1	Male	
2	Female	
Blank	Missing, not interpretable, or not applicable	

MEETINGS Number of times videotaped class meets each week ***(Code number of times class meets per week)***		
Code	**Response**	**Description or item option**
1	One	Example
2	Two	Example
Blank	Missing, not interpretable, or not applicable	

HOWLONG For how long? (minutes per meeting) ***(Code number of minutes per meeting)***		
Code	**Response**	**Description or item option**
1	1 minute	Example
2	2 minutes	Example
Blank	Missing, not interpretable, or not applicable	

MEETIME Total amount of time videotaped class meets each week (minutes multiplied by number of meetings per week) ***(Code number of minutes)***		
Code	**Response**	**Description or item option**
Blank	Missing, not interpretable, or not applicable	

GRADE Grade level(s) of students in videotaped class ***(Code Australia, Czech Republic, Hong Kong SAR, Switzerland, and U.S.)***		
Code	**Response**	**Description or item option**
1	Grade 6	
2	Mix – Grades 6 and 7	
3	Grade 7	
4	Mix – Grades 7 and 8	
5	Eighth Grade	
6	Mix – Grades 7, 8, and 9	
7	Mix – Grades 8 and 9	
8	Mix – Grades 8, 9, and 10	
9	Grade 9	
Blank	Missing, not interpretable, or not applicable	

GRADE Grade level(s) of students in videotaped class ***(Code for Netherlands)***		
Code	**Response**	**Description or item option**
1	VWO	Includes VWO, Gymnasium, Atheneum.
2	HAVO	
3	MAVO	
4	VBO	Includes VBO, IVBO, MBO
5	VWO/HAVO	
6	MAVO/VBO	
7	MAVO/HAVO	
8	VBO/MAVO/HAVO	Includes MHV
9	MAVO/HAVO/VWO	
10	VBO/MAVO/HAVO/VWO	
Blank	Missing, not interpretable, or not applicable	

GIRLS Number of girls enrolled in class ***(Code number of girls)***		
Code	**Response**	**Description or item option**
Blank	Missing, not interpretable, or not applicable	

BOYS Number of boys enrolled in class ***(Code number of boys)***		
Code	**Response**	**Description or item option**
Blank	Missing, not interpretable, or not applicable	

GIRLBOY Total number of boys and girls enrolled in class		
Code	**Response**	**Description or item option**
Blank	Missing, not interpretable, or not applicable	

TQ1A Please describe the subject matter content of the videotaped lesson. a. Whole number computation		
Code	**Response**	**Description or item option**
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1B Please describe the subject matter content of the videotaped lesson. b. Common fraction computation		
Code	**Response**	**Description or item option**
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1C Please describe the subject matter content of the videotaped lesson. c. Decimal fraction computation		
Code	**Response**	**Description or item option**
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1D Please describe the subject matter content of the videotaped lesson. d. Properties of whole numbers and fractions		
Code	**Response**	**Description or item option**
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1E Please describe the subject matter content of the videotaped lesson.
e. Integers

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1F Please describe the subject matter content of the videotaped lesson.
f. Percent

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1G Please describe the subject matter content of the videotaped lesson.
g. Estimation and number sense

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1H Please describe the subject matter content of the videotaped lesson.
h. Linear measurement

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1I Please describe the subject matter content of the videotaped lesson.
i. Area

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1J Please describe the subject matter content of the videotaped lesson.
j. Volume

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1K Please describe the subject matter content of the videotaped lesson.
k. Shapes and angles

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1L Please describe the subject matter content of the videotaped lesson.
l. Geometric congruence and similarity--applications

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1M Please describe the subject matter content of the videotaped lesson.
m. Geometric congruence and similarity--proofs

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1N Please describe the subject matter content of the videotaped lesson.
n. Symmetry, translations, rotations

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1O Please describe the subject matter content of the videotaped lesson.
o. Ratios and proportions

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1P Please describe the subject matter content of the videotaped lesson.
p. Functions, relations, and patterns

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1Q Please describe the subject matter content of the videotaped lesson.
q. Equations and inequalities

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1R Please describe the subject matter content of the videotaped lesson.
r. Data and statistics

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1S Please describe the subject matter content of the videotaped lesson.
s. Probability

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1T Please describe the subject matter content of the videotaped lesson.
t. Sets and logic

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ1U Please describe the subject matter content of the videotaped lesson.
u. Other

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ2A Which of the following played a role in your decision to teach this content?
a. National, State, District, or School curriculum guidelines

Code	Response	Description or item option
0	No role	A
1	Small Role	B
2	Major Role	C
Blank	Missing, not interpretable, or not applicable	

TQ2B Which of the following played a role in your decision to teach this content?
b. External examinations or standardized tests ***(Code for Czech Republic, Hong Kong SAR, Netherlands, and U.S. versions)***
(Code 'Blank' for Australia and Switzerland; item not applicable)

Code	Response	Description or item option
0	No role	A
1	Small role	B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for AU and SW; item not applicable.***

TQ2C Which of the following played a role in your decision to teach this content?
c. Mandated textbook for your grade level

Code	Response	Description or item option
0	No role	A
1	Small Role	B
2	Major Role	C
Blank	Missing, not interpretable, or not applicable	

TQ2D Which of the following played a role in your decision to teach this content?
d. Your comfort with or interest in the content

Code	Response	Description or item option
0	No Role	A
1	Small Role	B
2	Major Role	C
Blank	Missing, not interpretable, or not applicable	

TQ2E Which of the following played a role in your decision to teach this content?
e. Your personal assessment of the students' interests or needs

Code	Response	Description or item option
0	No Role	A
1	Small Role	B
2	Major Role	C
Blank	Missing, not interpretable, or not applicable	

TQ2F Which of the following played a role in your decision to teach this content?
f. Collaborative work with other teachers or consultants

Code	Response	Description or item option
0	No Role	A
1	Small Role	B
2	Major Role	C
Blank	Missing, not interpretable, or not applicable	

TQ2ARC1 Which of the following played a role in your decision to teach this content?
a. National, State, District, or School curriculum guidelines

Code	Response	Description or item option
0	No role	A
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	

TQ2BRC1 Which of the following played a role in your decision to teach this content?
b. External examinations or standardized tests ***(Code for Czech Republic, Hong Kong SAR, Netherlands, and U.S. versions)***
(Code 'Blank' for Australia and Switzerland; item not applicable)

Code	Response	Description or item option
0	No role	A
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for AU and SW; item not applicable.***

TQ2CRC1 Which of the following played a role in your decision to teach this content?
c. Mandated textbook for your grade level

Code	Response	Description or item option
0	No role	A
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	

TQ2DRC1 Which of the following played a role in your decision to teach this content?
d. Your comfort with or interest in the content

Code	Response	Description or item option
0	**No Role**	**A**
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	

TQ2ERC1 Which of the following played a role in your decision to teach this content?
e. Your personal assessment of the students' interests or needs

Code	Response	Description or item option
0	No Role	A
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	

TQ2FRC1 Which of the following played a role in your decision to teach this content?
f. Collaborative work with other teachers or consultants

Code	Response	Description or item option
0	No Role	A
1	Small or major role	B,C
Blank	Missing, not interpretable, or not applicable	

TQ2ARC2 Which of the following played a role in your decision to teach this content?
a. National, State, District, or School curriculum guidelines

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	

TQ2BRC2 Which of the following played a role in your decision to teach this content?
b. External examinations or standardized tests ***(Code for Czech Republic, Hong Kong SAR, Netherlands, and U.S. versions)***
(Code 'Blank' for Australia and Switzerland; item not applicable)

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for AU and SW; item not applicable.***

TQ2CRC2 Which of the following played a role in your decision to teach this content?
c. Mandated textbook for your grade level

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	

TQ2DRC2 Which of the following played a role in your decision to teach this content?
d. Your comfort with or interest in the content

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	

TQ2ERC2 Which of the following played a role in your decision to teach this content?
e. Your personal assessment of the students' interests or needs

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	

TQ2FRC2 Which of the following played a role in your decision to teach this content?
f. Collaborative work with other teachers or consultants

Code	Response	Description or item option
1	None or small role	A,B
2	Major role	C
Blank	Missing, not interpretable, or not applicable	

TQ4A To what extent did you use the following when planning this lesson,
a. A lesson plan that you had prepared and used before

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4B To what extent did you use the following when planning this lesson,
b. Lesson or unit plans developed by other educators

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4C To what extent did you use the following when planning this lesson,
c. A lesson you planned in collaboration with other teachers or mathematics specialists

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4D To what extent did you use the following when planning this lesson,
d. Student textbook

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4E To what extent did you use the following when planning this lesson,
e. Teacher's Guide version of textbook

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4F To what extent did you use the following when planning this lesson,
f. Replacement unit teacher guides (e.g., kits, modules, activity manuals)
(Code 'Blank' for Netherlands; item not applicable)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for Netherlands; item not applicable.***

TQ4G To what extent did you use the following when planning this lesson,
g. Resource books (e.g., trade books, reference books, other texts)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4H To what extent did you use the following when planning this lesson,
h. Multimedia resources (video, laser disc, TV, etc)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4I To what extent did you use the following when planning this lesson,
i. The Internet

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4J To what extent did you use the following when planning this lesson,
j. Ideas from a workshop

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4K To what extent did you use the following when planning this lesson,
k. Knowledge about your students' interests, thinking, or difficulties

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4L To what extent did you use the following when planning this lesson
l. Local curriculum guidelines (e.g., school, district)
l. School curriculum guidelines ***(Hong Kong SAR version)***
l. Your own school's curriculum guidelines ***(Australia version)***
(Code 'Blank' for Switzerland-Italian speaking area; item not applicable)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for Switzerland-Italian speaking area; item not applicable.***

TQ4M To what extent did you use the following when planning this lesson,
m. State or national curriculum guidelines or standards ***(Czech Republic, Netherlands, U.S. versions)***
m. Curriculum guidelines or standards issued by the education authorities ***(Hong Kong SAR version)***
m. Your state's version of the *National Profiles* ***(Australia version)***

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

TQ4N To what extent did you use the following when planning this lesson,
m. External examinations or standardized test
(Code 'Blank' for Australia or Switzerland German-speaking area; item not applicable)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for Australia and Switzerland-German speaking area; item not applicable.***

TQ4O1 To what extent did you use the following when planning this lesson,
o. Other

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5AC *Review content goal***		
Code	Response	Description or item option
0	New ideas or skills	No ideas or skills were review.
1	Numbers	Whole numbers, Number Theory, patterns.
2	Fractions	Fractions and decimals, irrrational numbers.
3	Ratio	Ratio, proportion, percent
4	Integers	Integers, powers.
5	Geometry-angles	Geometry: Angles
6	Geometry-lines, triangles	Geometry: Triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, and quads
7	Geometry-two-dimensions	Geometry: Perimeter/circumference/area two-dimensional figures and volume
8	Geometry-three-dimensions	Geometry: Descriptions - three-dimensional figures
9	Geometry-transformations	Geometry: Geometric transformations
10	Geometry-constructions	Geometry: Constructions
11	Statistics-data	Probability and statistics: Organizing and displaying data
12	Statistics-statistics	Probability and statistics: Statistics
13	Statistics-probability	Probability and statistics: Probability
14	Linear algebra-equations	Algebra: Linear functions: simplifying expressions and solving equations, formulas, functions, polynomials, multinomials
15	Linear algebra-graphs	Algebra: Linear functions: graphing
16	Linear algebra-functions	Algebra: Quadratic and other linearortrigonometric functions including formulae
17	Non-linear algebra	Algebra: Graphing non-linear (non-trigonometric) functions
18	Miscellaneous	Miscellaneous topics
19	Technology	
20	No content goal identified	Teacher indicated review in TQ5A or TQ5B, but did not identify specific content being reviewed, e.g., basic mathematics content
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5AP *Review process goal***		
Code	Response	Description or item option
0	New ideas or skills	No ideas or skills were review.
1	Knowing	Familiarity with mathematical content listed or general familiarity with mathematics; contents listed without process listed.
2	Operations or calculations	Students are capable of using operations in routine procedures such as addition, subtraction, multiplication, and division. The code implies that teachers identified common tasks without noting that students are problem solving or working on real world applications.
3	Review	Teacher specifically identified review of particular content area or general "review for a test".
4	Application to real world	Students are able to apply mathematical knowledge to real world application.
5	External influence	Teacher notes that “goals” or knowledge gained is deemed by an external source such as “getting through the book", “complete subject matter", “pass math", "curriculum standards", or "end of grade test".
6	Mathematical thinking	Students participate in the “logical” thinking of mathematics, but not problem solving.
7	Problem solving	Teacher notes problem solving skills as a performance.
8	Technology	Students learn to use technology to solve mathematics problems.
9	No process goal identified	Teacher indicated review in TQ5A or TQ5B, but did not list process goal.
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5AA *Review perspective goal***		
Code	Response	Description or item option
0	New ideas or skills	No ideas or skills were review.
1	Interest	Students become interested in or enjoy mathematics, and increase understanding.
2	Mathematical study habits	Teacher identifies "how to study" mathematics or references work ethics, encourages ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
3	Awareness	Recognition of the need for mathematics in life.
4	Confidence	Students gain confidence in their abilities to succeed in mathematics.
5	Positive attitude	Decrease the mathematics anxiety of students and/or increase appreciation for mathematics; encourage positive attitudes towards mathematics.
6	Atmosphere	Create a positive learning environment.
7	Multiple Solutions	Students learn different solution methods.
8	Future requirements	Help students prepare for future, e.g., academic requirements or career requirements.
9	Work in groups	Students work in groups, collaborate and help each other.
10	No perspective goal identified	Teacher indicated review in TQ5A or TQ5B, but did not list a perspective goal that was reviewed.
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5ACRC *Review content goal - recoded***		
Code	Response	Description or item option
0	No review content goal	
1	Review content goal	
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5APRC *Review process goal - recoded***		
Code	Response	Description or item option
0	No review process goal	
1	Review process goal	
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***review*** to students. **TQ5AARC *Review perspective goal - recoded***		
Code	Response	Description or item option
0	No review perspective goal	
1	Review perspective goal	
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BC** ***New content goal***		
Code	Response	Description or item option
0	Review ideas or skills	No ideas or skills were new.
1	Numbers	Whole numbers, Number Theory, patterns.
2	Fractions	Fractions and decimals, irrrational numbers.
3	Ratio	Ratio, proportion, percent
4	Integers	Integers, powers.
5	Geometry-angles	Geometry: Angles
6	Geometry-lines, triangles	Geometry: Triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, and quads
7	Geometry-two-dimensions	Geometry: Perimeter/circumference/area two-dimensional figures and volume
8	Geometry-three-dimensions	Geometry: Descriptions - three-dimensional figures
9	Geometry-transformations	Geometry: Geometric transformations
10	Geometry-constructions	Geometry: Constructions
11	Statistics-data	Probability and statistics: Organizing and displaying data
12	Statistics-statistics	Probability and statistics: Statistics
13	Statistics-probability	Probability and statistics: Probability
14	Linear algebra-equations	Algebra: Linear functions: simplifying expressions and solving equations, formulas, functions, polynomials, multinomials
15	Linear algebra-graphs	Algebra: Linear functions: graphing
16	Linear algebra-functions	Algebra: Quadratic and other linear or trigonometric functions including formulae
17	Non-linear algebra	Algebra: Graphing non-linear (non-trigonometric) functions
18	Miscellaneous	Miscellaneous topics
19	Technology	
20	No content goal identified	Teacher indicated new ideas or skills in TQ5A or TQ5B, but did not identify specific content being presented, e.g., basic mathematics content
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BP** ***New process goal***		
Code	Response	Description or item option
0	Review ideas or skills	No new ideas or skills were presented.
1	Knowing	Familiarity with mathematical content listed or general familiarity with mathematics; content listed without any process listed.
2	Operations or calculations	Students are capable of using operations in routine procedures such as addition, subtraction, multiplication, and division. The code implies that teachers identified common tasks without noting that students are problem solving or working on real world applications.
0	Review	Teacher specifically identified review of particular content area or general "review for a test".
4	Application to real world	Students are able to apply mathematical knowledge to real world application.
5	External influence	Teacher notes that “goals” or knowledge gained is required by an external source, e.g., “getting through the book", “complete subject matter", “pass math", "curriculum standards", or "end of grade test".
6	Mathematical thinking	Students participate in the “logical” thinking of mathematics, but not problem solving.
7	Problem solving	Teacher notes problem solving skills as a performance.
8	Technology	Students learn to use technology to solve mathematics problems.
9	No process goal identified	Teacher indicated new ideas or skills in TQ5A or TQ5B, but did not list a process goal.
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BA** ***New perspective goal***		
Code	Response	Description or item option
0	Review ideas or skills	Teacher did not list any new performance area associated with this process.
1	Interest	Students become interested in or enjoy mathematics, and increase understanding.
2	Mathematical study habits	Teacher identifies "how to study" mathematics or references work ethics; teacher encourages ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
3	Awareness	Recognition of the need for mathematics in life.
4	Confidence	Students gain confidence in their abilities to succeed in mathematics.
5	Positive attitude	Decrease the mathematics anxiety of students and/or increase appreciation for mathematics; encourage positive attitudes towards mathematics.
6	Atmosphere	Create a positive learning environment.
7	Multiple solutions	Student learn different solution methods.
8	Future requirements	Help students prepare for future, e.g., academic requirements or career requirements.
9	Work in groups	Students work in groups, collaborate and help each other.
10	No perspective goal identified	Teacher indicated new ideas or skills in TQ5A or TQ5B, but did not list specific ideas or skills.
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BCRC** ***New content goal - recoded***		
Code	Response	Description or item option
0	No new content goal	
1	New content goal	
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BPRC** ***New process goal - recoded***		
Code	Response	Description or item option
0	No new process goal	
1	New process goal	
Blank	Missing, not interpretable, or not applicable	

Ideas and skills in videotaped lesson that were mainly ***new*** to students. **TQ5BARC** ***New perspective goal - recoded***		
Code	Response	Description or item option
0	No new perspective goal	
1	New perspective goal	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6C** ***Content goal***		
Code	Response	Description or item option
0	No specific content topic mentioned	No specific content topic mentioned.
1	Numbers	Whole numbers, Number Theory, patterns.
2	Fractions	Fractions and decimals, irrrational numbers.
3	Ratio	Ratio, proportion, percent
4	Integers	Integers, powers.
5	Geometry-angles	Geometry: Angles
6	Geometry-lines, triangles	Geometry: Triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, and quads
7	Geometry-two-dimensions	Geometry: Perimeter/circumference/area two-dimensional figures and volume
8	Geometry-three-dimensions	Geometry: Descriptions - three-dimensional figures
9	Geometry-transformations	Geometry: Geometric transformations
10	Geometry-constructions	Geometry: Constructions
11	Statistics-data	Probability and statistics: Organizing and displaying data
12	Statistics-statistics	Probability and statistics: Statistics
13	Statistics-probability	Probability and statistics: Probability
14	Linear algebra-equations	Algebra: Linear functions: simplifying expressions and solving equations, formulas, functions, polynomials, multinomials
15	Linear algebra-graphs	Algebra: Linear functions: graphing
16	Linear algebra-functions	Algebra: Quadratic and other linear or trigonometric functions including formulae
17	Non-linear algebra	Algebra: Graphing non-linear (non-trigonometric) functions
18	Miscellaneous	Miscellaneous topics
19	Technology	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6CRC *Content goal - recoded***		
Code	Response	Description or item option
0	No specific content topic mentioned	No specific content topic mentioned.
10	Numbers	Whole numbers, Number Theory, patterns.
10	Fractions	Fractions and decimals, irrrational numbers.
10	Ratio	Ratio, proportion, percent
10	Integers	Integers, powers.
20	Geometry-angles	Geometry: Angles
20	Geometry-lines, triangles	Geometry: Triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, and quads
20	Geometry-two-dimensions	Geometry: Perimeter/circumference/area two-dimensional figures and volume
20	Geometry-three-dimensions	Geometry: Descriptions - three-dimensional figures
20	Geometry-transformations	Geometry: Geometric transformations
20	Geometry-constructions	Geometry: Constructions
30	Statistics-data	Probability and statistics: Organizing and displaying data
30	Statistics-statistics	Probability and statistics: Statistics
30	Statistics-probability	Probability and statistics: Probability
40	Linear algebra-equations	Algebra: Linear functions: simplifying expressions and solving equations, formulas, functions, polynomials, multinomials
40	Linear algebra-graphs	Algebra: Linear functions: graphing
40	Linear algebra-functions	Algebra: Quadratic and other linear or trigonometric functions including formulae
40	Non-linear algebra	Algebra: Graphing non-linear (non-trigonometric) functions
0	Miscellaneous	Miscellaneous topics
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6P *Process goal***		
Code	Response	Description or item option
0	No process mentioned	No process goal mentioned.
1	Knowing	Familiarity with mathematical content listed or general familiarity with mathematics; contents listed without any process listed.
2	Operations or calculations	Students are capable of using operations in routine procedures such as addition, subtraction, multiplication, and division. The code implies that teachers identified common tasks without noting that students are problem solving or working on real world applications.
3	Review	Teacher specifically identified review of particular content area or general "review for a test"
4	Application to real world	Students are able to apply mathematical knowledge to real world application.
5	External influence	Teacher notes that “goals” or knowledge gained is required by an external source such as “getting through the book", “complete subject matter", “pass math", "curriculum standards", or "end of grade test".
6	Mathematical thinking	Students participate in the “logical” thinking of mathematics, but not problem solving.
7	Problem solving	Teacher notes problem solving skills as a performance.
8	Technology	Students learn to use technology to solve mathematics problems.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6A *Perspective goal***		
Code	Response	Description or item option
0	No perspective goal mentioned	No perspective goal mentioned.
1	Interest	Students become interested in or enjoy mathematics, and increase understanding
2	Mathematical study habits	Teacher identifies "how to study" mathematics or references work ethics; teacher encourages ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
3	Awareness	Recognition of the need for mathematics in life.
4	Confidence	Students gain confidence in their abilities to succeed in mathematics.
5	Positive attitude	Decrease the mathematics anxiety of students and/or increase appreciation for mathematics; encourage positive attitudes towards mathematics.
6	Atmosphere	Create a positive learning environment.
7	Multiple solutions	Student learn different solution methods.
8	Future requirements	Help students prepare for future, e.g., academic requirements or career requirements.
9	Work in groups	Students work in groups, collaborate and help each other.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6CC0 *No content goals***		
Code	Response	Description or item option
0	Content goal identified	
1	No content goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC0 *No process goals***		
Code	Response	Description or item option
0	Process goal identified	
1	No process goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC0** ***No perspective goals***		
Code	Response	Description or item option
0	Perspective goal identified	
1	No perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6CCRC** ***Content goals - recoded***		
Code	Response	Description or item option
0	No content goal identified	
1	Content goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PCRC** ***Process goals - recoded***		
Code	Response	Description or item option
0	No process goal identified	
1	Process goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6ACRC** ***Perspective goals - recoded***		
Code	Response	Description or item option
0	No perspective goal identified	
1	Perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6CPDF *Difference between content and process goals identified***		
Code	Response	Description or item option
-1	Process but not content goal identified	
0	No difference between content and process goals identified	
1	Content but not process goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6CADF *Difference between content and perspective goals identified***		
Code	Response	Description or item option
-1	Perspective but not content goal identified	
0	No difference between content and perspective goals identified	
1	Content but not perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PADF *Difference between process and perspective goals identified***		
Code	Response	Description or item option
-1	Perspective but not process goal identified	
0	No difference between process and perspective goals identified	
1	Process but not perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6NUMB *Content goal identified - Numbers***		
Code	Response	Description or item option
0	No numbers content goal identified	
1	Numbers content goal identified	Includes whole numbers, number theory, patterns, fractions, decimals, irrational numbers, ratio, proportion, percent, integers, and powers.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6GEOM *Content goal identified - Geometry***		
Code	Response	Description or item option
0	No geometry content goal identified	
1	Geometry content goal identified	Includes angles, triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, quads, perimeter, circumference, area, volume, three-dimensional figures, geometry transformations, and constructions.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6STAT *Content goal identified - Statistics***		
Code	Response	Description or item option
0	No statistics content goal identified	
1	Statistics content goal identified	Includes organizing and displaying data, statistics, and probability.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6ALG** ***Content goal identified - Algebra***		
Code	Response	Description or item option
0	No algebra content goal identified	
1	Algebra content goal identified	Includes algebra linear functions (simplifying expressions and solving equations, formulas, functions, polynomials, multinomials, and graphing), quadratic and other linear or trigonometric functions, and graphing non-linear, non-trigonometric functions.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6OTH** ***Content goal identified - Other***		
Code	Response	Description or item option
0	No other content goal identified	Excludes numbers, geometry, statistics, and algebra content goals.
1	Other content goal identified	Includes miscellaneous goals.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC1** ***Process goal identified – Knowing mathematical content***		
Code	Response	Description or item option
0	No process goal identified as knowing	
1	Process goal identified as knowing	Includes familiarity with mathematical content listed or general familiarity with mathematics.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC2** ***Process goal identified – Using routine operations or calculations***		
Code	Response	Description or item option
0	No process goal identified as operations or calculations	
1	Process goal identified as operations or calculations	Includes using operations in routine procedures such as addition, subtraction, multiplication, and division.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC3** ***Process goal identified – Reviewing***		
Code	Response	Description or item option
0	No process goal identified as review	
1	Process goal identified as review	Includes review of a particular content area or general "review for a test".
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC4** ***Process goal identified – Applying mathematics to real world problems***		
Code	Response	Description or item option
0	No process goal identified as application to real world	
1	Process goal identified as application to real world	Includes applying mathematical knowledge to real world application.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC5** ***Process goal identified – Fulfilling external requirements***		
Code	Response	Description or item option
0	No process goal identified as external influence	
1	Process goal identified as external influence	Includes goal required by an external source such as "getting through the book", "complete subject matter", "curriculum standards", or "end of grade test".
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC6** ***Process goal identified –Thinking mathematically***		
Code	Response	Description or item option
0	No process goal identified as mathematical thinking	
1	Process goal identified as mathematical thinking	Includes engaging in the "logical" thinking of mathematics.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC7** ***Process goal identified – Developing problem solving skills***		
Code	Response	Description or item option
0	No process goal identified as problem solving	
1	Process goal identified as problem solving	Includes problem solving skills.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6PC8** ***Process goal identified – Using technology***		
Code	Response	Description or item option
0	No process goal identified as technology	
1	Process goal identified as technology	Includes learning to use technology to solve mathematics problems.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6POTH** ***Process goal identified – Other***		
Code	Response	Description or item option
0	No other process goal	Excludes knowing mathematical content, using routine operations, applying mathematics to real world problems, and reasoning mathematically.
1	Other process goal identified	Includes reviewing, developing problem solving skills, using technology, and fulfilling external requirements.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC1** ***Perspective goal identified – Increasing interest in mathematics***		
Code	Response	Description or item option
0	No perspective goal identified as interest	
1	Perspective goal identified as interest	Includes increasing students' interest in or enjoyment of mathematics.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC2** ***Perspective goal identified – Developing mathematical dispositions***		
Code	Response	Description or item option
0	No perspective goal identified as developing mathematical dispositions	
1	Perspective goal identified as developing mathematical dispositions	Includes developing "how to study" mathematics or work ethics, encourages ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC3** ***Perspective goal identified – Increasing awareness of mathematics in life***		
Code	Response	Description or item option
0	No perspective goal identified as awareness	
1	Perspective goal identified as awareness	Includes increasing students' awareness of the use of mathematics in life.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC4** ***Perspective goal identified – Increasing confidence***		
Code	Response	Description or item option
0	No perspective goal identified as confidence	
1	Perspective goal identified as confidence	Includes increasing students' confidence in their abilities to succeed in mathematics.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC5** ***Perspective goal identified – Encouraging positive attitude toward mathematics***		
Code	Response	Description or item option
0	No perspective goal identified as positive attitude	
1	Perspective goal identified as positive attitude	Includes decreasing students' mathematics anxiety and/or increasing their appreciation for mathematics; encouraging a positive attitude toward mathematics.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC6** ***Perspective goal identified – Creating a positive learning environment***		
Code	Response	Description or item option
0	No perspective goal identified as positive learning environment	
1	Perspective goal identified as positive learning environment	Includes creating a positive learning environment.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC7** ***Perspective goal identified – Learning multiple solutions***		
Code	Response	Description or item option
0	No perspective goal identified as multiple solutions	
1	Perspective goal identified as multiple solutions	Includes encouraging students to appreciate different solutions methods.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC8** ***Perspective goal identified – Fulfilling future requirements***		
Code	Response	Description or item option
0	No perspective goal identified as fulfilling future requirements	
1	Perspective goal identified as fulfilling future requirements	Includes helping students fulfill future academic or career requirements.
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ6AC9** ***Perspective goal identified – Working in groups***		
Code	Response	Description or item option
0	No perspective goal identified as groupwork	
1	Perspective goal identified as groupwork	Includes students learning to work in groups, collaborate with and help each other.
Blank	Missing, not interpretable, or not applicable	

TQ7A Are you satisfied that the videotaped lesson achieved that purpose?		
Code	Response	Description or item option
0	No	B
1	Yes	A
2	Yes and No	A,B
Blank	Missing, not interpretable, or not applicable	

TQ7ARC Are you satisfied that the videotaped lesson achieved that purpose?		
Code	Response	Description or item option
0	No	B
1	Yes, or mixed	A, or A and B
Blank	Missing, not interpretable, or not applicable	

TQ8A To what extent did any of the following limit you from reaching your ideal in this lesson? a. Official curricular guidelines and/or standardized tests ***(Czech Republic, Hong Kong SAR, Netherlands, and U.S. versions)*** a. Your state's version of the *National Profiles* ***(Australia version)***		
Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8B To what extent did any of the following limit you from reaching your ideal in this lesson? b. Requirements to teach many topics		
Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8C To what extent did any of the following limit you from reaching your ideal in this lesson? c. Insufficient student motivation or readiness to learn		
Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8D1 To what extent did any of the following limit you from reaching your ideal in this lesson? d. Class size		
Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8E To what extent did any of the following limit you from reaching your ideal in this lesson? e. Insufficient time for lesson planning		
Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8F To what extent did any of the following limit you from reaching your ideal in this lesson?
Insufficient time to work with colleagues on lessons
Insufficient time to collaborate with colleagues on lessons *(Australia version)*

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8G To what extent did any of the following limit you from reaching your ideal in this lesson?
g. Not enough books (textbooks, trade books, reference books, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8H To what extent did any of the following limit you from reaching your ideal in this lesson?
h. Insufficient time to finish what I planned to teach

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8I To what extent did any of the following limit you from reaching your ideal in this lesson?
i. Lack of or obsolete computers
i. Lack of computers or obsolete computers ***(Australia version)***

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8J To what extent did any of the following limit you from reaching your ideal in this lesson?
j. Lack of appropriate software for computers

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8K To what extent did any of the following limit you from reaching your ideal in this lesson?
k. Lack of needed instructional equipment (VCR, overhead projection equipment, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8L To what extent did any of the following limit you from reaching your ideal in this lesson?
l. Lack of needed multimedia materials (videotapes, transparency sets, slides, and laser disks)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8M To what extent did any of the following limit you from reaching your ideal in this lesson?
m. Insufficient mathematics teaching materials and supplies (hands-on materials, calculators, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8N To what extent did any of the following limit you from reaching your ideal in this lesson?
n. Inadequate physical facilities (room size or layout, furniture, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8O To what extent did any of the following limit you from reaching your ideal in this lesson?
o. Insufficient training or support for using new technologies in your classroom

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8P To what extent did any of the following limit you from reaching your ideal in this lesson?
p. Presence of the video-camera or videographer

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot	D
4	A great deal	E
98	Not applicable	F Item noted by teacher as not applicable.
Blank	Missing or not interpretable	

TQ8ARC To what extent did any of the following limit you from reaching your ideal in this lesson?
a. Official curricular guidelines and/or standardized tests ***(Czech Republic, Hong Kong SAR, Netherlands, and U.S. versions)***
a. Your state's version of the *National Profiles* ***(Australia version)***

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8BRC To what extent did any of the following limit you from reaching your ideal in this lesson?
b. Requirements to teach many topics

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8CRC To what extent did any of the following limit you from reaching your ideal in this lesson?
c. Insufficient student motivation or readiness to learn

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8DRC To what extent did any of the following limit you from reaching your ideal in this lesson?
d. Class size

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8ERC To what extent did any of the following limit you from reaching your ideal in this lesson?
e. Insufficient time for lesson planning

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8FRC To what extent did any of the following limit you from reaching your ideal in this lesson?
f. Insufficient time to work with colleagues on lessons
f. Insufficient time to collaborate with colleagues on lessons ***(Australia version)***

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8GRC To what extent did any of the following limit you from reaching your ideal in this lesson?
g. Not enough books (textbooks, trade books, reference books, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8HRC To what extent did any of the following limit you from reaching your ideal in this lesson?
h. Insufficient time to finish what I planned to teach

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8IRC To what extent did any of the following limit you from reaching your ideal in this lesson?
ii. Lack of or obsolete computers
ii. Lack of computers or obsolete computers ***(Australia version)***

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8JRC To what extent did any of the following limit you from reaching your ideal in this lesson?
j. Lack of appropriate software for computers

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8KRC To what extent did any of the following limit you from reaching your ideal in this lesson?
k. Lack of needed instructional equipment (VCR, overhead projection equipment, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8LRC To what extent did any of the following limit you from reaching your ideal in this lesson?
l. Lack of needed multimedia materials (videotapes, transparency sets, slides, and laser disks)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8MRC To what extent did any of the following limit you from reaching your ideal in this lesson?
m. Insufficient mathematics teaching materials and supplies (hands-on materials, calculators, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8NRC To what extent did any of the following limit you from reaching your ideal in this lesson?
n. Inadequate physical facilities (room size or layout, furniture, etc.)

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F.

TQ8ORC To what extent did any of the following limit you from reaching your ideal in this lesson?
o. Insufficient training or support for using new technologies in your classroom

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ8PRC To what extent did any of the following limit you from reaching your ideal in this lesson?
p. Presence of the video-camera or videographer

Code	Response	Description or item option
0	Not at all	A
1	A little	B
2	Some	C
3	Quite a lot or a great deal	D,E
Blank	Missing, not interpretable, or not applicable	F

TQ9A How long did you spend planning the videotaped lesson?
(Code number of minutes)

Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ9B How long do you usually spend planning for this type of mathematics lesson? (Code number of minutes)		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ9A9BDF Difference in time teacher spent planning for this type of mathematics lesson from time spent planning for the videotaped lesson (Code number of minutes in TQ9A minus number of minutes in TQ9B)		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ10 Did your students work in groups for any part of the videotaped lesson?		
Code	Response	Description or item option
0	No	
1	Yes	
2	Yes and No	
Blank	Missing, not interpretable, or not applicable	

TQ10RC Did your students work in groups for any part of the videotaped lesson?		
Code	Response	Description or item option
0	No	
1	Yes, or mixed	
Blank	Missing, not interpretable, or not applicable	

TQ12A To what extent do you have sufficient access to this item for use in your mathematics classroom? a. Computers		
Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
Blank	Missing, not interpretable, or not applicable	

TQ12B To what extent do you have sufficient access to this item for use in your mathematics classroom?
b. Computer software

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
Blank	Missing, not interpretable, or not applicable	

TQ12C To what extent do you have sufficient access to this item for use in your mathematics classroom?
c. Computers with Internet connections

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
Blank	Missing, not interpretable, or not applicable	

TQ12D To what extent do you have sufficient access to this item for use in your mathematics classroom?
d. A/V equipment (TV, VCR, overhead projectors)

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
Blank	Missing, not interpretable, or not applicable	

TQ12E To what extent do you have sufficient access to this item for use in your mathematics classroom?
e. Teaching supplies/materials (e.g. hands-on materials)
(Item was not included in 40% of the Cantonese versions of the teacher questionnaire.)

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
3	Not at all and Enough	A,C
Blank	Missing, not interpretable, or not applicable	

TQ12F To what extent do you have sufficient access to this item for use in your mathematics classroom?
f. Calculators

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
3	Not at all and Enough	A,C (e.g., NL teacher marked not at all and enough, and wrote "these belong to students").
Blank	Missing, not interpretable, or not applicable	

TQ12G To what extent do you have sufficient access to this item for use in your mathematics classroom?
g. Reference book materials (books, journals, magazines)

Code	Response	Description or item option
0	Not at all	C
1	Too few or little	B
2	Enough	A
Blank	Missing, not interpretable, or not applicable	

TQ13
Do all students in the school take this course? ***(Czech Republic, Hong Kong SAR, U.S. versions)***
Do all students at the year 8 level take this course of study/pathway? ***(Australia version)***
(Code '1' for Netherlands and Switzerland)

Code	Response	Description or item option
0	No	B
1	Yes	A ***Code '1' for all NL and SW; all students must take this course.***
Blank	Missing, not interpretable, or not applicable	

TQ14
If **no**, is curriculum in this course more challenging or less challenging than the typical eighth grade mathematics course in this school? Mark one of the three choices below ***(Australia, Hong Kong SAR, U.S. versions)***
If **no**, is the curriculum on the same level as in other 8th-grade courses? ***(CZ version)***
(Code '2' for Netherlands and for Switzerland German-speaking and Italian-Speaking areas)

Code	Response	Description or item option
1	Less challenging	C
2	A typical 8th grade curriculum	B 'Yes' on Question 13; all students take this course. ***Code '2' for NL and SW; all students must take this course.***
3	More challenging	A
4	Mixed level of difficulty	A and C; A, B, and C
Blank	Missing, not interpretable, or not applicable	

TQ14RC
If **no**, is curriculum in this course more challenging or less challenging than the typical eighth grade mathematics course in this school? Mark one of the three choices below ***(Australia, Hong Kong SAR, U.S. versions)***
If **no**, is the curriculum on the same level as in other 8th-grade courses? ***(CZ version)***
(Code '2' for Netherlands and for Switzerland German-speaking and Italian-Speaking areas)

Code	Response	Description or item option
1	Less challenging	C
2	A typical 8th grade curriculum, or mixed level of difficulty	B; A and C; A, B, and C 'Yes' on Question 13; all students take this course. ***Code '2' for all NL and SW; all students must take this course.***
3	More challenging	A
Blank	Missing, not interpretable, or not applicable	

TQ14NO13
If **no**, is curriculum in this course more challenging or less challenging than the typical eighth grade mathematics course in this school? Mark one of the three choices below ***(Australia, Hong Kong SAR, U.S. versions)***
If **no**, is the curriculum on the same level as in other 8th-grade courses? ***(CZ version)***
(Code 'Blank' for Netherlands, Switzerland German-speaking and Italian-speaking areas)

Code	Response	Description or item option
1	Less challenging	C
2	A typical 8th grade curriculum	B
3	More challenging	A
4	Mixed level of difficulty	A and C; A, B, and C.
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for all 'Yes' responses on Question 13; Code 'Blank' for NL, SW-German and SW-Italian speaking areas; all students take this course.***

TQ15 Did you previously assign mathematics homework that was due for the day of the videotaped lesson?

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ17 Was the assigned homework related to this lesson or the prior lesson?

Code	Response	Description or item option
0	No homework assigned	No homework assigned; or homework not from prior or videotaped lesson. ***Code '0' for all TQ15 = '0' responses.***
1	Prior lesson	B
2	Videotaped lesson	A
3	Both	C
Blank	Missing, not interpretable, or not applicable	

TQ18 How long would it have taken the typical student in your class to complete this homework?
(Code actual number of minutes)

Code	Response	Description or item option
1	1 minute	Example
2	2 minutes	Example
Blank	Missing, not interpretable, or not applicable	

TQ19 Will students be formally evaluated on the material they studied in the videotaped lesson (e.g., a quiz, unit test, project, etc.)?

Code	Response	Description or item option
0	No	B
1	Yes	A
2	Yes and No	A,B
Blank	Missing, not interpretable, or not applicable	

TQ19RC Will students be formally evaluated on the material they studied in the videotaped lesson (e.g., a quiz, unit test, project, etc.)?

Code	Response	Description or item option
0	No	B
1	Yes, or mixed	A, or A and B
Blank	Missing, not interpretable, or not applicable	

TQ21 Was the videotaped lesson part of a unit or sequence of related lessons, or was it standalone?

Code	Response	Description or item option
1	Stand-alone lesson	A
2	Part of a larger unit or sequence of related lessons	B
Blank	Missing, not interpretable, or not applicable	

TQ24 Approximately how many lessons are in the entire sequence or unit?
(Code number of lessons in unit)

Code	Response	Description or item option
1	1 lesson	First lesson, or stand-alone lesson.
2	2 lessons	Example
Blank	Missing, not interpretable, or not applicable	

TQ25 Where did the videotaped lesson fall in the sequence or unit? ***(Code number of videotaped lesson in unit)***		
Code	Response	Description or item option
1	First lesson in unit	First lesson in unit, teacher notes lesson is not stand alone but only one lesson in unit, or stand-alone lesson.
2	Second lesson in unit	Example
Blank	Missing, not interpretable, or not applicable	

TQ27 For this study, we are interested in capturing your typical mathematics teaching. It is important for us to know in what ways the teaching in the videotaped lesson might not have been typical. How often do you use the teaching methods that are in the videotaped lesson?		
Code	Response	Description or item option
1	Seldom	A
2	Sometimes	B
3	Often	C
4	Almost always	D
Blank	Missing, not interpretable, or not applicable	

TQ27C12 For this study, we are interested in capturing your typical mathematics teaching. It is important for us to know in what ways the teaching in the videotaped lesson might not have been typical. How often do you use the teaching methods that are in the videotaped lesson?		
Code	Response	Description or item option
0	Almost always or Often	C,D
1	Seldom or Sometimes	A,B
Blank	Missing, not interpretable, or not applicable	

TQ27C3 For this study, we are interested in capturing your typical mathematics teaching. It is important for us to know in what ways the teaching in the videotaped lesson might not have been typical. How often do you use the teaching methods that are in the videotaped lesson?		
Code	Response	Description or item option
0	Seldom, Sometimes, or Almost always	A,B,D
1	Often	C
Blank	Missing, not interpretable, or not applicable	

TQ27C4 For this study, we are interested in capturing your typical mathematics teaching. It is important for us to know in what ways the teaching in the videotaped lesson might not have been typical. How often do you use the teaching methods that are in the videotaped lesson?		
Code	Response	Description or item option
0	Seldom, Sometimes, or Often	A,B,C
1	Almost always	D
Blank	Missing, not interpretable, or not applicable	

TQ29 How would you describe your students' behavior and participation during the videotaped lesson?		
Code	Response	Description or item option
1	Worse than usual	C
2	About the same as usual	B
3	Better than usual	A
4	Better and Worse than usual	A,C or A,B,C
Blank	Missing, not interpretable, or not applicable	

TQ29RC How would you describe your students' behavior and participation during the videotaped lesson?		
Code	Response	Description or item option
1	Worse than usual	C
2	About the same as usual, or mixed	B, A and C, or A and B and C
3	Better than usual	A
Blank	Missing, not interpretable, or not applicable	

TQ29C1 How would you describe your students' behavior and participation during the videotaped lesson?		
Code	Response	Description or item option
0	About the same as usual, or Better than usual	A,B
1	Worse than usual	C
Blank	Missing, not interpretable, or not applicable	

TQ29C2 How would you describe your students' behavior and participation during the videotaped lesson?		
Code	Response	Description or item option
0	Worse than usual, or Better than usual	A,C
1	About the same as usual, or mixed	B
Blank	Missing, not interpretable, or not applicable	

TQ29C3 How would you describe your students' behavior and participation during the videotaped lesson?		
Code	Response	Description or item option
0	Worse than usual, or About the same as usual	B,C
1	Better than usual	A
Blank	Missing, not interpretable, or not applicable	

What, if anything, was different about the nature of the students' behavior and the amount of student participation during the videotaped lesson? **TQ30C11 CZ student behavior less active** **Code CZ only for responses describing student behavior as worse.**		
Code	Response	Description or item option
0	Student behavior same as usual, or better	**Code CZ only for responses describing student behavior as worse, specifically, insecure, shy, or less focused.**
1	Student behavior worse: less active	**Code CZ only for responses describing student behavior as worse, specifically, less active.**
Blank	Missing, not interpretable, or not applicable	**Code 'Blank' for all other countries.**

What, if anything, was different about the nature of the students' behavior and the amount of student participation during the videotaped lesson? **TQ30C12 CZ student behavior insecure or shy** **Code CZ only for responses describing student behavior as worse.**		
Code	Response	Description or item option
0	Student behavior same as usual, or better	**Code CZ only for responses describing student behavior as worse, specifically, less active or less focused.**
1	Student behavior worse: insecure or shy	**Code CZ only for responses describing student behavior as worse, specifically, insecure or shy.**
Blank	Missing, not interpretable, or not applicable	**Code 'Blank' for all other countries.**

What, if anything, was different about the nature of the students' behavior and the amount of student participation during the videotaped lesson? **TQ30C13 CZ student behavior less focused** **Code CZ only for responses describing student behavior as worse.**		
Code	Response	Description or item option
0	Student behavior same as usual, or better	**Code CZ only for responses describing student behavior as worse, specifically, less active, insecure, or shy.**
1	Student behavior worse: less focused	**Code CZ only for responses describing student behavior as worse, specifically, less focused.**
Blank	Missing, not interpretable, or not applicable	**Code 'Blank' for all other countries.**

TQ31 Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?		
Code	Response	Description or item option
1	Less difficult for students than most lessons	C
2	About the same as most lessons	B
3	More difficult for students than most lessons	A
4	Mixed level of difficulty	A and C, or A, B, and C.
Blank	Missing, not interpretable, or not applicable	

TQ31RC Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?		
Code	Response	Description or item option
1	Less difficult for students than most lessons	C
2	About the same as most lessons, or mixed level of difficulty	B, or A and C, or A and B and C
3	More difficult for students than most lessons	A
Blank	Missing, not interpretable, or not applicable	

TQ31C1 Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?		
Code	Response	Description or item option
0	About the same, or More difficult for students than most lessons	A,B
1	Less difficult for students than most lessons	C
Blank	Missing, not interpretable, or not applicable	

TQ31C2 Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?		
Code	Response	Description or item option
0	Less difficult, or More difficult for students than most lessons	A,C
1	About the same as most lessons	B
Blank	Missing, not interpretable, or not applicable	

TQ31C3 Was the content of the videotaped lesson more difficult for your students than usual, about the same, or less difficult than usual?		
Code	Response	Description or item option
0	Less difficult, or About the same as most lessons	B,C
1	More difficult for students than most lessons	A
Blank	Missing, not interpretable, or not applicable	

TQ32 Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?		
Code	Response	Description or item option
1	Worse than usual	C
2	About the same as usual	B
3	Better than usual	A
4	Mixed – Better and Worse	A and C, or A, B, and C
Blank	Missing, not interpretable, or not applicable	

TQ32RC Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?		
Code	Response	Description or item option
1	Worse than usual	C
2	About the same as usual, or Mixed	B, or A and C, or A and B and C
3	Better than usual	A
Blank	Missing, not interpretable, or not applicable	

TQ32C1 Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?		
Code	Response	Description or item option
0	About the same, or Better than usual	A,B
1	Worse than usual	C
Blank	Missing, not interpretable, or not applicable	

TQ32C2 Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?		
Code	Response	Description or item option
0	Worse, or Better than usual	A,C
1	About the same as usual	B
Blank	Missing, not interpretable, or not applicable	

TQ32C3 Do you think that having the camera present caused you to teach a lesson that was better than usual, worse than usual, or about the same as usual?		
Code	Response	Description or item option
0	Worse, or About the same as usual	B,C
1	Better than usual	A
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year.
TQ33C1 ***Content goal - First mentioned***
TQ33C2 ***Content goal - Second mentioned***
TQ33C3 ***Content goal - Third mentioned***

Code	Response	Description or item option
0	No specific content topics mentioned	No specific content topics mentioned.
1	Numbers	Whole numbers, Number Theory, patterns.
2	Fractions	Fractions and decimals, irrrational numbers.
3	Ratio	Ratio, proportion, percent
4	Integers	Integers, powers.
5	Geometry-angles	Geometry: Angles
6	Geometry-lines, triangles	Geometry: Triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, and quads
7	Geometry-two-dimensions	Geometry: Perimeter/circumference/area two-dimensional figures and volume
8	Geometry-three-dimensions	Geometry: Descriptions - three-dimensional figures
9	Geometry-transformations	Geometry: Geometric transformations
10	Geometry-constructions	Geometry: Constructions
11	Statistics-data	Probability and statistics: Organizing and displaying data
12	Statistics-statistics	Probability and statistics: Statistics
13	Statistics-probability	Probability and statistics: Probability
14	Linear algebra-equations	Algebra: Linear functions: simplifying expressions and solving equations, formulas, functions, polynomials, multinomials
15	Linear algebra-graphs	Algebra: Linear functions: graphing
16	Linear algebra-functions	Algebra: Quadratic and other linear or trigonometric functions including formulae
17	Non-linear algebra	Algebra: Graphing non-linear (non-trigonometric) functions
18	Miscellaneous	Miscellaneous topics
19	Technology	
20	Unspecified geometry content	Geometry content, but no detailed topic identified
21	Unspecified algebra content	Algebra content, but no detailed topic identified
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33CSUM Number of *content goals identified***		
Code	Response	Description or item option
0	No goals	No content goals identified
1	One goal	One content goal identified
2	Two goals	Two content goals identified
3	Three goals	Three content goals identified
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ33P1 *Process goal - First mentioned*** **TQ33P2 *Process goal - Second mentioned*** **TQ33P3 *Process goal - Third mentioned***		
Code	Response	Description or item option
0	No processes mentioned	No processes mentioned.
1	Knowing	Familiarity with mathematical content listed or general familiarity with mathematics; contents simply listed without process listed.
2	Operations or calculations	Students are capable of using operations in routine procedures such as addition, subtraction, multiplication, and division. The code implies that teachers identified common tasks without noting that students are problem solving or working on real world applications.
3	Review	Teacher specifically identified review of particular content area or general "review for a test".
4	Application to real world	Students are able to apply mathematical knowledge to real world application.
5	External influence	Teacher notes that “goals” or knowledge gained is required by an external source such as “getting through the book", “complete subject matter", “pass math", "curriculum standards", or "end of grade test".
6	Mathematical thinking	Students participate in the “logical” thinking of mathematics, but not problem solving.
7	Problem solving	Teacher notes problem solving skills as a performance.
8	Technology	Students learn to use technology to solve mathematics problems.
9	Communicate	Students learn to communicate mathematically.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PSUM Number of *process goals identified***		
Code	Response	Description or item option
0	No goals	No process goals identified
1	One goals	One process goal identified
2	Two goals	Two process goals identified
3	Three goals	Three process goals identified
Blank	Missing, not interpretable, or not applicable	

What was the main thing you wanted students to learn from the videotaped lesson? **TQ33A1 *Perspective goal - First mentioned*** **TQ33A2 *Perspective goal - Second mentioned*** **TQ33A3 *Perspective goal - Third mentioned***		
Code	Response	Description or item option
0	No perspective goals mentioned	No perspective or attitude goals mentioned.
1	Interest	Students become interested in or enjoy mathematics, and increase understanding
2	Mathematical study habits	Teacher identifies "how to study" mathematics or references work ethics; teacher encourages ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
3	Awareness	Recognition of the need for mathematics in life.
4	Confidence	Students gain confidence in their abilities to succeed in mathematics.
5	Positive attitude	Decrease the mathematics anxiety of students and/or increase appreciation for mathematics; encourage positive attitudes towards mathematics.
6	Atmosphere	Create a positive learning environment.
7	Multiple solutions	Student learn different solution methods, e.g., "There are more than one methods to solve a problem".
8	Future requirements	Help students prepare for future, e.g., academic requirements or career requirements.
9	Work in groups	Students work in groups, collaborate and help each other.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33ASUM Number of *perspective goals identified***		
Code	Response	Description or item option
0	No goals	No perspective goals identified
1	One goals	One perspective goal identified
2	Two goals	Two perspective goals identified
3	Three goals	Three perspective goals identified
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33NUMB *Content goals - Numbers*** **(Code number of mentions)**		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33GEOM *Content goals - Geometry*** **(Code number of mentions)**		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33STAT *Content goals - Statistics*** **(Code number of mentions)**		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33ALG *Content goals - Algebra*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33OTH** ***Content goals - Other*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC1** ***Process goals – Knowing mathematical content*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC2** ***Process goals – Using routine operations or calculations*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC3** ***Process goals - Reviewing*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC4** ***Process goals – Applying mathematics to real world problems*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC5** ***Process goals – Fulfilling external requirements*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC6** ***Process goals – Thinking mathematically*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC7** ***Process goals - Developing problem solving skills*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC8** ***Process goals – Using technology*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC9** ***Process goals – Other process goal*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC1** ***Perspective goals - Increasing interest in mathematics*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC2** ***Perspective goals – Developing mathematical dispositions*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC3** ***Perspective goals - Increasing awareness of mathematics in life*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC4** ***Perspective goals – Increasing confidence*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC5** ***Perspective goals - Encouraging positive attitude toward mathematics*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC6** ***Perspective goals – Creating a positive learning environment*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC7** ***Perspective goals - Learning multiple solutions*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC8** ***Perspective goals – Fulfilling future requirements*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC9** ***Perspective goals – Working in groups*** ***(Code number of mentions)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33NURC** ***Content goal identified - Numbers***		
Code	Response	Description or item option
0	No numbers content goal identified	
1	Numbers content goal identified	Includes whole numbers, number theory, patterns, fractions, decimals, irrational numbers, ratio, proportion, percent, integers, and powers.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33GERC** ***Content goal identified - Geometry***		
Code	Response	Description or item option
0	No geometry content goal identified	
1	Geometry content goal identified	Includes angles, triangles and lines in two-dimensional plane, similarity, Pythagorean Theorem, quads, perimeter, circumference, area, volume, three-dimensional figures, geometry transformations, and constructions.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33STRC** ***Content goal identified - Statistics***		
Code	Response	Description or item option
0	No statistics content goal identified	
1	Statistics content goal identified	Includes organizing and displaying data, statistics, and probability.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33ALRC** ***Content goal identified - Algebra***		
Code	Response	Description or item option
0	No algebra content goal identified	
1	Algebra content goal identified	Includes algebra linear functions (simplifying expressions and solving equations, formulas, functions, polynomials, multinomials, and graphing), quadratic and other linear or trigonometric functions, and graphing non-linear, non-trigonometric functions.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33OTRC** ***Content goal identified - Other***		
Code	Response	Description or item option
0	No other content goal identified	Excludes numbers, geometry, statistics, and algebra content goals.
1	Other content goal identified	Includes miscellaneous goals.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC1** ***Process goal identified – Knowing mathematical content***		
Code	Response	Description or item option
0	No process goal identified as knowing	
1	Process goal identified as knowing	Includes familiarity with mathematical content listed or general familiarity with mathematics.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC2** ***Process goal identified – Using routine operations or calculations***		
Code	Response	Description or item option
0	No process goal identified as operations or calculations	
1	Process goal identified as operations or calculations	Includes using operations in routine procedures such as addition, subtraction, multiplication, and division.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC3** ***Process goal identified – Reviewing***		
Code	Response	Description or item option
0	No process goal identified as review	
1	Process goal identified as review	Includes review of a particular content area or general "review for a test".
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC4** ***Process goal identified – Applying mathematics to real world problems***		
Code	Response	Description or item option
0	No process goal identified as application to real world	
1	Process goal identified as application to real world	Includes applying mathematical knowledge to real world application.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC5** ***Process goal identified – Fulfilling external requirements***		
Code	Response	Description or item option
0	No process goal identified as external influence	
1	Process goal identified as external influence	Includes goal established by an external source such as "getting through the book", "complete subject matter", "curriculum standards", or "end of grade test".
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC6** ***Process goal identified –Thinking mathematically***		
Code	Response	Description or item option
0	No process goal identified as mathematical thinking	
1	Process goal identified as mathematical thinking	Includes engaging in the "logical" thinking of mathematics.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC7** ***Process goal identified – Developing problem solving skills***		
Code	Response	Description or item option
0	No process goal identified as problem solving	
1	Process goal identified as problem solving	Includes problem solving skills.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PC8** ***Process goal identified – Using technology***		
Code	Response	Description or item option
0	No process goal identified as technology	
1	Process goal identified as technology	Includes learning to use technology to solve mathematics problems.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33P9RC** ***Process goal identified – Communicating mathematically***		
Code	Response	Description or item option
0	No process goal identified as technology	Excludes knowing mathematical content, using routine operations, applying mathematics to real world problems, and reasoning mathematically.
1	Process goal identified as technology	Includes reviewing, developing problem solving skills, using technology, and fulfilling external requirements.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC1** ***Perspective goal identified – Increasing interest in mathematics***		
Code	Response	Description or item option
0	No perspective goal identified as interest	
1	Perspective goal identified as interest	Includes increasing students' interest in or enjoyment of mathematics.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC2** ***Perspective goal identified – Developing mathematical dispositions***		
Code	Response	Description or item option
0	No perspective goal identified as developing mathematical dispositions	
1	Perspective goal identified as developing mathematical dispositions	Includes developing "how to study" mathematics or work ethics, encouraging ways of mathematics thinking, e.g., openness, objectivity, tolerance of uncertainty, inventiveness, curiosity.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC3** ***Perspective goal identified – Increasing awareness of mathematics in life***		
Code	Response	Description or item option
0	No perspective goal identified as awareness	
1	Perspective goal identified as awareness	Includes increasing students' awareness of the use of mathematics in life.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC4** ***Perspective goal identified – Increasing confidence***		
Code	Response	Description or item option
0	No perspective goal identified as confidence	
1	Perspective goal identified as confidence	Includes increasing students' confidence in their abilities to succeed in mathematics.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC5** ***Perspective goal identified – Encouraging positive attitude toward mathematics***		
Code	Response	Description or item option
0	No perspective goal identified as positive attitude	
1	Perspective goal identified as positive attitude	Includes decreasing students' mathematics anxiety and/or increasing their appreciation for mathematics; encouraging a positive attitude toward mathematics.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC6** ***Perspective goal identified – Creating a positive learning environment***		
Code	Response	Description or item option
0	No perspective goal identified as positive learning environment	
1	Perspective goal identified as positive learning environment	Includes creating a positive learning environment.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC7** ***Perspective goal identified – Learning multiple solutions***		
Code	Response	Description or item option
0	No perspective goal identified as multiple solutions	
1	Perspective goal identified as multiple solutions	Includes encouraging students to appreciate different solutions methods.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC8** ***Perspective goal identified – Fulfilling future requirements***		
Code	Response	Description or item option
0	No perspective goal identified as fulfilling future requirements	
1	Perspective goal identified as fulfilling future requirements	Includes helping students fulfill future academic or career requirements.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33AC9** ***Perspective goal identified – Working in groups***		
Code	Response	Description or item option
0	No perspective goal identified as groupwork	
1	Perspective goal identified as groupwork	Includes students learning to work in groups, collaborate with and help each other.
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33CPDF *Difference between content and process goals identified***		
Code	Response	Description or item option
-1	Process but not content goal identified	
0	No difference between content and process goals identified	
1	Content but not process goal identified	
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33CADF *Difference between content and perspective goals identified***		
Code	Response	Description or item option
-1	Perspective but not content goal identified	
0	No difference between content and perspective goals identified	
1	Content but not perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

Most important thing you would like your students to learn from studying mathematics this year. **TQ33PADF *Difference between process and perspective goals identified***		
Code	Response	Description or item option
-1	Perspective but not process goal identified	
0	No difference between process and perspective goals identified	
1	Process but not perspective goal identified	
Blank	Missing, not interpretable, or not applicable	

TQ34 In general, I feel comfortable trying new techniques for teaching mathematics in my classroom		
Code	Response	Description or item option
1	I disagree	C
2	No opinion	B
3	I agree	A
Blank	Missing, not interpretable, or not applicable	

TQ35 In general, I feel I keep up with current ideas in mathematics teaching and learning		
Code	Response	Description or item option
1	I disagree	C
2	No opinion	B
3	I agree	A
Blank	Missing, not interpretable, or not applicable	

TQ35C1 In general, I feel I keep up with current ideas in mathematics teaching and learning		
Code	Response	Description or item option
0	No opinion, or I agree	A,B
1	I disagree	C
Blank	Missing, not interpretable, or not applicable	

TQ35C2 In general, I feel I keep up with current ideas in mathematics teaching and learning		
Code	Response	Description or item option
0	I disagree, or I agree	A,C
1	No opinion	B
Blank	Missing, not interpretable, or not applicable	

TQ35C3 In general, I feel I keep up with current ideas in mathematics teaching and learning		
Code	Response	Description or item option
0	I disagree, or No opinion	B,C
1	I agree	A
Blank	Missing, not interpretable, or not applicable	

TQ37A What written materials are you aware of that describe current ideas about the teaching and learning of mathematics?
(Code number of written materials)

Code	Response	Description or item option
0	None	No written materials identified
1	One material	Teacher identified one written material
2	Two materials	Teacher identified two written materials
3	Three materials	Teacher identified three written materials
Blank	Missing, not interpretable, or not applicable	

What written materials are you aware of that describe current ideas about the teaching and learning mathematics? Please list up to three, and indicate whether you have personally read each one.
TQ37B1 ***First mentioned written material***
TQ37B2 ***Second mentioned written material***
TQ37B3 ***Third mentioned written material***

Code	Response	Description or item option
0	None of it	D
1	Some of it	C
2	Most of it	B
3	All of it	A
Blank	Missing, not interpretable, or not applicable	

TQ38 To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?

Code	Response	Description or item option
0	Not at all	D
1	A little	C
2	A fair amount	B
3	A lot	A
Blank	Missing, not interpretable, or not applicable	

TQ38RC To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?

Code	Response	Description or item option
0	Not at all	D
1	A little	C
2	A fair amount or A lot	A,B
Blank	Missing, not interpretable, or not applicable	

TQ38C0 To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?		
Code	Response	Description or item option
0	A little, A fair amount, or A lot	A,B,C
1	Not at all	D
Blank	Missing, not interpretable, or not applicable	

TQ38C1 To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?		
Code	Response	Description or item option
0	Not at all, A fair amount, or A lot	A,B,D
1	A little	C
Blank	Missing, not interpretable, or not applicable	

TQ38C23 To what extent do you feel that the videotaped lesson is in accord with current ideas about the teaching and learning of mathematics?		
Code	Response	Description or item option
0	Not at all, or A little	C,D
1	A fair amount, or A lot	A,B
Blank	Missing, not interpretable, or not applicable	

TQ39A Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.		
Code	Response	Description or item option
0	Lesson does not exemplify current ideas	'No' on TQ38
1	Student actively involved	Students involved in hands-on activities, students apply knowledge to practical problems or tasks, students actively participate in lesson, or students use manipulatives.
2	Classroom discussion	Classroom discussion used to 'motivate or stimulate' students.
3	Students construct their own knowledge	Teacher facilitates students learning on their own, e.g., "I try to lead them to their own conclusions"; students construct their own knowledge; students pose questions; students design investigations to answer questions; students develop or invent concept or procedure; teacher does not tell students what to do.
4	Students working together	Students go over work together; students help each other; students collaborate; students build a community of inquiry-group collaboration.
5	External source	Teacher implements department, school, textbook guidelines or requirements in lesson.
6	Teacher as facilitator	Teacher identifies role of the teacher as facilitator.
7	Students work independent of teacher	Teacher implements discovery learning, self-motivation, learning by way of doing the task with teacher feedback.
8	Student motivation or interest	Teacher increases student motivation or interest, e.g., "students were having fun and … improving thinking skills".
9	Method of introduction - student focused	Teacher's introduction of the topic is consistent with current ideas of teaching and learning, e.g., "I moved from the general to the specific," "used problems to develop ideas," "students led to independent work".
10	Multiple ability class	Class is composed of students with different levels of ability.
11	Linking new concepts to prior knowledge	Teacher links new concepts to prior knowledge; checking for students' prior ideas and misconceptions, then helping them address and change these ideas, e.g., "Learning only takes place with understanding, the new concept was strongly linked to established numerical concepts".
12	Types of problems used	Teacher identifies the types of problems, but not how students work on these problems, as reflecting current reform, e.g., "use of competition problems," "practical

		examples".
13	Teach critical thinking or problem solving skills	Instruction focused on teaching critical thinking or problem solving skills.
14	Use of real world problems	Teacher uses practical or real world problems.
15	Instruction level responsive to student	Instruction responsive to student needs including student knowledge and/or abilities.
16	Use of technology	Instruction includes using computers, calculators, or other technology.
17	Other	Instruction implements other current ideas including assessing student performance, e.g., "students successes are assessed not their failures", building student confidence, using competition.
18	No current area identified	Teacher indicated implementation of current ideas in TQ38 but did not identify a specific current idea.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC1 ***Active involvement of students***

Code	Response	Description or item option
0	None identified, or current idea not identified as students actively involved	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as students actively involved.
1	Students actively involved	Students involved in hands-on activities, students apply knowledge to practical problems or tasks, students actively participate in lesson, or students use manipulatives.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC2 ***Classroom discussion***

Code	Response	Description or item option
0	None identified, or current idea not identified as classroom discussion	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as classroom discussion.
1	Classroom discussion	Classroom discussion used to 'motivate or stimulate' students.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC3** ***Student construction of their own knowledge***		
Code	Response	Description or item option
0	None identified, or current idea not identified as students constructing knowledge	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as students constructing knowledge.
1	Students constructing knowledge	Teacher facilitates students learning on their own; students construct their own knowledge; students pose questions; students design investigations to answer questions; students develop or invent concept or procedure; teacher does not tell students what to do.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC4** ***Student groupwork***		
Code	Response	Description or item option
0	None identified, or current idea not identified as groupwork	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as groupwork.
1	Students work together	Students go over work together; students help each other; students collaborate; students build a community of inquiry-group collaboration.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC5** ***Instruction derived from external source of current ideas***		
Code	Response	Description or item option
0	None identified, or current idea not identified as external source	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as external source.
1	External source of current ideas	Teacher implements department, school, textbook guidelines or requirements in lesson.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC6 *Teacher role as facilitator***		
Code	Response	Description or item option
0	None identified, or current idea not identified as teacher as facilitator	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as teacher as facilitator.
1	Teacher facilitates student learning	Teacher identifies role of the teacher as facilitator.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC7 *Independent student work***		
Code	Response	Description or item option
0	None identified, or current idea not identified as independent student work	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as independent student work.
1	Students work independently	Teacher implements discovery learning, self-motivation, learning by way of doing the task with teacher feedback.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC8 *Increased student interest***		
Code	Response	Description or item option
0	None identified, or current idea not identified as student interest	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as student interest.
1	Increase student interest	Teacher increases student motivation or interest, e.g., "students were having fun and…improving thinking skills".
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC9** ***Student focused instruction***		
Code	Response	Description or item option
0	None identified, or current idea not identified as student focused	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as student focused.
1	Student focused instruction	Teacher's introduction of the topic is consistent with current ideas of teaching and learning, e.g., "I moved from the general to the specific," "used problems to develop ideas," "students led to independent work".
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC10** ***Multiple ability class***		
Code	Response	Description or item option
0	None identified, or current idea not identified as multiple ability class	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as multiple ability class.
1	Multiple ability class	Class is composed of students with different levels of ability.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics. **TQ39AC11** ***New concepts linked to prior knowledge***		
Code	Response	Description or item option
0	None identified, or current idea not identified as new concepts linked to prior knowledge	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as new concepts linked to prior knowledge.
1	New concepts linked to prior knowledge	Teacher links new concepts to students' prior knowledge.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC12 ***Types of problems used***

Code	Response	Description or item option
0	None identified, or current idea not identified as types of problems	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as types of problems.
1	Types of problems used	Teacher identifies the types of problems, but not how students work on these problems, as reflecting current reform, e.g., "use of competition problems," "practical examples".
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC13 ***Problem solving skills***

Code	Response	Description or item option
0	None identified, or current idea not identified as problem solving	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as problem solving.
1	Problem solving skills	Instruction focused on teaching problem solving skills or critical thinking.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC14 ***Use of real world problems***

Code	Response	Description or item option
0	None identified, or current idea not identified as real world problems	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as real world problems.
1	Use of real world problems	Teacher uses practical or real world problems.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC15 ***Instruction level responsive to student needs***

Code	Response	Description or item option
0	None identified, or current idea not identified as instruction responsive to student needs	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as instruction responsive to student needs.
1	Instruction responsive to student needs	Instruction responsive to student needs including student knowledge and/or abilities.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC16 ***Use of technology***

Code	Response	Description or item option
0	None identified, or current idea not identified as use of technology	Lesson does not exemplify current ideas ('No' on TQ38), or current idea not identified as use of technology.
1	Use of technology	Instruction includes use of computers, calculators, or other technology.
Blank	Missing, not interpretable, or not applicable	

Please describe one part of the videotaped lesson that you feel exemplifies current ideas about the teaching and learning of mathematics.
TQ39AC17 ***Other current idea***

Code	Response	Description or item option
0	None identified, or other current idea identified	Lesson does not exemplify current ideas ('No' on TQ38), or other current idea identified.
1	Other current idea	Lesson exemplifies other current idea.
Blank	Missing, not interpretable, or not applicable	

TQ39B Please describe why you feel this exemplifies current ideas about the teaching and learning of mathematics.		
Code	Response	Description or item option
0	Lesson does not exemplify current ideas	'No' on TQ 38; teacher did not feel lesson exemplified current ideas about teaching and learning
1	Informal communication	Teacher read this is better, other professional told teacher this worked better – no indication of personal experience, e.g., "current idea in the teaching of math", "current trends".
2	Confidence	
3	External guidelines or requirements	State or national mathematics standards; Department, school, principal, etc. expectations of method – no indication of teachers' personal ideas
4	Promotes groups work skills	Current practice promotes opportunities for students to learn how to work productively or solve problems as a group.
5	Builds independence	The current practice enables students to work on their own, e.g., "students can work at own pace," "it puts the problem in the hands of the student".
6	Incorporates how children learn	Practice is employed because it reflects how the teacher believes students learn, e.g., "students learn better by independent thinking," "better retention".
7	Develops thinking skills	Teacher indicates that current practice promotes mathematical thinking, e.g., "promotes thinking skills," "gets students to do self-assessment".
8	Motivates students; increases student interest	Current practice is used because it is what the teacher believes students will or do find most interesting, e.g., "it grabs their attention."
9	Student preparation for future	Help prepare student for future, e.g., next grade level requirements, future job requirements.
10	Teach critical thinking or problem solving skills	
11	Real world applications	Instruction incorporates real world applications
12	Teacher experience	
13	Other	Includes helping teacher assess student abilities; useful; improves mathematics study habits.
14	No reason given	Teacher identified current idea in TQ39, but did not provide a reason.
Blank	Missing, not interpretable, or not applicable	

TQ40 As part of professional development activities, how often in the past year has a teacher colleague observed you teaching an entire mathematics lesson?		
Code	Response	Description or item option
0	Never	A
1	Once or twice	B
2	Every other month	C
3	Once a month or more	D
Blank	Missing, not interpretable, or not applicable	

TQ40RC As part of professional development activities, how often in the past year has a teacher colleague observed you teaching an entire mathematics lesson?		
Code	Response	Description or item option
0	Never	A
1	One or more times	B,C,D
Blank	Missing, not interpretable, or not applicable	

TQ41 As part of professional development activities, how often in the past year have you observed a teacher colleague teaching an entire mathematics lesson?		
Code	Response	Description or item option
0	Never	A
1	Once or twice	B
2	Every other month	C
3	Once a month or more	D
Blank	Missing, not interpretable, or not applicable	

TQ41RC As part of professional development activities, how often in the past year have you observed a teacher colleague teaching an entire mathematics lesson?		
Code	Response	Description or item option
0	Never	A
1	One or more times	B,C,D
Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for U.S. version only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Teacher training without completing high school	A
2	2	High school	B
2	2	High school with one or two years of teacher training	C
2	2	High school with 3 or 4 years of teacher training	D
3	3	BA or equivalent with no teacher training	E
3	3	BA or equivalent with teacher training	F
4	4	Masters or Doctoral degree with no teacher training	G
4	4	Masters or Doctoral degree with teacher training	H
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Australia only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Teacher training without completing secondary school	A
2	3	Secondary school	B
2	3	High school with one or two years of teacher training	C
2	3	High school with 3 or 4 years of teacher training	D
3	4	BA or equivalent with no teacher training	E
3	4	BA or equivalent with teacher training	F
4	4	Masters or Doctoral degree with no teacher training	G
4	4	Masters or Doctoral degree with teacher training	H
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Czech Republic only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
2	2	High school	A
3	2	BA or equivalent with no teacher training	B
3	3	BA or equivalent with teacher training	C
4	4	Masters or Doctoral degree with no teacher training	D
4	4	Masters or Doctoral degree with teacher training	E
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Hong Kong only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Teacher training without completing high school	A
2	2	High school	B
2	2	High school with one or two years of teacher training	C
2	2	High school with 3 or 4 years of teacher training	D
2	2	Matriculation	E ***Additional option in HK version only!***
2	2	Matriculation with 1 or 2 years of teacher training	F ***Additional option in HK version only!***
2	2	Matriculation with 3 or 4 years of teacher training	G ***Additional option in HK version only!***
3	3	BA or equivalent with no teacher training	H
3	3	BA or equivalent with teacher training	I
4	4	Masters or Doctoral degree with no teacher training	J
4	4	Masters or Doctoral degree with teacher training	K
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Netherlands only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Teacher training without completing high school	A
2	2	High school	B
2	2	High school with one or two years of teacher training	C
2	2	High school with 3 or 4 years of teacher training	D
3	3	BA or equivalent without teacher training	E
3	3	BA or equivalent with teacher training	Teacher marked option 'D' plus teacher reported at least two years of teaching experience (see TQ48 and TQ49)
4	4	Masters or Doctoral degree with no teacher training	F
4	4	Masters or Doctoral degree with teacher training	G
Blank	Blank	Not interpretable response	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Switzerland–German language area only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Lehrerseminar 4-6, Jahr	A
2	2	Matura mit 1-2 Jahren Lehrerausbildung	B
3	3	Matura mit 2-3 Jahren Studium zum Sekundarlehrer	C
4	4	Lizentiat (Studium von mindestens 5 Jahren)	D
4	4	Lizentiat mit Lehrdiplom (z.B, Hoheres Lehramt)	E
4	4	Doktorat ohne Lehrdiplom	F
4	4	Doktorat mit zusatzlichem Lehrdiplom	G
4	4	Habilitierter Professor	H,I
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Switzerland–Italian language area only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
2	2	Scuola magistrale con abilitazione all'insegnamento medio	A
3	3	Mezza licenza universitaria	B
4	4	Licenza universitaria	C
4	4	Licenza universitaria con abilitazione	D
4	4	Dottorato	E
4	4	Dottorato con abilitazione	F
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42 What was the highest level of formal education you have completed? ***(Codes for Switzerland–French language only)***			
Code TQ42RC4	Code TQ42RC4B	Response	Description or item option
1	2	Formation pedagogique sans baccalaureat	A
2	2	Le baccalaureat	B
2	2	Le baccalaureat, plus 1 ou 2 ans de formation pedagogique	C
3	3	Le baccalaureat, plus 3 ou 4 ans de formation pedagogique	D
4	4	Diplome universitaire ou equivalent sans formation pedagogique	E
4	4	Diplome universitaire ou equivalent avec formation pedagogique	F
4	4	Diplome d'etudes superieures sans formation pedagogique	G
4	4	Diplome d'etudes superieures avec formation pedagogique	H
Blank	Blank	Missing, not interpretable, or not applicable	

TQ42HS What was the highest level of formal education you have completed?		
Code	Response	Description or item option
0	College or university degree	TQ42RC4 codes '3' or '4'
1	High school diploma or less, with or without teacher training	TQ42RC4 codes '1' or '2'
Blank	Missing, not interpretable, or not applicable	

TQ42BABS What was the highest level of formal education you have completed?		
Code	Response	Description or item option
1	Less than high school, high school diploma, or graduate degree, with or without teacher training	TQ42RC4 codes '1', '2', or '4'
1	College or university degree, with or without teacher training	TQ42RC4 code '3'
Blank	Missing, not interpretable, or not applicable	

TQ42HS What was the highest level of formal education you have completed?		
Code	Response	Description or item option
0	College or university degree or less, with or without teacher training	TQ42RC4 codes '1', '2', or '3'
1	Graduate degree, with or without teacher training	TQ42RC4 code '4'
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? ***(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)*** **TQ43MATH – Mathematics**		
Code	Response	Description or item option
0	Not certified in mathematics	
1	Certified below Grade 8	Certification includes Grades K through 7
2	Certified including Grade 8	Certification includes Grade 8, e.g., Grades K-8, K-9, K-12, 7 – 8, 7 – 9, or 7 - 10
3	Certified above Grade 8	Certification includes grades above Grade 8
4	Certified but grade unspecified	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MED - Mathematics Education**		
Code	Response	Description or item option
0	Not certified in mathematics education	
1	Certified below Grade 8	Certification includes Grades K through 7
2	Certified including Grade 8	Certification includes Grade 8, e.g., Grades K-8, K-9, K-12, 7 – 8, 7 – 9, or 7 - 10
3	Certified above Grade 8	Certification includes grades above Grade 8
4	Certified but grade unspecified	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43SCI – Science or Science Education**		
Code	Response	Description or item option
0	Not certified in science or science education	
1	Certified below Grade 8	Certification includes Grades K through 7
2	Certified including Grade 8	Certification includes Grade 8, e.g., Grades K-8, K-9, K-12, 7 – 8, 7 – 9, or 7 - 10
3	Certified above Grade 8	Certification includes grades above Grade 8
4	Certified but grade unspecified	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43EDU - Education**		
Code	Response	Description or item option
0	Not certified in education	
1	Certified below Grade 8	Certification includes Grades K through 7
2	Certified including Grade 8	Certification includes Grade 8, e.g., Grades K-8, K-9, K-12, 7 – 8, 7 – 9, or 7 - 10
3	Certified above Grade 8	Certification includes grades above Grade 8
4	Certified but grade unspecified	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43OTHR - Other area**		
Code	Response	Description or item option
0	Not certified in other area	
1	Certified below Grade 8	Certification includes Grades K through 7
2	Certified including Grade 8	Certification includes Grade 8, e.g., Grades K-8, K-9, K-12, 7 – 8, 7 – 9, or 7 - 10
3	Certified above Grade 8	Certification includes grades above Grade 8
4	Certified but grade unspecified	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MARC – Mathematics – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 mathematics	Not certified in mathematics
1	Certified excluding Grade 8	Certification excludes Grade 8 mathematics
2	Certified including Grade 8	Certification includes Grade 8 mathematics
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MERC - Mathematics Education – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 mathematics education	Not certified in mathematics education
1	Certified excluding Grade 8	Certification excludes Grade 8 mathematics education
2	Certified including Grade 8	Certification includes Grade 8 mathematics education
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MAME – Mathematics or Mathematics Education – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 mathematics or mathematics education	Not certified in mathematics or mathematics education
1	Certified excluding Grade 8	Certification excludes Grade 8 mathematics or mathematics education
2	Certified including Grade 8	Certification includes Grade 8 mathematics or mathematics education
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43SCRC – Science or Science Education – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 science or science education	Not certified in science or science education
1	Certified excluding Grade 8	Certification excludes Grade 8 science or science education
2	Certified including Grade 8	Certification includes Grade 8 science or science education
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43EDRC - Education – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 education	Not certified in education
1	Certified excluding Grade 8	Certification excludes Grade 8 education
2	Certified including Grade 8	Certification includes Grade 8 education
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43OTRC - Other area – Recode 1**		
Code	Response	Description or item option
0	Not certified in Grade 8 other area	Not certified in other area
1	Certified excluding Grade 8	Certification excludes Grade 8 other area
2	Certified including Grade 8	Certification includes Grade 8 other area
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MRC2 – Mathematics or Mathematics Education – Recode 2**		
Code	Response	Description or item option
1	Certified in mathematics or mathematics education excluding Grade 8	Certified in mathematics or mathematics education for grades other than Grade 8 or grade unspecified
2	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	Not certified in mathematics or mathematics education, missing, not interpretable, or not applicable

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43SRC2 – Science or Science Education– Recode 2**		
Code	Response	Description or item option
1	Certified in science or science education excluding Grade 8	Certified in science or science education for grades other than Grade 8 or grade unspecified
2	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	Not certified in science or science education, missing, not interpretable, or not applicable

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43ERC2 - Education– Recode 2**		
Code	Response	Description or item option
1	Certified in education excluding Grade 8	Certified in education for grades other than Grade 8 or grade unspecified
2	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	Not certified in education, missing, not interpretable, or not applicable

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43ORC2 - Other area– Recode 2**		
Code	Response	Description or item option
1	Certified in other area excluding Grade 8	Certified in other area for grades other than Grade 8 or grade unspecified
2	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	Not certified in other area, missing, not interpretable, or not applicable

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43CERT – Certified to teach in at least one subject area**		
Code	Response	Description or item option
0	No subject area identified	
1	Certified to teach in at least one subject area	
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43M8 – Mathematics or Mathematics Education – Recode 3**		
Code	Response	Description or item option
0	Not certified in Grade 8 mathematics or mathematics education	Not certified in mathematics or mathematics education, or certified in mathematics or mathematics education excluding Grade 8
1	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43MNO8 – Mathematics or Mathematics Education – Recode 3**		
Code	Response	Description or item option
0	Not certified in mathematics or mathematics education for grades other than Grade 8	Not certified in mathematics or mathematics education, or certified in mathematics or mathematics education Grade 8
1	Certified in mathematics or mathematics education excluding Grade 8	Certified in mathematics or mathematics education, or certified in mathematics or mathematics education for grades other than Grade 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43S8 – Science or Science Education– Recode 3**		
Code	Response	Description or item option
0	Not certified in Grade 8 science or science education	Not certified in science or science education, or certified in science or science education excluding Grade 8
1	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43SNO8 – Science or Science Education– Recode 3**		
Code	Response	Description or item option
0	Not certified in science or science education for grades other than Grade 8	Not certified in science or science education, or certified in science or science education Grade 8
1	Certified in science or science education excluding Grade 8	Certified in science or science education, or certified in science or science education for grades other than Grade 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? *(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)* **TQ43E8 - Education– Recode 3**		
Code	Response	Description or item option
0	Not certified in Grade 8 education	Not certified in education, or certified in education excluding Grade 8
1	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? ***(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)*** **TQ43ENO8 –Education– Recode 3**		
Code	Response	Description or item option
0	Not certified in education for grades other than Grade 8	Not certified in education, or certified in education Grade 8
1	Certified in education excluding Grade 8	Certified in education, or certified in education for grades other than Grade 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? ***(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)*** **TQ43O8 - Other area– Recode 3**		
Code	Response	Description or item option
0	Not certified in Grade 8 other area	Not certified in other area, or certified in other area excluding Grade 8
1	Certified including Grade 8	Certification includes Grades 8
Blank	Missing, not interpretable, or not applicable	

In what subject are you certified to teach? In what grade level are you certified to teach? ***(Australia, Czech Republic, Hong Kong, Netherlands, and US versions)*** **TQ43ONO8 –Other area – Recode 3**		
Code	Response	Description or item option
0	Not certified in other area for grades other than Grade 8	Not certified in other area, or certified in other area Grade 8
1	Certified in other area excluding Grade 8	Certified in other area, or certified in other area for grades other than Grade 8
Blank	Missing, not interpretable, or not applicable	

TQ44A What was your undergraduate major? Mathematics ***(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*** What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***		
Code	Response	Description or item option
0	No undergraduate courses taken in mathematics	
1	Mathematics undergraduate major	Mathematics or a specific field of mathematics
Blank	Missing, not interpretable, or not applicable	

TQ44B What was your undergraduate major? Mathematics Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No undergraduate courses taken in mathematics education	
1	Mathematics education undergraduate major	Education degree specific to mathematics
Blank	Missing, not interpretable, or not applicable	

TQ44C What was your undergraduate major? Science/Science Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No undergraduate courses taken in science or science education	
1	Science or science education undergraduate major	Science or a specific field of science or applied science, e.g., biology, physics, engineering, environmental, or education degree specific to science.
Blank	Missing, not interpretable, or not applicable	

TQ44D What was your undergraduate major? Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No undergraduate courses taken in education	
1	Education undergraduate major	Grade level education, e.g., elementary education, education, pedagogy.
Blank	Missing, not interpretable, or not applicable	

TQ44E What was your undergraduate major? Other
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No undergraduate courses taken in other discipline	
1	Other undergraduate major	Undergraduate major in field other than mathematics, mathematics education, science or science education, or education.
Blank	Missing, not interpretable, or not applicable	

TQ45A What was your undergraduate minor? Mathematics
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
HEG: Check SW TQ
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No undergraduate courses taken in mathematics	
1	Mathematics undergraduate minor	Mathematics or a specific field of mathematics
Blank	Missing, not interpretable, or not applicable	

TQ45B What was your undergraduate minor? Mathematics Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)

Code	Response	Description or item option
0	No undergraduate courses taken in mathematics education	
1	Mathematics education undergraduate minor	Education degree specific to mathematics
Blank	Missing, not interpretable, or not applicable	

TQ45C What was your undergraduate minor? Science/Science Education *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No undergraduate courses taken in science or science education	
1	Science or science education undergraduate minor	Science or a specific field of science or applied science, e.g., biology, physics, engineering, environmental, or education degree specific to science.
Blank	Missing, not interpretable, or not applicable	

TQ45D What was your undergraduate minor? Education *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No undergraduate courses taken in education	
1	Education undergraduate minor	Grade level education, e.g., elementary education, education, pedagogy.
Blank	Missing, not interpretable, or not applicable	

TQ45E What was your undergraduate minor? Other area *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No undergraduate courses taken in other discipline	
1	Other undergraduate minor	Undergraduate minor in field other than mathematics, mathematics education, science or science education, or education.
Blank	Missing, not interpretable, or not applicable	

TQ46A What was your major field of study in graduate school? Mathematics
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in mathematics	
1	Mathematics graduate major	Mathematics or a specific field of mathematics
Blank	Missing, not interpretable, or not applicable	

TQ46B What was your graduate major? Mathematics Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in mathematics education	
1	Mathematics education graduate major	Education degree specific to mathematics
Blank	Missing, not interpretable, or not applicable	

TQ46C What was your graduate major? Science/Science Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in science or science education	
1	Science or science education graduate major	Science or a specific field of science or applied science, e.g., biology, physics, engineering, environmental, or education degree specific to science.
Blank	Missing, not interpretable, or not applicable	

TQ46D What was your graduate major? Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in education	
1	Education graduate major	Grade level education, e.g., elementary education, education, pedagogy.
Blank	Missing, not interpretable, or not applicable	

TQ46E What was your graduate major? Other area
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in other discipline	
1	Other graduate major	Graduate major in field other than mathematics, mathematics education, science or science education, or education.
Blank	Missing, not interpretable, or not applicable	

TQ47A What was your graduate minor? Mathematics
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
HEG: Check SW TQ
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	No graduate courses taken in mathematics	
1	Mathematics graduate minor	Mathematics or a specific field of mathematics
Blank	Missing, not interpretable, or not applicable	

TQ47B What was your graduate minor? Mathematics Education *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No graduate courses taken in mathematics education	
1	Mathematics education graduate minor	Education degree specific to mathematics
Blank	Missing, not interpretable, or not applicable	

TQ47C What was your graduate minor? Science/Science Education *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No graduate courses taken in science or science education	
1	Science or science education graduate minor	Science or a specific field of science or applied science, e.g., biology, physics, engineering, environmental, or education degree specific to science.
Blank	Missing, not interpretable, or not applicable	

TQ47D What was your graduate minor? Education *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No graduate courses taken in education	
1	Education graduate minor	Grade level education, e.g., elementary education, education, pedagogy.
Blank	Missing, not interpretable, or not applicable	

TQ47E What was your graduate minor? Other area *(Australia, Czech Republic, Hong Kong, Netherlands, US versions)*		
Code	Response	Description or item option
0	No graduate courses taken in other discipline	
1	Other graduate minor	Graduate minor in field other than mathematics, mathematics education, science or science education, or education.
Blank	Missing, not interpretable, or not applicable	

MAJORMTH Main area of study - Mathematics
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	Area other than mathematics	Area other than mathematics or no area identified
1	Mathematics	Main area of study in mathematics or a specific field of mathematics

MAJORMED Main area of study – Mathematics Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	Area other than mathematics education	Area other than mathematics education or no area identified
1	Mathematics education	Main area of study is mathematics education degree specific to mathematics

MAJORSCI Main area of study – Science or Science Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	Area other than science or science education	Area other than science or science education or no area identified
1	Science or science education	Main area of study is science or science education

MAJOREDU Main area of study - Education
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	Area other than education	Area other than education or no area identified
1	Education	Main area of study in education or a specific field of mathematics, including courses taken or certification

MAJOROTH Main area of study – Other area
(Australia, Czech Republic, Hong Kong, Netherlands, US versions)
What was your course of study in your main discipline - Less than three years of study? ***(Swiss version)***

Code	Response	Description or item option
0	Mathematics, or mathematics education, science or science education, education, or no other area described by teacher	
1	Other area	Main area of study in mathematics or a specific field of mathematics, including courses taken or certification

TQ48 Counting this school year, how many years have you been teaching?
(Code number of years)

Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ49 Counting this school year, how many years have you been teaching mathematics?
(Code number of years)

Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ50 During the last two years, how many college or university courses have you taken in mathematics or mathematics education? ***(Czech Republic, Hong Kong SAR, Netherlands, U.S. versions)***
During the last two years, how many university courses have you taken in mathematics or mathematics education? ***(Australia version)***
During the last two years, how many Education Center courses have you taken in mathematics or mathematics education? ***(Japan version)***

Code	Response	Description or item option
0	None	A
1	One course	B
2	Two courses	C
3	Three courses	D
4	Four or more courses	E
Blank	Missing, not interpretable, or not applicable	

TQ50RC During the last two years, how many college or university courses have you taken in mathematics or mathematics education? ***(Czech Republic, Hong Kong SAR, Netherlands, U.S. versions)***
During the last two years, how many university courses have you taken in mathematics or mathematics education? ***(Australia version)***
During the last two years, how many Education Center courses have you taken in mathematics or mathematics education? ***(Japan version)***

Code	Response	Description or item option
0	None	A
1	One or more courses	B,C,D,E
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51A Use of technology, such as computers

Code	Response	Description or item option
0	No	
1	Yes	A
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51B Mathematics instructional techniques

Code	Response	Description or item option
0	No	
1	Yes	B
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51C Cooperative group instruction

Code	Response	Description or item option
0	No	
1	Yes	C
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following? **TQ51D** Interdisciplinary instruction		
Code	Response	Description or item option
0	No	
1	Yes	D
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following? **TQ51E** Teaching higher-order thinking skills		
Code	Response	Description or item option
0	No	
1	Yes	E
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following? **TQ51F** Teaching students from different cultural backgrounds		
Code	Response	Description or item option
0	No	
1	Yes	F
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following? **TQ51G** Teaching limited English proficient students		
Code	Response	Description or item option
0	No	
1	Yes	G
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51H Teaching students with special needs

Code	Response	Description or item option
0	No	
1	Yes	H
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51I
Standards-based teaching ***(Hong Kong SAR, Japan, Netherlands, U.S. versions)***
Outcomes based teaching ***(Australia version)***
(Code 'Blank' for Czech Republic and Switzerland; item not applicable)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	*Code 'Blank' for Czech Republic and Switzerland; item not applicable.*

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51J Classroom-management and organization

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

During the last two years, have you participated in professional development activities or taken courses in any of the following?
TQ51K Other professional issues

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ51L Number of professional development activities ***(Code number of activities)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52A1 How many hours a week do you teach mathematics? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52B1 How many hours a week do you teach classes other than mathematics? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52C How many hours a week do you meet with other teachers to work on curriculum and planning lessons? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52D How many hours a week do you do work at school related to teaching mathematics (e.g. lesson planning, grading papers, etc.)? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52E How many hours a week do you do work at home related to teaching mathematics (e.g. lesson planning, grading papers, etc.)? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52F How many hours a week do you spend at home or at school doing other school related activities? ***(Code number of hours per week)***		
Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ52A1MD How many hours a week do you teach mathematics? ***(Code number of hours per week; substitute '0' for missing data)***		
Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52B1MD How many hours a week do you teach classes other than mathematics? ***(Code number of hours per week; substitute '0' for missing data)***		
Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52CMD How many hours a week do you meet with other teachers to work on curriculum and planning lessons? ***(Code number of hours per week; substitute '0' for missing data)***		
Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52DMD How many hours a week do you do work at school related to teaching mathematics (e.g. lesson planning, grading papers, etc.)? ***(Code number of hours per week; substitute '0' for missing data)***		
Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52EMD How many hours a week do you do work at home related to teaching mathematics (e.g. lesson planning, grading papers, etc.)?
(Code number of hours per week; substitute '0' for missing data)

Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52FMD How many hours a week do you spend at home or at school doing other school related activities?
(Code number of hours per week; substitute '0' for missing data)

Code	Response	Description or item option
0	No hours, or substitute '0' hours for missing data	
Blank	Not interpretable, or not applicable	

TQ52TOT Total hours a week teacher spends on activities (Sum of TQ52A1MD through TQ52FMD)
(Code total number of hours per week)

Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ53 List the grade levels taught in this school.
(Codes for Australia, Czech Republic, Hong Kong SAR, Switzerland, and U.S.)

Code	Response	Description or item option
1	4-9 or intervals included	Entire interval must be within this interval; includes 4-8, 5-8, 6-8, 6 to 9, 7-8, 7-9, 8-9 (7-10 is not included in this code).
2	6 -13 or intervals included	For Australia, code includes 5-12, 8-12. For the Czech Republic, code includes 6-12, 7-10, 7-12, 7-13. In Hong Kong SAR, Secondary 1-Secondary 7 and Form 1-Form 7 are equivalent to Grades 7-13, and Secondary 1-Secondary 5 or Form 1-Form 5 are equivalent to Grades 7 to 11.
3	K-9 or intervals included	Includes K-7, K-8, K-9, 1-8, and 1-9.
4	K-13 or intervals included	In the Czech Republic, code includes K-10, K-12, and K-13.
Blank	Missing, not interpretable, or not applicable	

TQ53 List the grade levels taught in this school.
(Codes for Netherlands)

Code	Response	Description or item option
1	VWO	D
2	HAVO	C
3	MAVO	B
4	VBO	A
5	VWO/HAVO	C,D
6	MAVO/VBO	A,B
7	MAVO/HAVO	B,C
8	VBO/MAVO/HAVO	A,B,C
9	MAVO/HAVO/VWO	B,C,D
10	VBO/MAVO/HAVO/VWO	A,B,C,D
Blank	Missing, not interpretable, or not applicable	

TQ54A1 What type of school is this?
a. Academic accelerated school (***AU, HK SAR, U.S. versions)***
a. State school ***(CZ version)***
a. Openbaar ***(NL version)***
a. Oberschule ***(SW-German version)***
a. Corso attitudinale ***(SW-Italian version)***
a. Public school - Cycle d'orientation ***(SW-French version)***

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A2 What type of school is this?
b. Vocational school ***(AU, HK SAR, U.S. versions)***
b. State school with specialization **(CZ version)**
b. Roman Catholic ***(NL version)***
b. Realschule ***(SW-German version)***
b.Corso di base ***(SW-Italian version)***
b.Public school - Ecole secondaire ***(SW-French version)***

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A3 What type of school is this?
c. Magnet school ***(HK SAR and U.S. versions)***
c. School with a special program ***(AU version)***
c. Private school ***(CZ version)***
c. Protestant or Christian ***(NL version)***
c. Sekundarschule ***(SW-German version)***
c. Public school ***(SW-French version)***

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A4 What type of school is this?
d. Charter school ***(U.S. version)***
d. Private school with specialization ***(CZ version)***
d. Experimental secondary school ***(HK SAR version)***
d. General school ***(NL version)***
d, Kantonsschule oder Untergymnasium (Progymnasium) ***(SW-German version)***

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A5 What type of school is this?
e. Partnership with a university ***(AU, HK SAR, U.S. versions)***
e. Religious or Christian school ***(CZ version)***
e. Other ***(SW-German version)***

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A6 What type of school is this?
f.. Laboratory school
(Codes for U.S. version)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A7 What type of school is this?
g. School within a school
(Codes for AU and U.S. versions)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A8 What type of school is this?
h. Religious or sectarian school
(Codes for AU, HK SAR, U.S. versions)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A9 What type of school is this?
i. Private (non-religious) school
(Codes for AU, HK SAR, U.S. versions)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A10 What type of school is this?
j. Single sex school
(Codes for AU, HK SAR, U.S. versions)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A11 What type of school is this?
k. Other
(Codes for AU, HK SAR, U.S. versions)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54A12 What type of school is this?
l. Public school
(Codes for AU, HK SAR, U.S. version only)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B1 What type of school is this? Philosophy categories ***(Netherlands version)*** ***(Code Netherlands version)***		
Code	Response	Description or item option
1	Montessori-onderwijs	A
2	Vrije School	B
3	Dalton- onderwijs	C
4	Freinet - onderwijs	D
5	Other	E
Blank	Missing, not interpretable, or not applicable	Code 'Blank' for all countries except Netherlands!

TQ54B1 What type of school is this? a. Oberschule ***(Codes for Switzerland only)***		
Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B2 What type of school is this? b. Realschule ***(Codes for Switzerland only)***		
Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B3 What type of school is this? c. Sekundarschule ***(Codes for Switzerland only)***		
Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B4 What type of school is this?
d. Bezirksschule
(Codes for Switzerland only)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B5 What type of school is this?
e. Kantonsschule oder Untergymnasium (Progymnasium)
(Codes for Switzerland only)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ54B6 What type of school is this?
f. Other
(Codes for Switzerland only)

Code	Response	Description or item option
0	No	
1	Yes	
Blank	Missing, not interpretable, or not applicable	

TQ56 Approximately how many mathematics teachers are in this school this year?
(Code number of teachers)

Code	Response	Description or item option
Blank	Missing, not interpretable, or not applicable	

TQ57A Attitudes about teaching.
a. I have adequate materials and facilities to support my teaching of mathematics

Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57B Attitudes about teaching. b. I actively pursue opportunities to learn how to improve my mathematics teaching		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57C Attitudes about teaching. c. I especially prefer teaching low-ability students.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57D Attitudes about teaching. d. My work as a mathematics teacher is appreciated by my teacher colleagues.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57E Attitudes about teaching. e. Girls in this school are not encouraged to develop a mathematics interest.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57F Attitudes about teaching. f. If I had to choose I would become a teacher again.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57G Attitudes about teaching. g. I have a strong mathematics background in the subject areas I teach.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57H Attitudes about teaching. h. I am often impressed with the quality of thinking my students can do.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57I Attitudes about teaching. I. I prefer to teach a class that has students of all different ability levels.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57J Attitudes about teaching. j. I am enthusiastic about teaching mathematics.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57K Attitudes about teaching. k. I do not like to watch TV programs about new developments in mathematics.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57L Attitudes about teaching. l. I enjoy students' questions about mathematics even when I do not know the answer.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57M Attitudes about teaching. m. My work as a mathematics teacher is appreciated by my students' parents.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57N Attitudes about teaching. n. I read journals and books about mathematics teaching.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57O Attitudes about teaching. o. I enjoy teaching students of this age level.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57P Attitudes about teaching. p. I do not pursue mathematics interests or issues in my personal life.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57Q Attitudes about teaching. q. I especially prefer teaching high-ability students.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57R Attitudes about teaching. r. Teaching mathematics is rewarding work.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57S Attitudes about teaching. s. The number of students in my class is not appropriate to support good mathematics teaching and learning.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57T Attitudes about teaching. t. I do not have adequate opportunities during the school day to collaborate with colleagues about mathematics.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57U Attitudes about teaching. u. I am proud of the quality of my teaching.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57V Attitudes about teaching. v. I enjoy working with colleagues about mathematics curriculum and teaching, even if it means after-school meetings.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57W Attitudes about teaching. w. Teaching mathematics is hard work.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57X Attitudes about teaching. x. I teach in an environment where I do not feel physically safe.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57Y Attitudes about teaching. y. I enjoy attending mathematics teacher conferences to learn about new ideas in mathematics teaching.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57Z Attitudes about teaching. z. My work as a mathematics teacher is appreciated by my students.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57AA Attitudes about teaching. aa. My work as a mathematics teacher is not appreciated by administrators.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57BB Attitudes about teaching. bb. I work hard to get girls involved in mathematics.		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	

TQ57CC Attitudes about teaching. bb. I work hard to get boys involved in mathematics. (Item included in Australia version only)		
Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, SW, and U.S.***

TQ57DD Attitudes about teaching.
dd. I think that I am an effective teacher, I am confidant that my students learn nearly all of what I teach.
(Item included in Australia version only)

Code	Response	Description or item option
1	Strongly disagree	D
2	Somewhat disagree	C
3	Somewhat agree	B
4	Strongly agree	A
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, SW, and U.S.***

TQ58
How knowledgeable are you about the National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards for School Mathematics? ***(HK SAR and U.S. versions)***
How knowledgeable are you about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
(Item included in Australia HK SAR, and U.S. versions only)

Code	Response	Description or item option
1	I have little or no knowledge	D
2	Somewhat knowledgeable	C
3	Knowledgeable	B
4	Very knowledgeable	A
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, NL, and SW***

TQ59A
What type of professional development activities have you participated in that have provided you with strategies for implementing the 1989 NCTM Curriculum and Evaluation Standards for School Mathematics? ***(U.S. version)***
In what type of professional development activities have you participated which have provided you with strategies for implementing about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
a. Local workshop
(Item included in U.S. and Australia versions only)

Code	Response	Description or item option
0	No	
1	Yes	A
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, and SW***

TQ59B
What type of professional development activities have you participated in that have provided you with strategies for implementing the 1989 NCTM Curriculum and Evaluation Standards for School Mathematics? ***(U.S. version)***
In what type of professional development activities have you participated which have provided you with strategies for implementing about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
b. Regional NCTM meeting
(Item included in U.S. and Australia versions only)

Code	Response	Description or item option
0	No	
1	Yes	B
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, and SW***

TQ59C
What type of professional development activities have you participated in that have provided you with strategies for implementing the 1989 NCTM Curriculum and Evaluation Standards for School Mathematics? ***(U.S. version)***
In what type of professional development activities have you participated which have provided you with strategies for implementing about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
c. National NCTM meeting
(Item included in U.S. and Australia versions only)

Code	Response	Description or item option
0	No	
1	Yes	C
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, and SW***

TQ59D
What type of professional development activities have you participated in that have provided you with strategies for implementing the 1989 NCTM Curriculum and Evaluation Standards for School Mathematics? ***(U.S. version)***
In what type of professional development activities have you participated which have provided you with strategies for implementing about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
d. Other
(Item included in U.S. and Australia versions only)

Code	Response	Description or item option
0	No	
1	Yes	D
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, and SW***

TQ59E
In what type of professional development activities have you participated which have provided you with strategies for implementing about your state's version of the Mathematics National Profiles for Australian Schools? ***(Australia version)***
d. None
(Item included in Australia version only)

Code	Response	Description or item option
0	Not checked	
1	Checked – no participation in activities	E
Blank	Missing, not interpretable, or not applicable	***Code 'Blank' for CZ, HK SAR, NL, and SW***

CTYNOSW Country identification excluding Switzerland

Code	Country name	Description or item option
10	Australia	
20	Czech Republic	
30	Hong Kong SAR	
40	Japan	
50	Netherlands	
70	United States	

CTYNOJP Country identification excluding Japan

Code	Country name	Description or item option
10	Australia	
20	Czech Republic	
30	Hong Kong SAR	
50	Netherlands	
60	Switzerland	
70	United States	

CTYNONL Country identification excluding NL

Code	Country name	Description or item option
10	Australia	
20	Czech Republic	
30	Hong Kong SAR	
40	Japan	
60	Switzerland	
70	United States	

CTAUSWUS Country identification		
Code	Country name	Description or item option
10	Australia	
60	Switzerland	
70	United States	

CTYAUUS Country identification		
Code	Country name	Description or item option
10	Australia	
70	United States	

CTNOAUJP Country identification excluding Switzerland		
Code	Country name	Description or item option
20	Czech Republic	
30	Hong Kong SAR	
50	Netherlands	
60	Switzerland	
70	United States	

CTNOJPNL Country identification		
Code	Country name	Description or item option
10	Australia	
20	Czech Republic	
30	Hong Kong SAR	
60	Switzerland	
70	United States	

CTNOCZJP Country identification		
Code	Country name	Description or item option
10	Australia	
30	Hong Kong SAR	
50	Netherlands	
60	Switzerland	
70	United States	

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