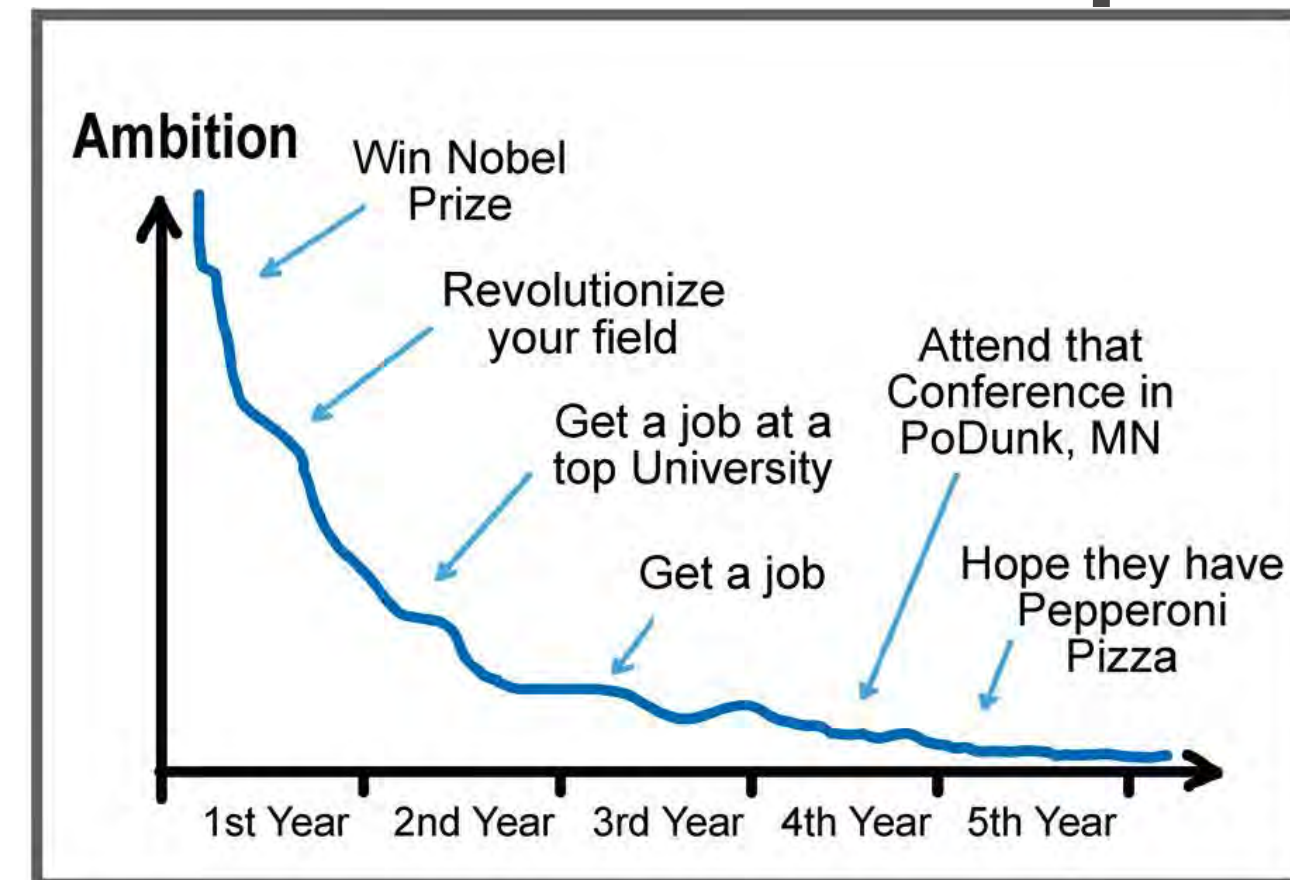


**Exploring bansho:
Insights, strategies and possibilities in boardwork**

**Shirley Tan
Windesheim University of Applied Sciences
Nagoya University**

12 years ago

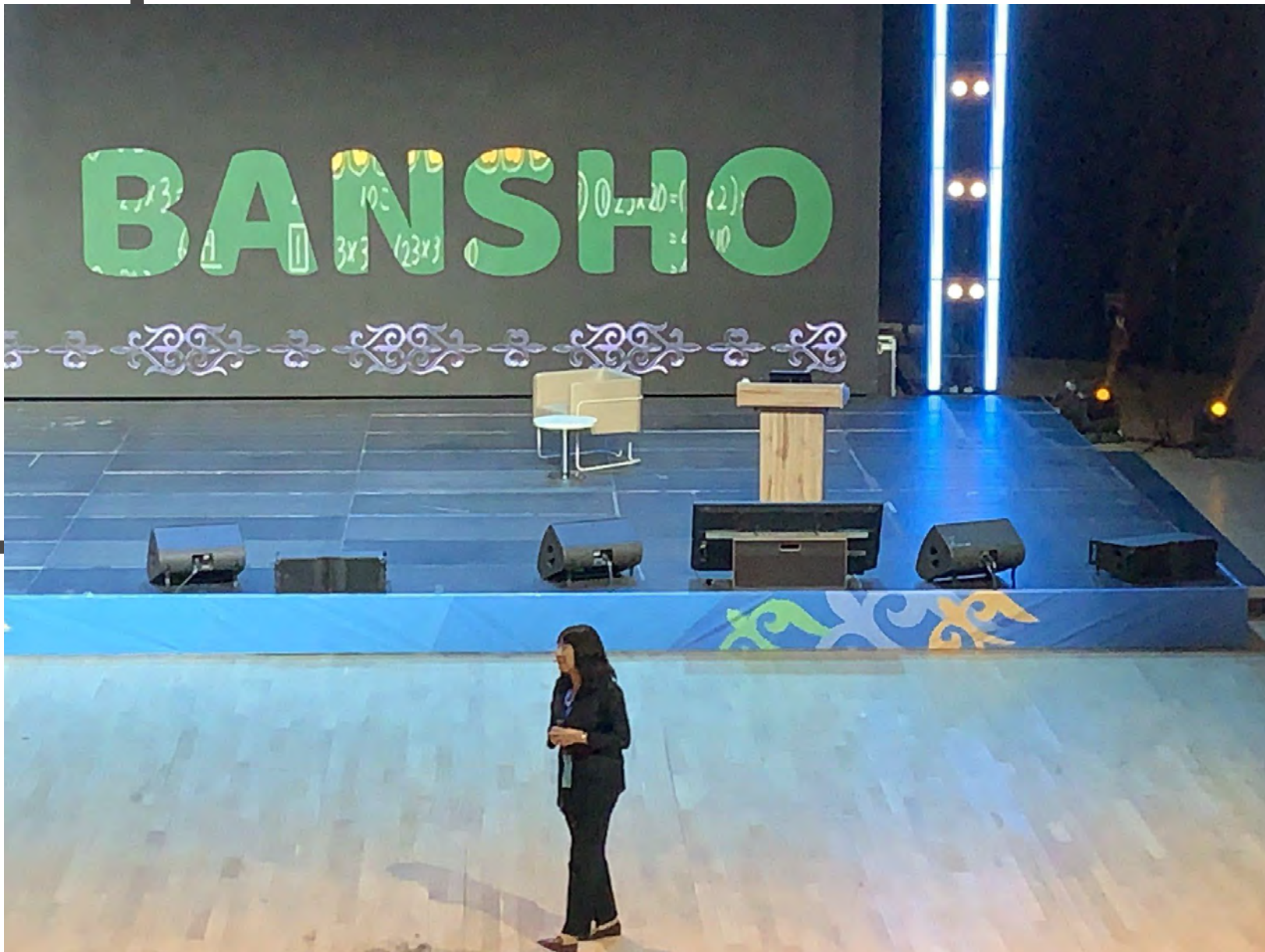
- ready to conquer the world



Source: www.phdcomics.com

Now...

- a newfound appreciation for lesson study and bansho (boardwork)



Exploring bansho: Insights, strategies and possibilities in boardwork



- Classrooms in Japan
- Lesson study in Japan
- Bansho (board writing and organisation)



- Bansho strategies



- Bansho beyond Japan
- Future possibilities



Firsthand Experiences in Japan



Miyazaki Elementary School, Okazaki City

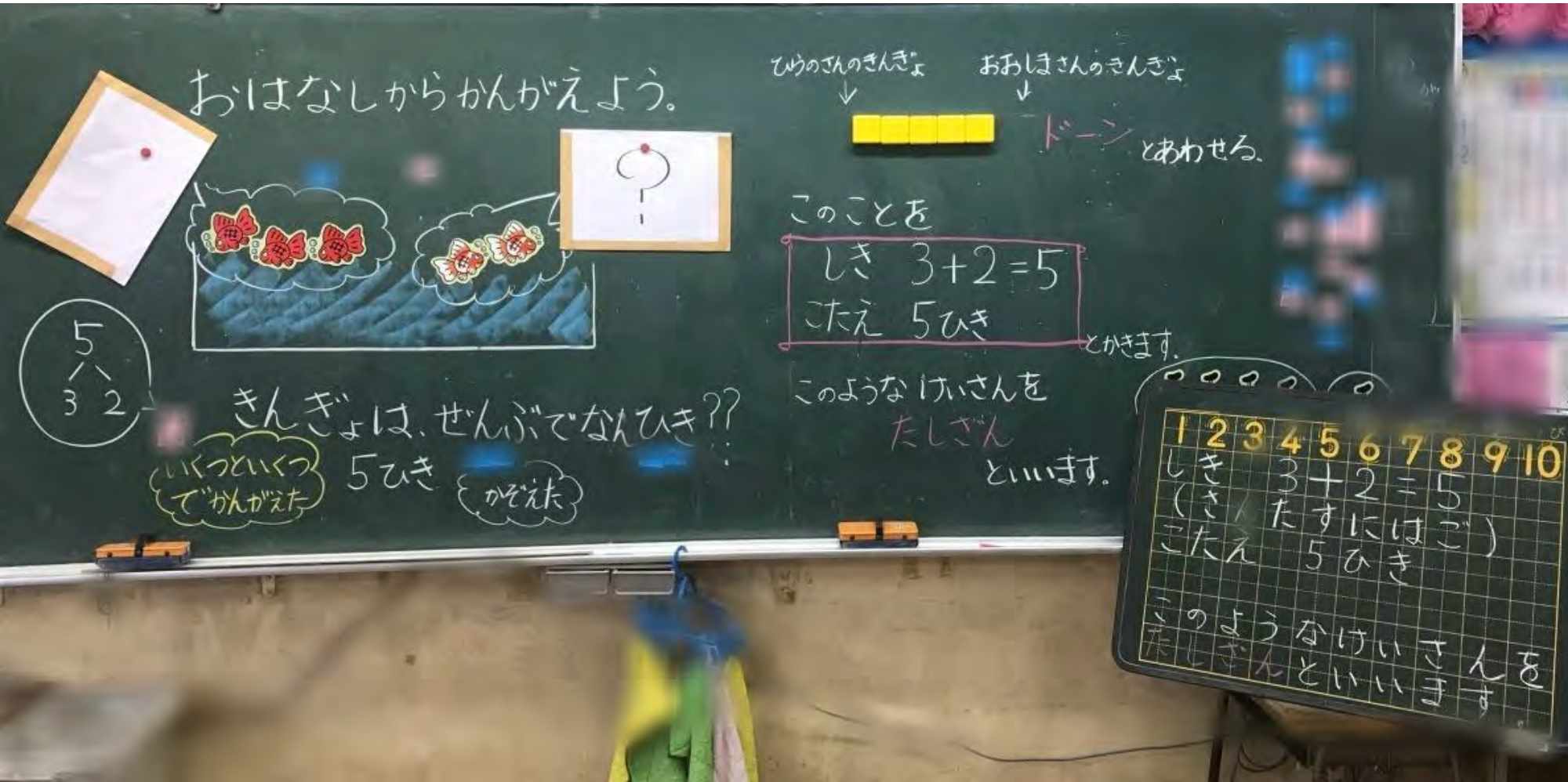
Source: Miyazaki Elementary School (2024)



3年

3年

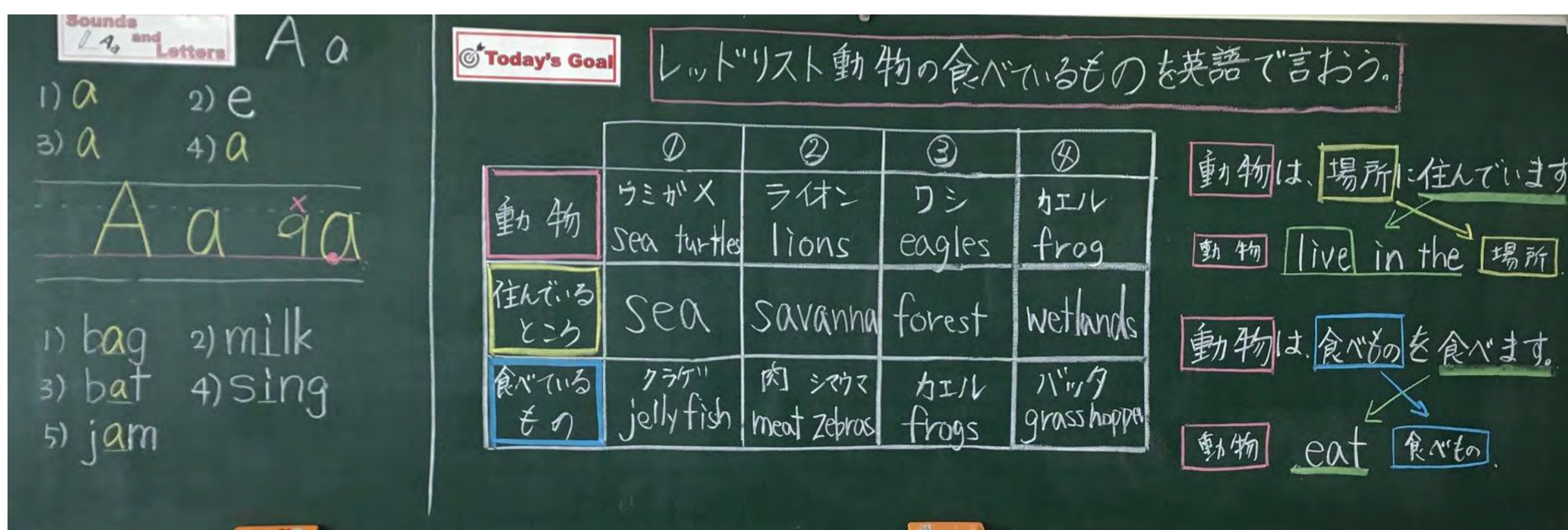
4年



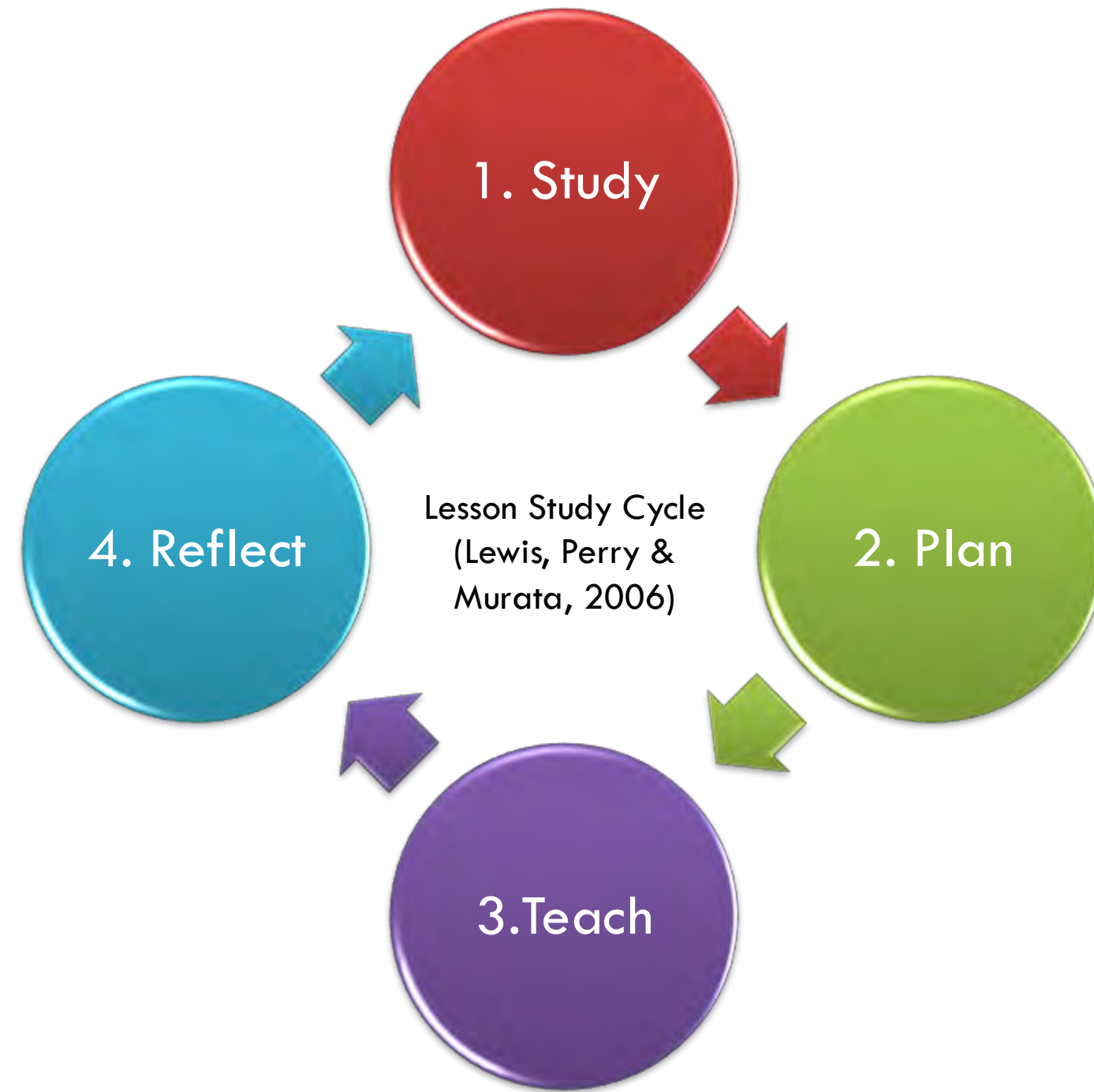
source: foresta.education

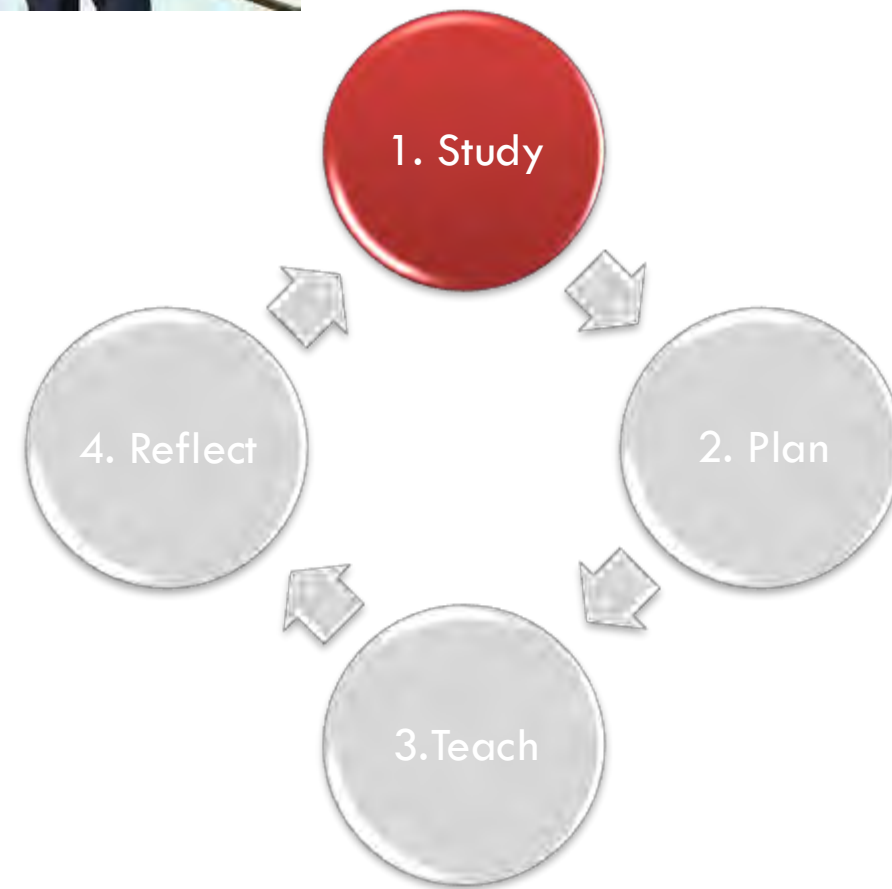


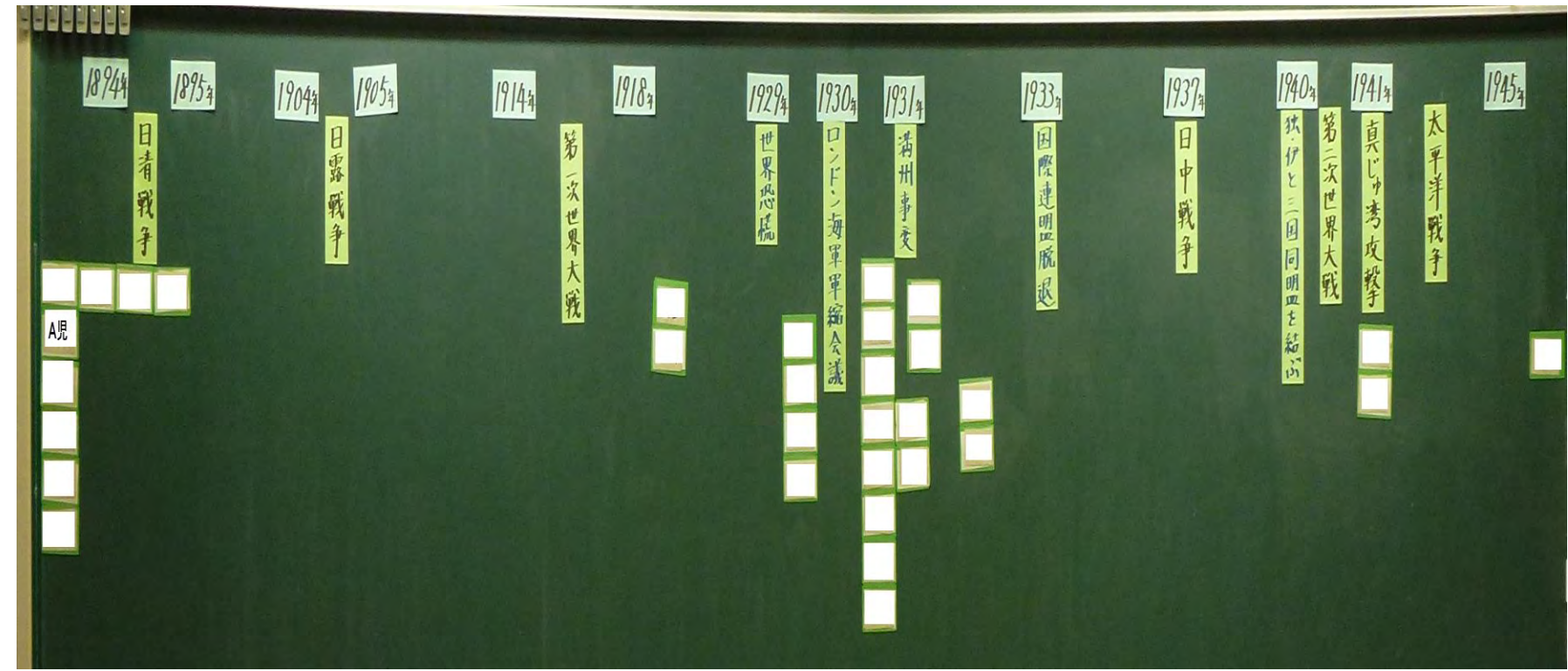
source: Shikahama school



source: Hattori (2021)







Learning task
10 板書計画

Problem
10/25 かけざん
しきをかながえよう
もんだい

Learning goal
めあて 2つのにているもんだいのしきとこたえをかながえよう。

What you know
分かっていること
ドーナツは2こずつ
5人にくばる

Anticipate student thinking

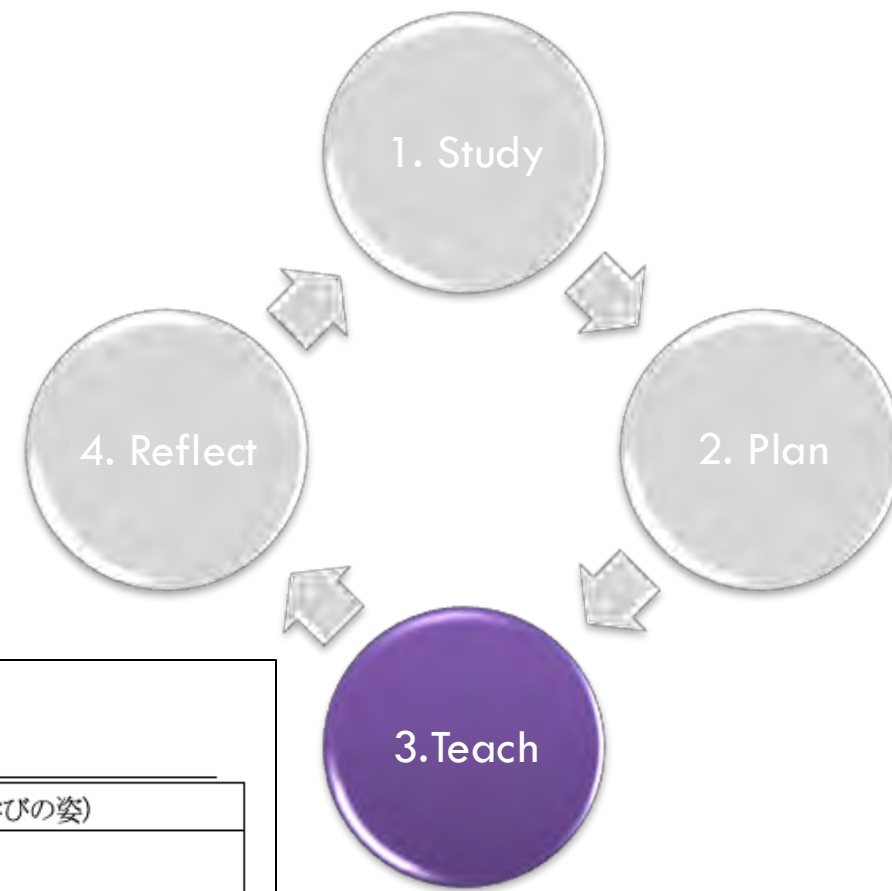
Summary
まとめ
「1つ分」を見つけて、「いくつ分」
をかけると、正しいしきとこたえにな
る。

Practice questions
れんしゅうもんだい

Summary
① ドーナツを2こずつ
5人にくばります。
ドーナツは、ぜんぶで
何こいらいますか。

Summary
② ドーナツを2人に
5こずつくばります。
ドーナツは、ぜんぶで
何こいらいますか。

Anticipate student thinking



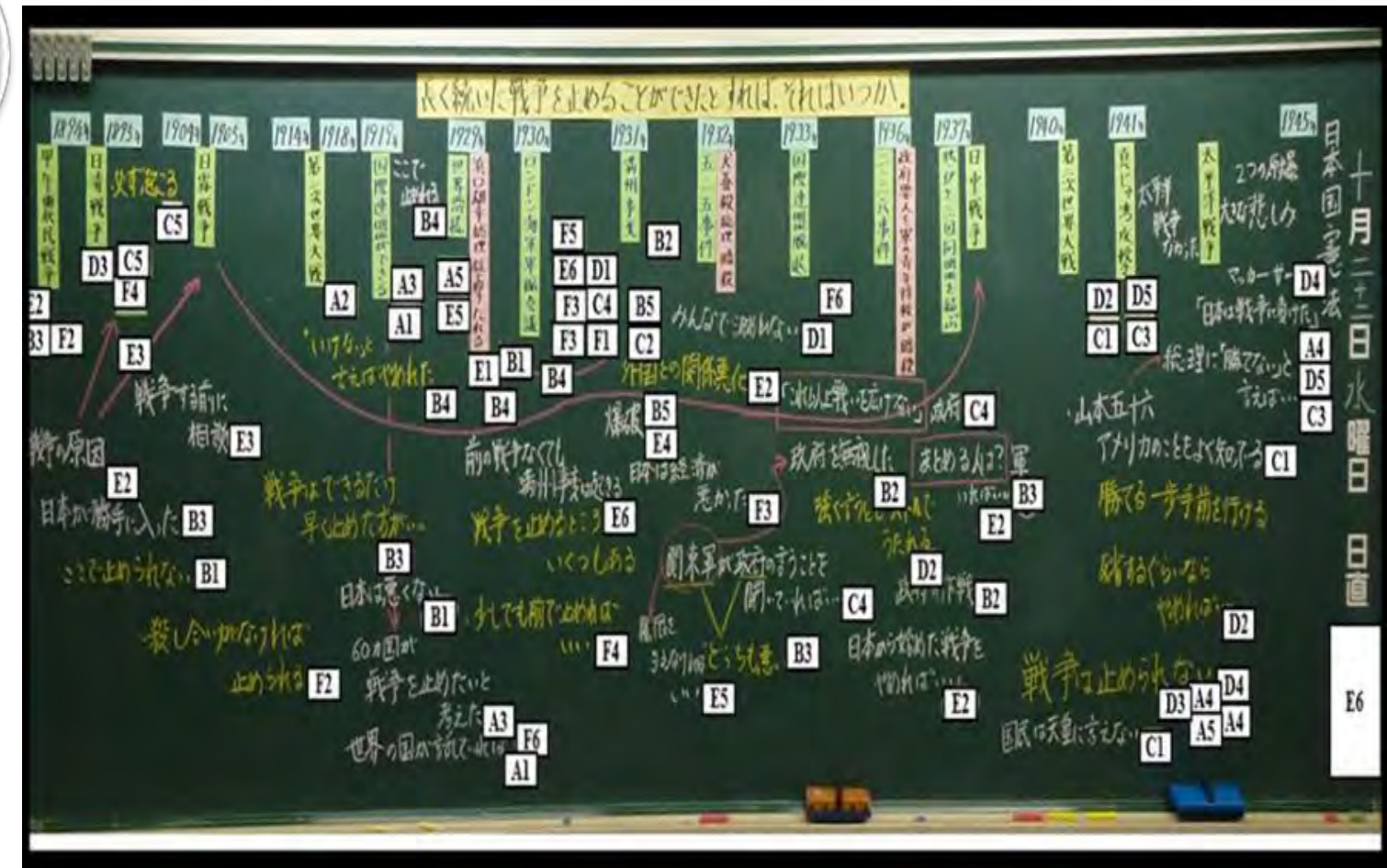
Lesson observation sheet

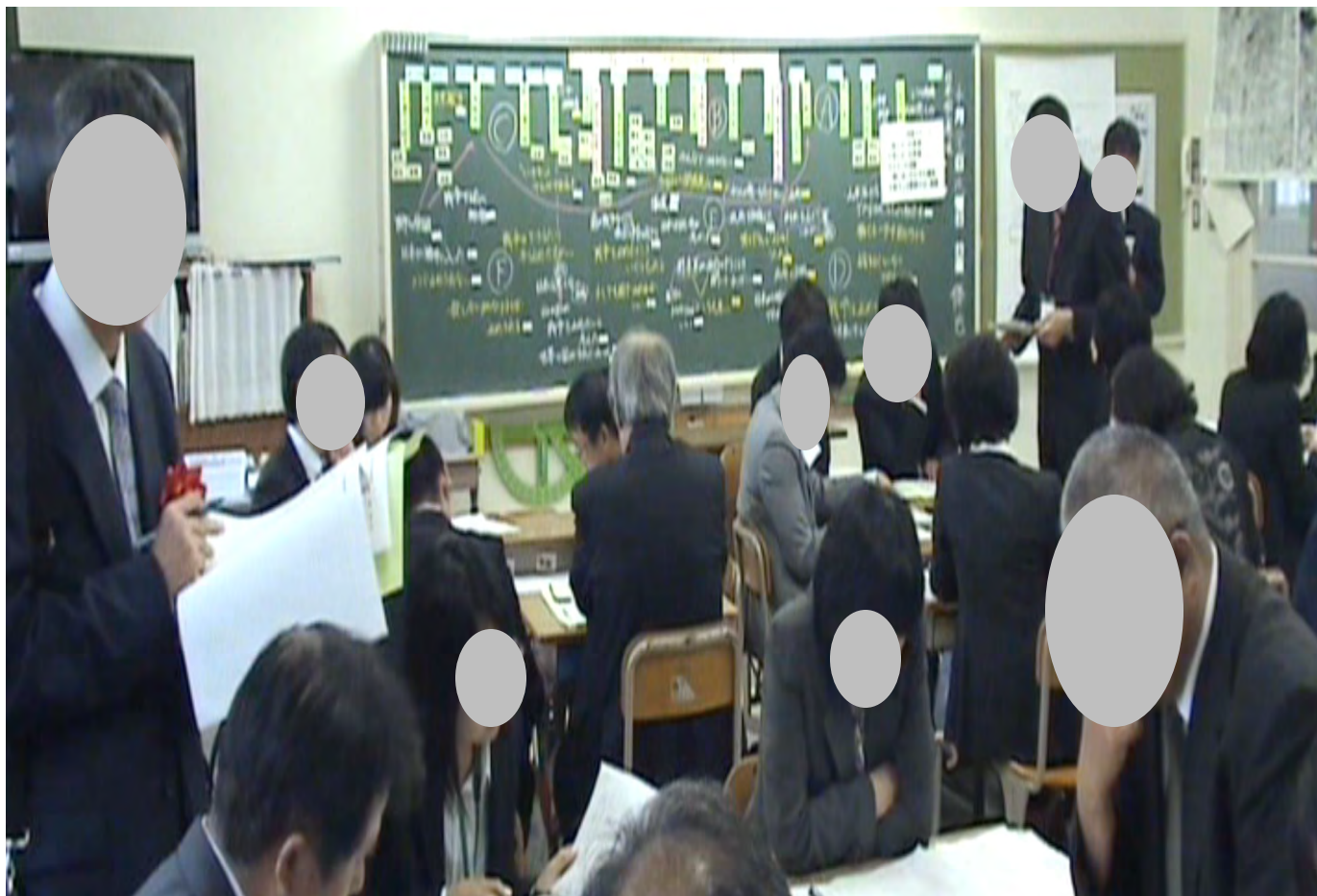
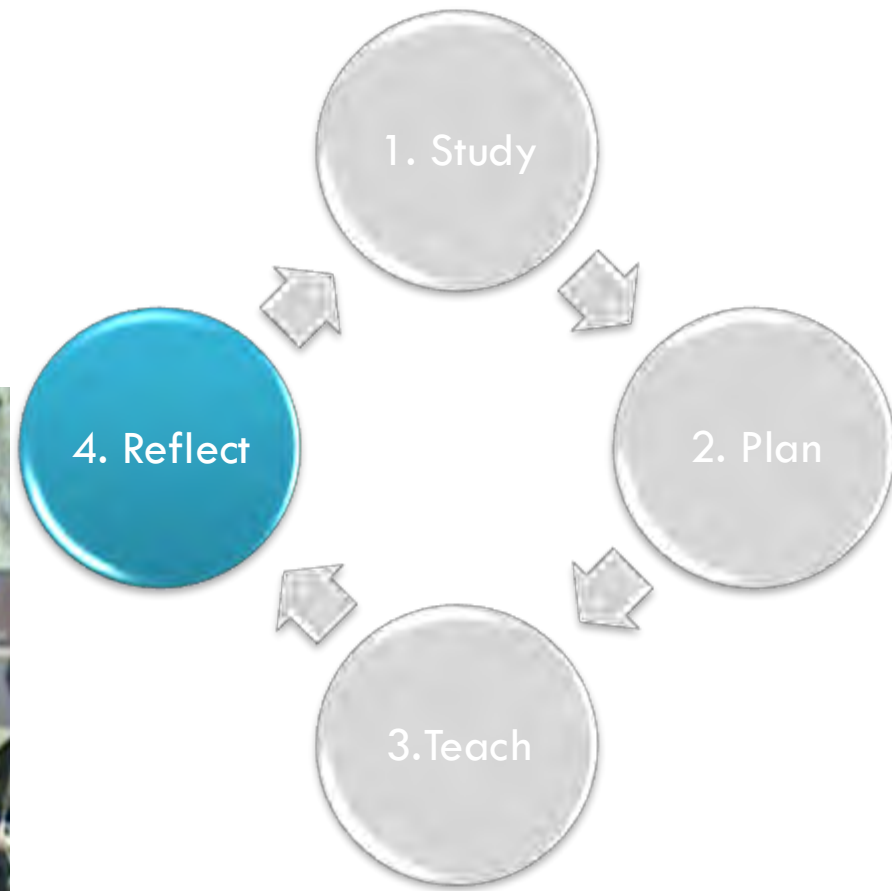
授業記録用紙

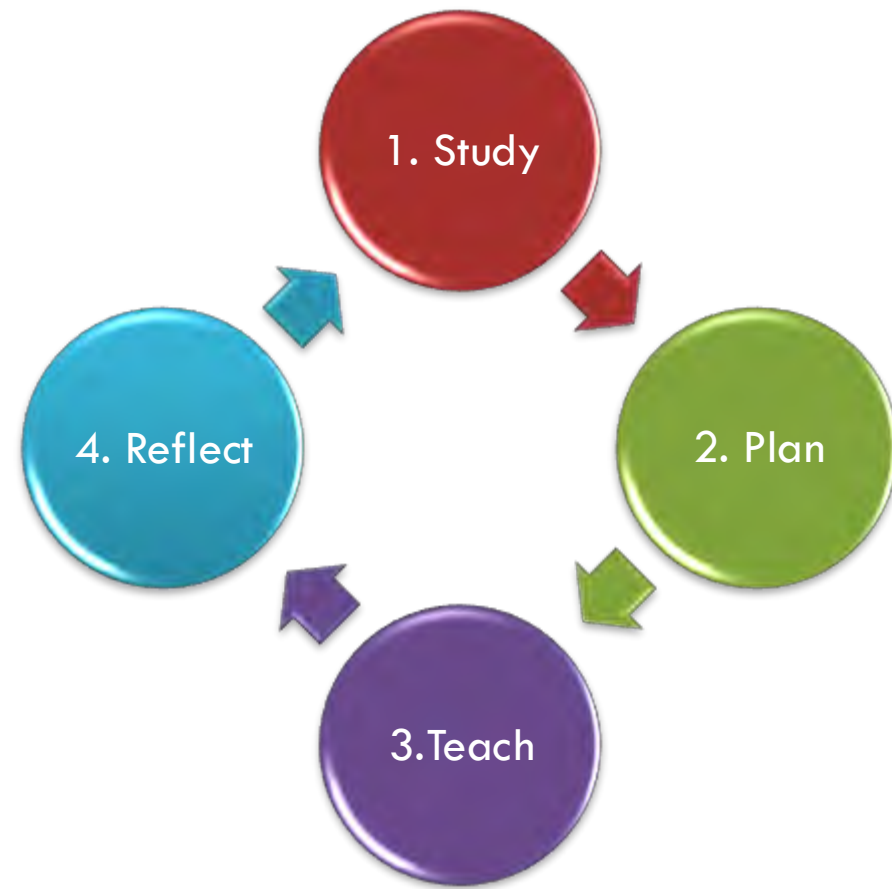
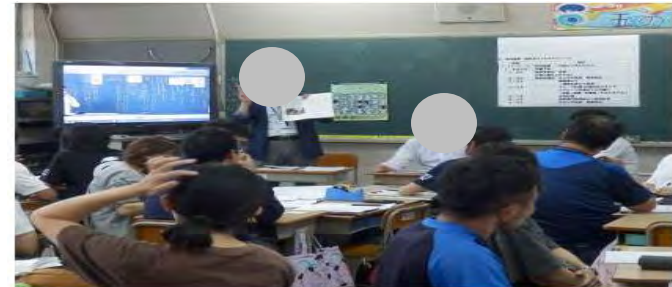
期日：令和 年 月 日 曜 限 教科： 授業者：

時間	教師の働きかけ (発問・提示・板書・演示)	生徒の動き (主な活動・学びの姿)
5	Teacher's approaches (question, presentation, bansho, demonstration)	
10		

Time







Learning task

10 板書計画

Problem 10/25 かけ算しきをかんがえよう

Learning goal めあて 2つのにているもんだいのしきとこたえをかんがえよう。

Summary まとめ 「1つ分」を見つけて、「いくつ分」をかけると、正しいしきとこたえになる。

What you know ① ドーナツを2こずつ5人にくばります。ドーナツは、ぜんぶで何こありますか。
② ドーナツを2人に5こずつくばります。ドーナツは、ぜんぶで何こありますか。

Practice questions 「1つ分」を見つけて、「いくつ分」をかけると、正しいしきとこたえになる。 れんしゅうもんだい

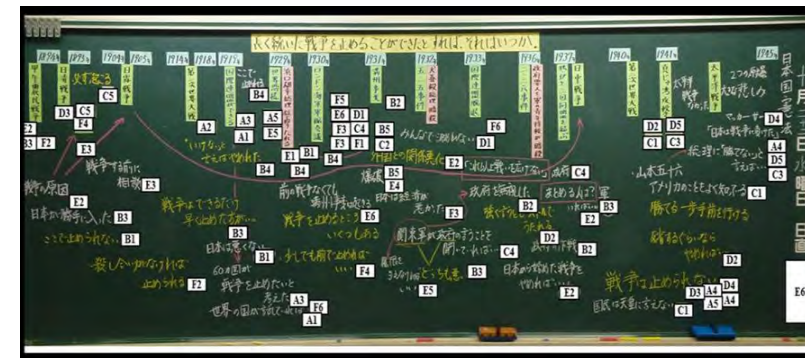
Anticipate student thinking 分かっていること ドーナツは2こずつ5人にくばる ドーナツは5こずつ2人にくばる

Lesson observation sheet

授業記録用紙

期日：令和 年 月 日 曜 限 教科： 授業者：

Time	教師の働きかけ (発問・提示・板書・演示)	生徒の動き (主な活動・学びの姿)
5	Teacher's approaches (question, presentation, ban sho, demonstration)	
10		



Hello

Bonjour

Ciao

Bansho
板書

こんにちは

Hallo

你好

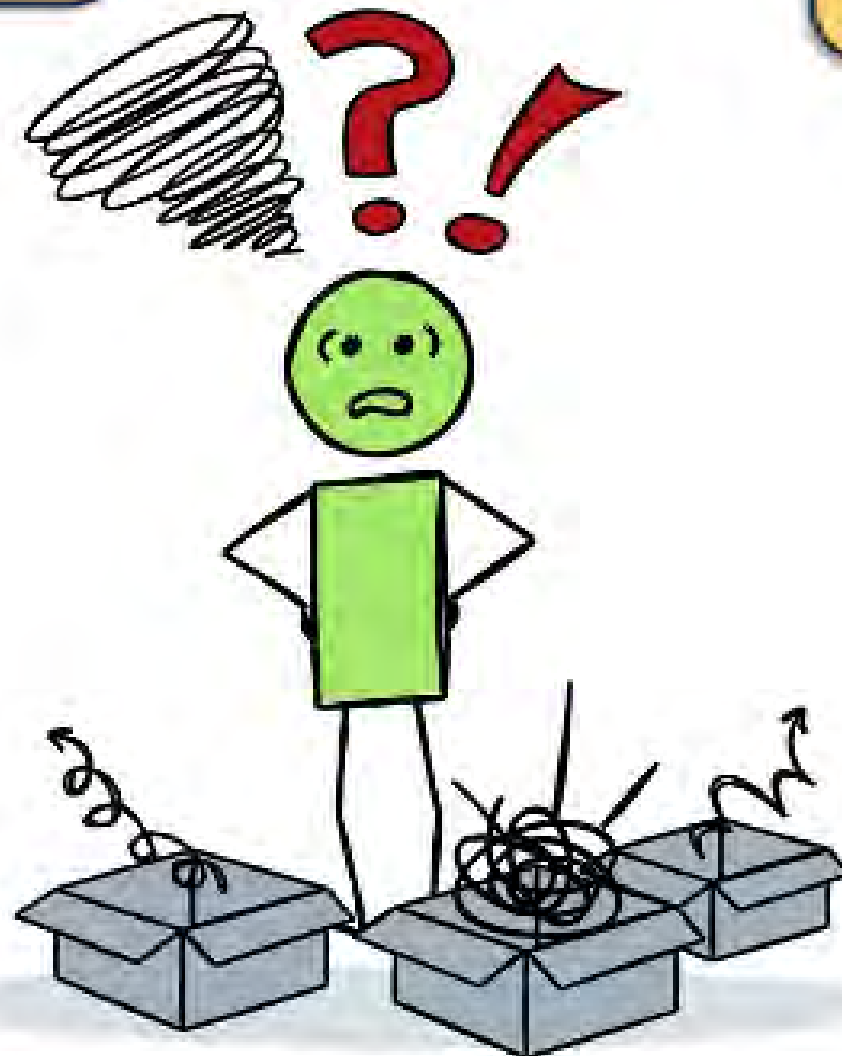


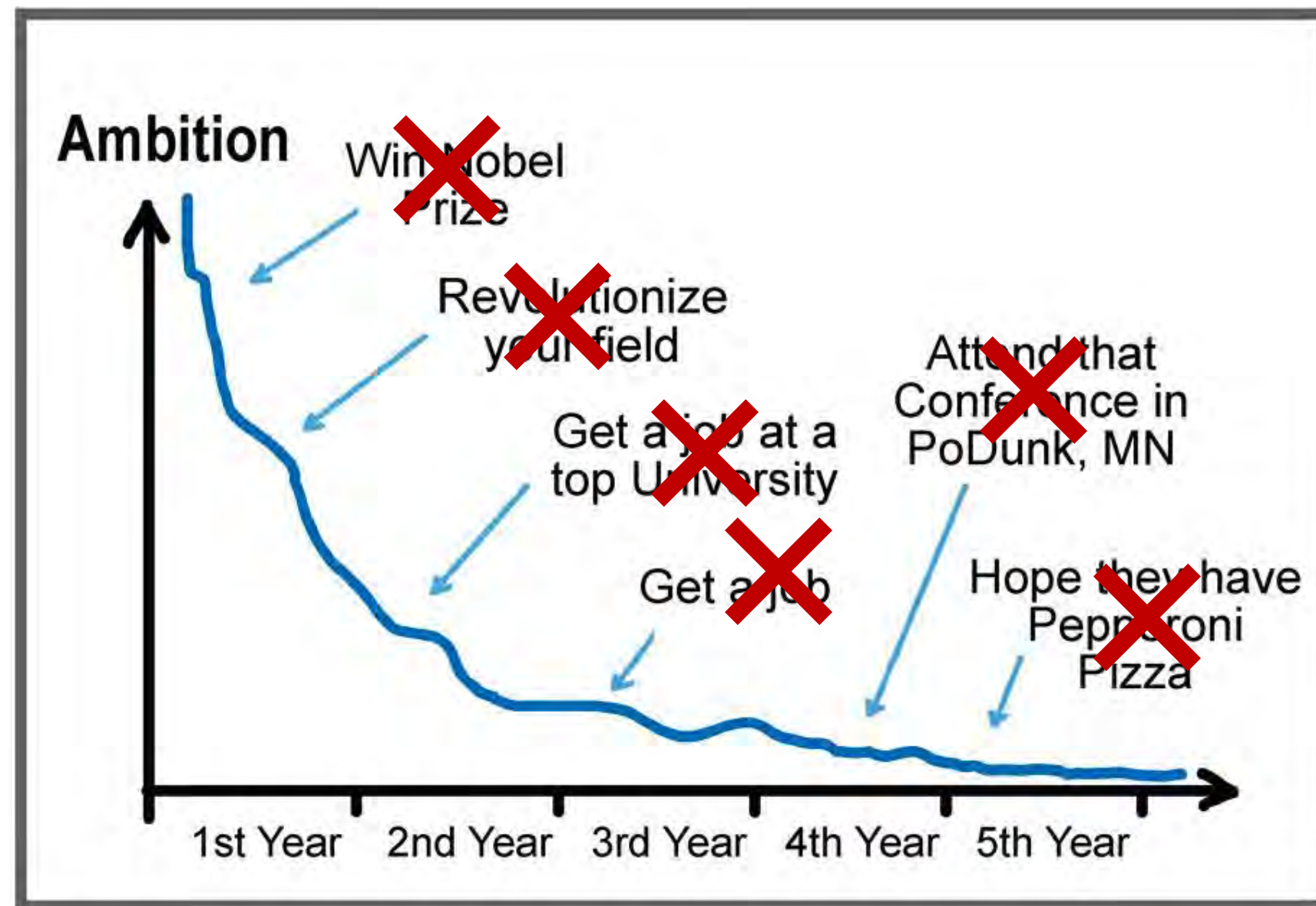
How do teachers choose what to write on the board?

Is there any bansho analysis method?

Why was bansho so widely used in Japanese classrooms?

Does the bansho style change with the subjects?





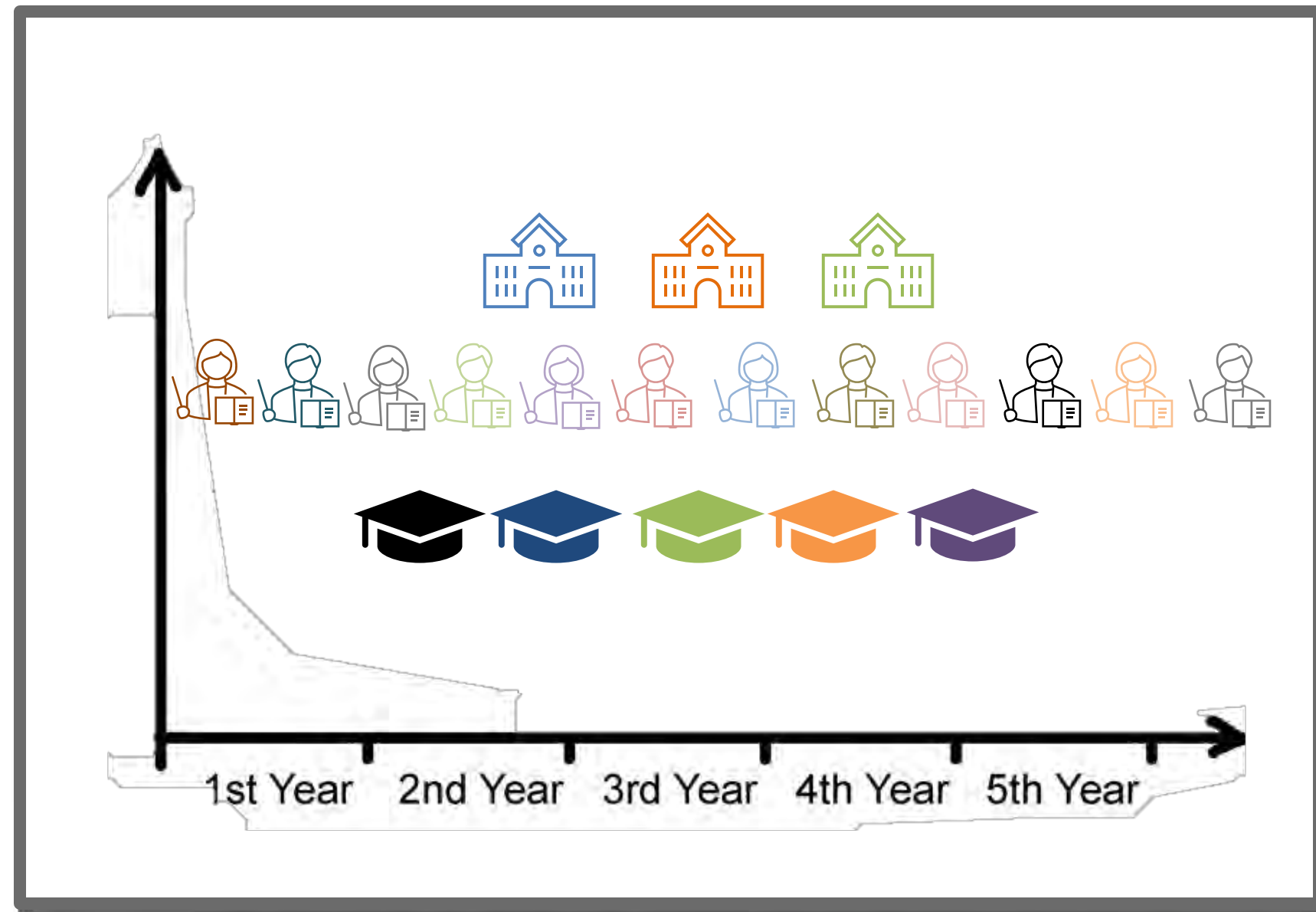
How do teachers choose what to write on the board?

Is there any bansho analysis method?

Why was bansho so widely used in Japanese classrooms?

Does the bansho style change with the subjects?





- 3 schools
- 12 teachers
- 380 students

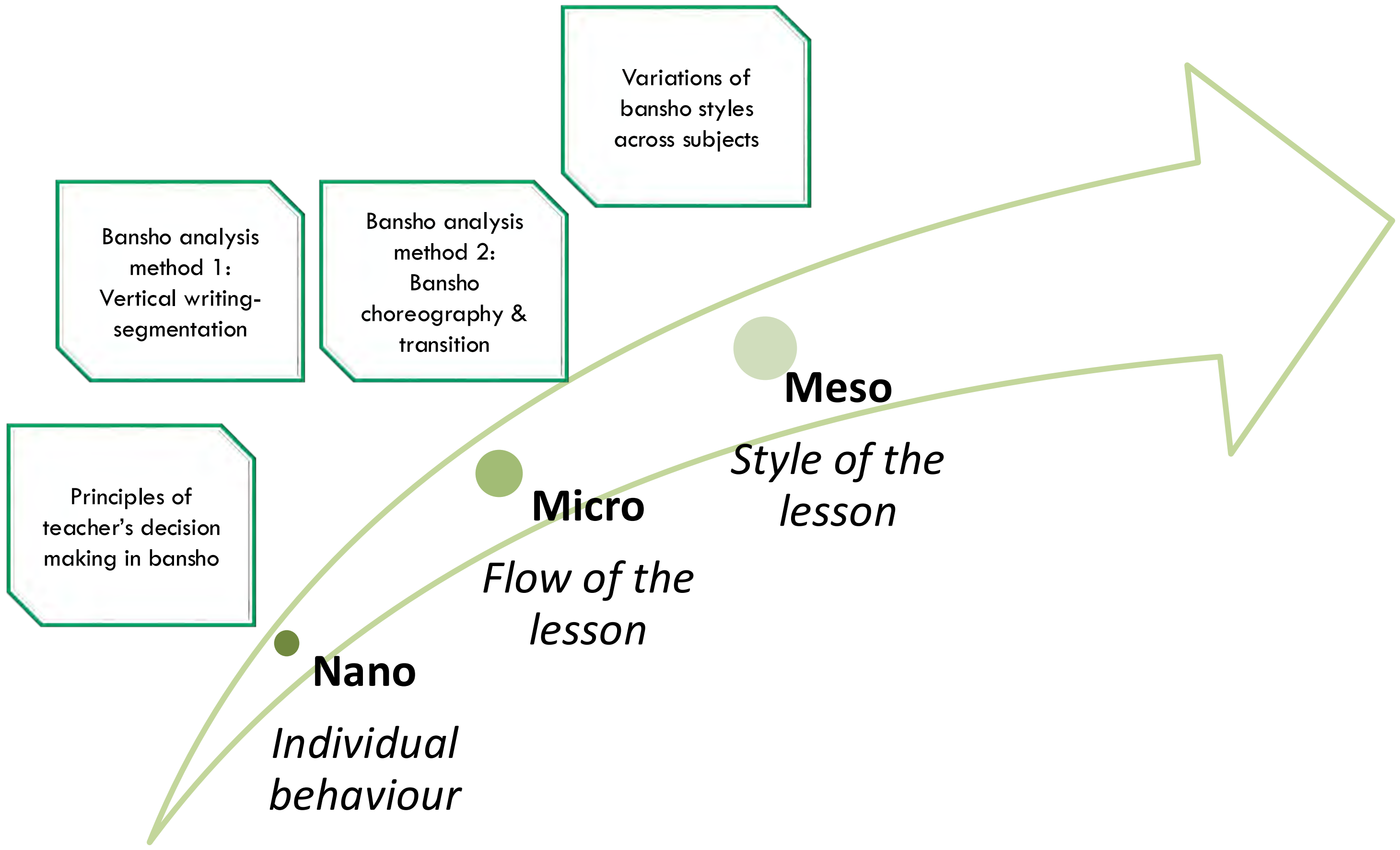
How do teachers choose what to write on the board?

Is there any bansho analysis method?

Why was bansho so widely used in Japanese classrooms?

Does the bansho style change with the subjects?





Bansho analysis method 1:
Vertical writing-segmentation

Bansho analysis method 2:
Bansho choreography & transition

Variations of bansho styles across subjects

Principles of teacher's decision making in bansho

Nano
Individual behaviour

Micro
Flow of the lesson

Meso
Style of the lesson

BANSHO

BANISHO

what is it?

Source	Definition
Dictionary of School Education (2014)	Refers to the <u>action of presenting or the presentation of words or illustrations on a blackboard or whiteboard</u> , for the purpose of displaying learning tasks and learning goals, explaining the thinking processes and <u>working methods</u> involved in learning tasks, and elaborating the learning content.
Dictionary of glossary terms for National Language Education (Tajika & Inoue, 2009)	The <u>writing or the action of writing</u> words, diagrams, symbols, sketches and the like, on the blackboard. The <u>writer</u> is usually the <u>instructors, but the learners also write</u> . The way to write the content varies depending on the purpose of bansho and the instructional views.
The research on the foundations of lessons (Matsumoto, 2012)	Bansho is the <u>plan for a one-hour lesson</u> and an <u>object that allows learning footprints</u> to be understood in a visual way.
Teacher's instructions: What to look at a bansho(Arita, 1986)	It is the <u>object that puts children's responses together and represents them in a gathered form</u> . Therefore, teacher's reaction towards children's responses expressed through the use of chalkboard is also defined as bansho.
Selection and structuring of bansho of social studies(Hatta, 1971)	Although blackboard is <u>an opaque board</u> , it could be a <u>clear window</u> that opens to the society. It also serves as the <u>stage that portrays the variation of living society</u> . Therefore, the use of blackboard (bansho) could provide a <u>platform of a leap for children's thinking</u> to be part of the outside world. Bansho could then serve as both an <u>effective space for collaborative thinking and a tool</u> .
Bansho: Board Writing (The Literacy and Numeracy Secretariat, 2011)	The term used by Japanese teachers to refer to the <u>use and organization of the chalkboard</u> . Such board writing is derived from and for the development of students' individual and collective mathematical thinking.
Developing effective use of the blackboard through lesson study (Yoshida, 2002)	Bansho is translated into English as " <u>use or organisation of blackboard</u> " or in a literal translation " <u>board writing</u> ". Bansho is considered a <u>critical teaching skill in Japan</u> , particularly when conducting child-centered discovery-oriented lessons in mathematics and science.

BANSHO 板書

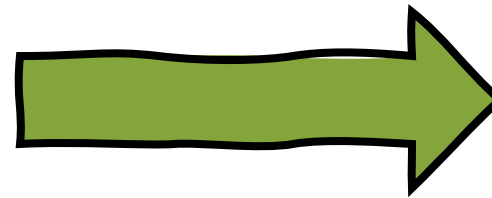
01

process and product
of producing words
or illustrations on the
board

02

effective use and
organisation of the
board

WHY BANSHO



Long-term learning impact on students

- develop not just a strategy for problem-solving but a deeper level of thinking through the process (e.g., Baldry, 2021; Billman, 2018, Greiffenhagen, 2014; Tan, 2022).
- facilitate the comparison of key points and enhance comprehension of the flow of ideas (Okazaki et al., 2014)

Sense of ownership

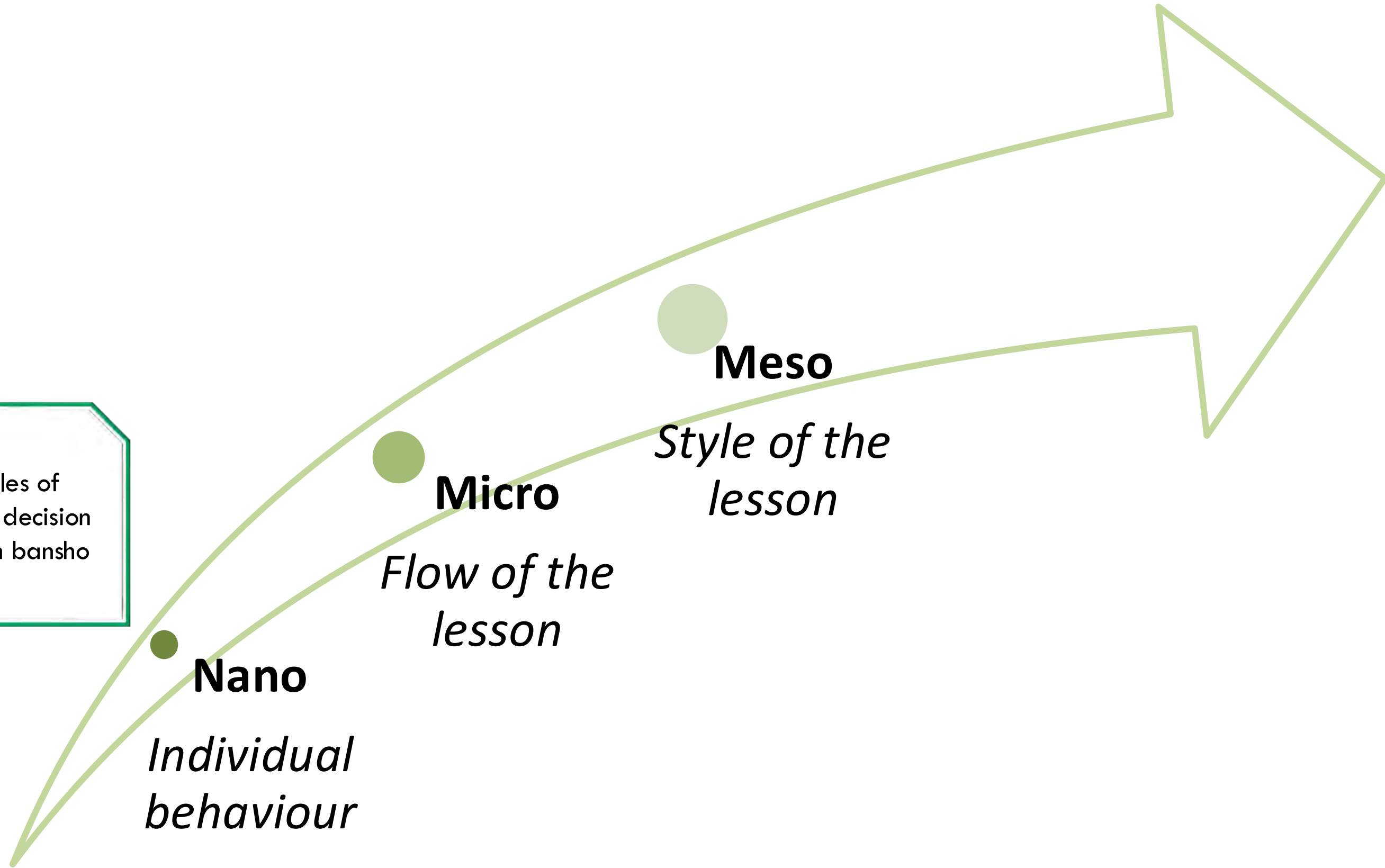
- each student's thoughts are valuable and worthy of acknowledgement (Tan, 2018)

Principles of
teacher's decision
making in bansho

Nano
*Individual
behaviour*

Micro
*Flow of the
lesson*

Meso
*Style of the
lesson*



Actual Bansho

Topic: If the longstanding war could be stopped, when would that be?

長く続いた戦争を止めることができたとすれば、それはいつか。

1894年 甲午戦争 (E2, F2, D3, C5, F4, E3)

1895年 日清戦争 (E2, F2, D3, C5, F4, E3)

1904年 日露戦争 (E2, F2, D3, C5, F4, E3)

1905年 露清戦争 (E2, F2, D3, C5, F4, E3)

1914年 第一次世界大戦 (A2)

1918年 第一次世界大戦 (A2)

1919年 国際連盟 (A1, A3, A5, E5)

1929年 世界恐慌 (B4)

1930年 ロンドン海軍軍縮会議 (F5, E6, D1, F3, C4, B5, F3, F1, C2)

1931年 満州事変 (B2)

1932年 大森砲台暗殺 (E2)

1933年 国際連盟脱退 (F6, D1)

1936年 政府要人暴行 (E2)

1937年 日中戦争 (E2)

1940年 第二次世界大戦 (E2)

1941年 真珠湾攻撃 (D2, D5, C1, C3)

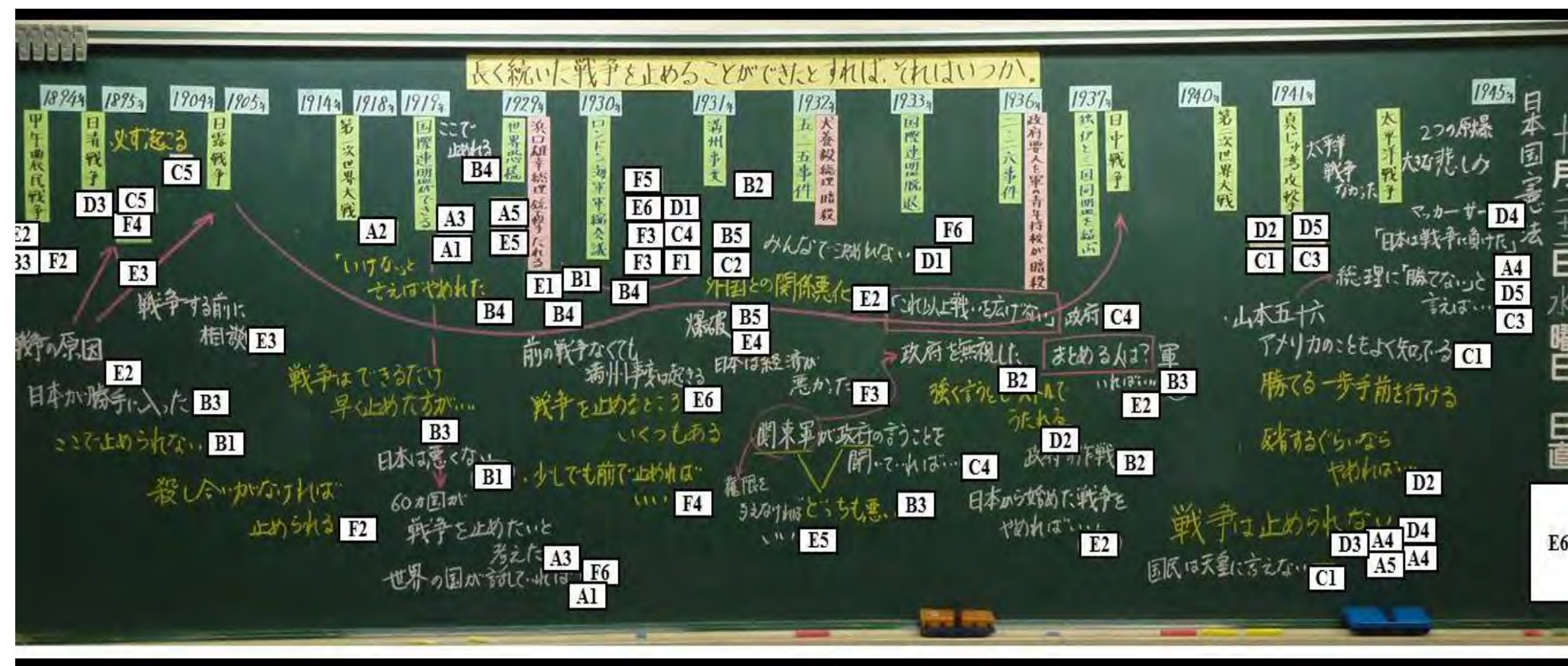
1945年 日本国憲法 (D4, A4, D5, C3)

十月二十一日 水曜日 日直 (E6)

Contents of pupils' utterances

Pupils' nameplate

Teacher writes the contents of pupils' utterances next to their nameplates



Principles of teacher's decision making in bansho



SCAN ME

1

**Extracting
Summarising Ideas**

2

**Highlighting new
information**

3

**Accentuating
thought-provoking
ideas**

Necessary to have systematic bansho analysis methods

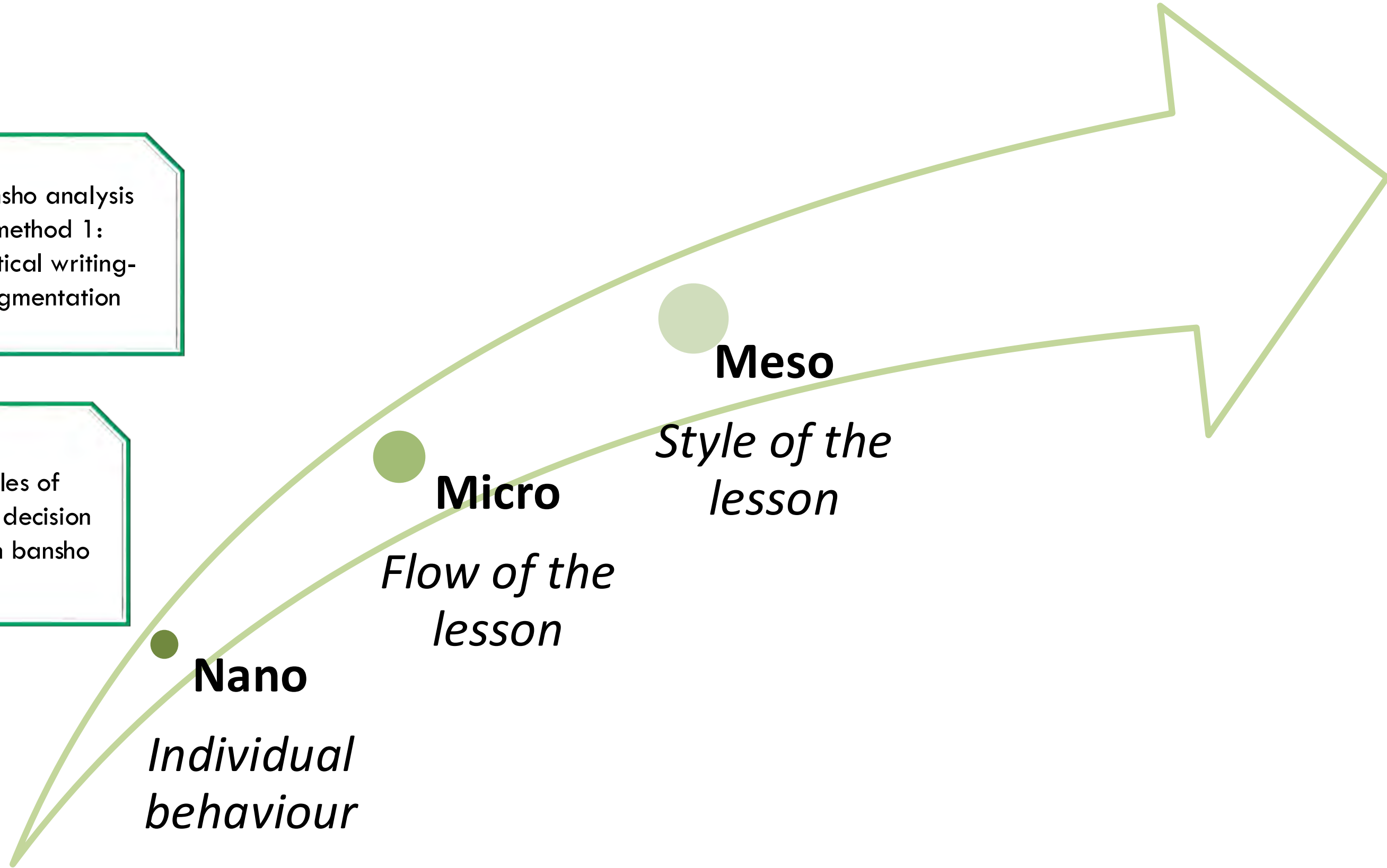
Bansho analysis method 1: Vertical writing-segmentation

Principles of teacher's decision making in bansho

Nano
Individual behaviour

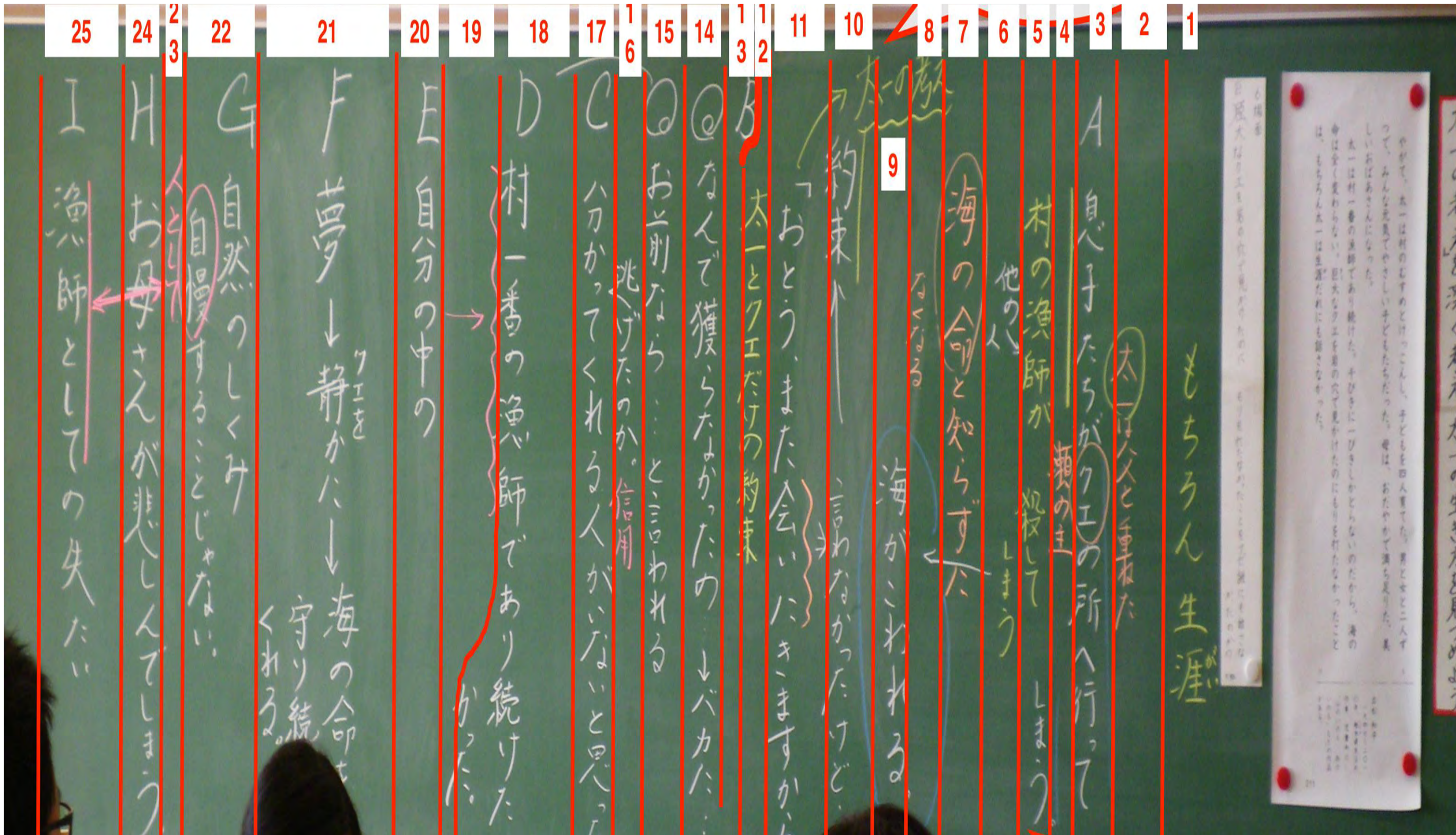
Micro
Flow of the lesson

Meso
Style of the lesson



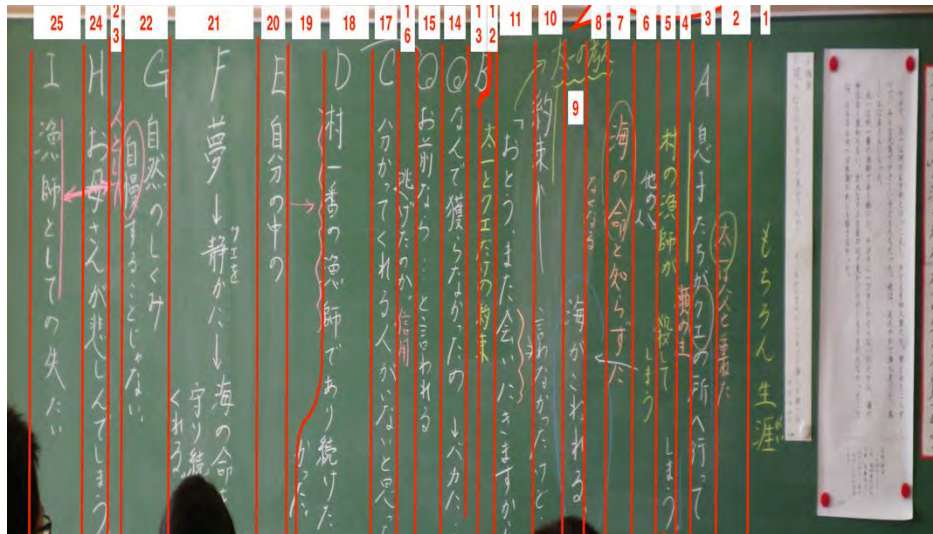
Tategaki-segmentation

Bansho analysis
method 1:
Vertical writing-
segmentation



Tategaki-segmentation

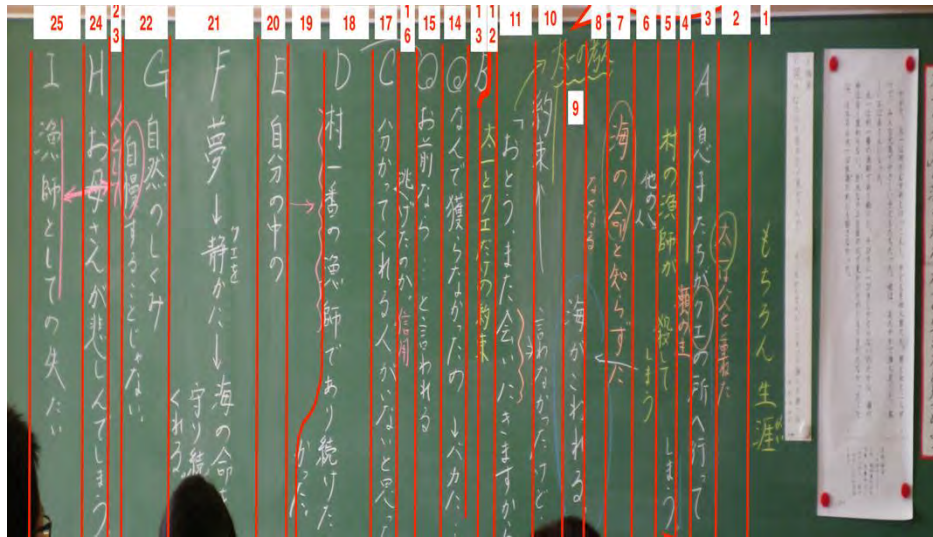
Bansho analysis
method 1:
Vertical writing-
segmentation



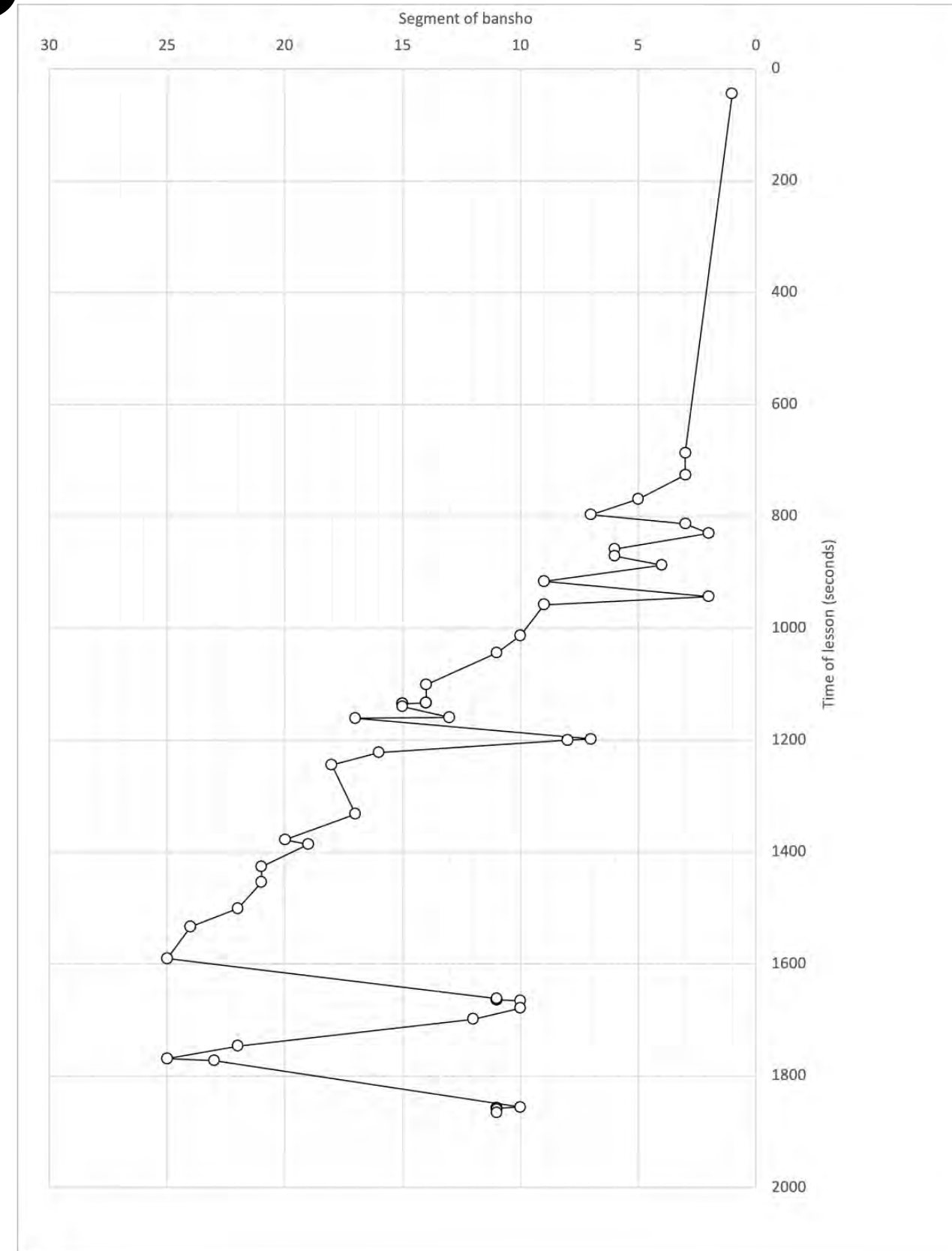
Content of bansho	Segment of bansho	Time of lesson (from minute: seconds to the minute: seconds)
もちろん・生涯 (certainly. entire life)	1	6:44 - 6:56
がい (gai)	1	7:02 - 7:04
A	3	17:27 - 17:28
息子たちがクエのところへ行ってしまふ (his own son would have gone to look for the grouper)	3	18:20 - 18:40
村の漁師が殺してしまふ (fishermen in the village would have gone to kill)	5	18:56 - 19:21
海の命と知らずに (without realising the value of the life of the sea)	7	19:26 - 19:37

Tategaki-segmentation

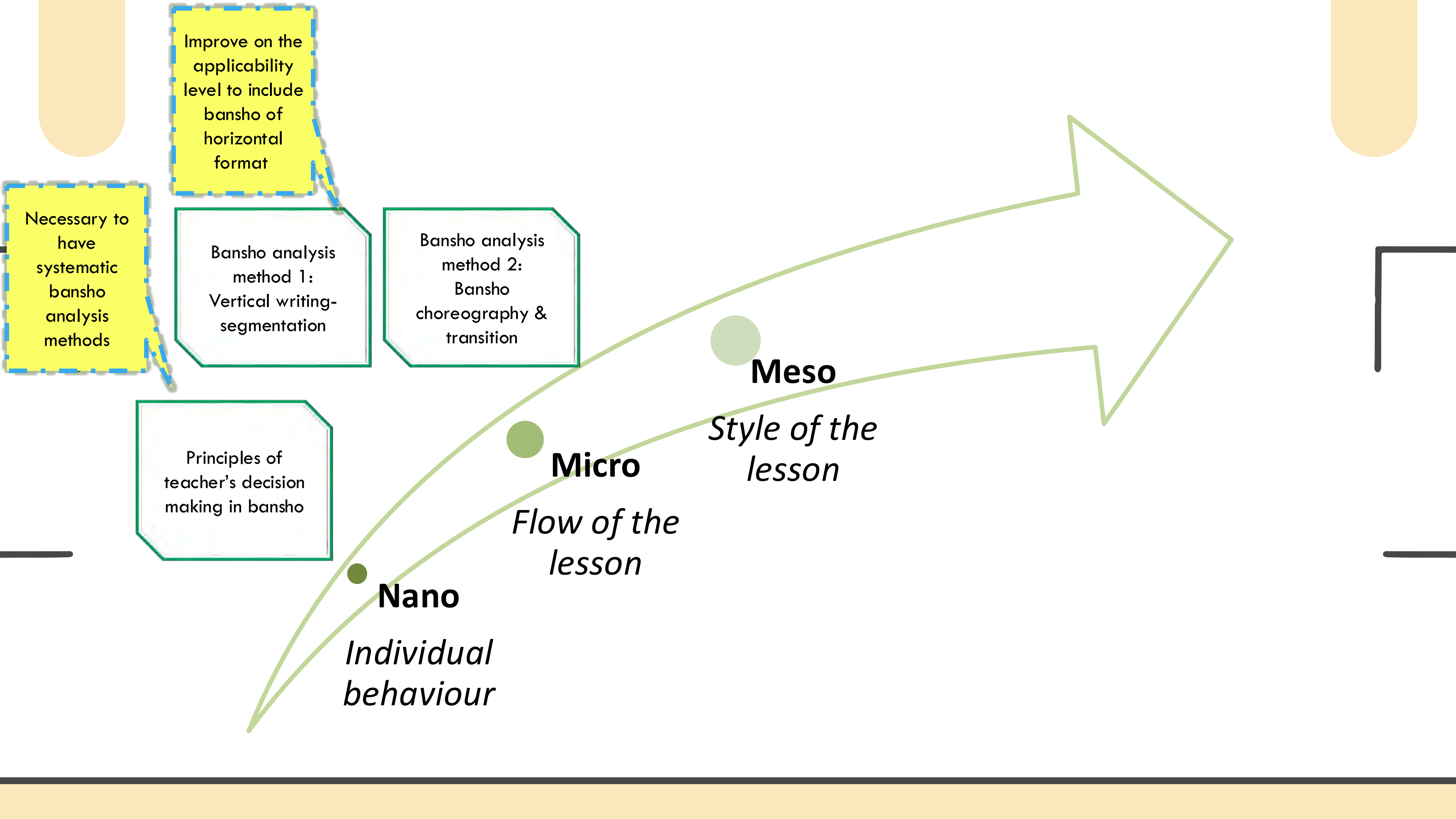
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(Tan, Fukaya & Nozaki, 2018)



Bansho choreography & transition

Bansho analysis
method 2:
Bansho
choreography &
transition

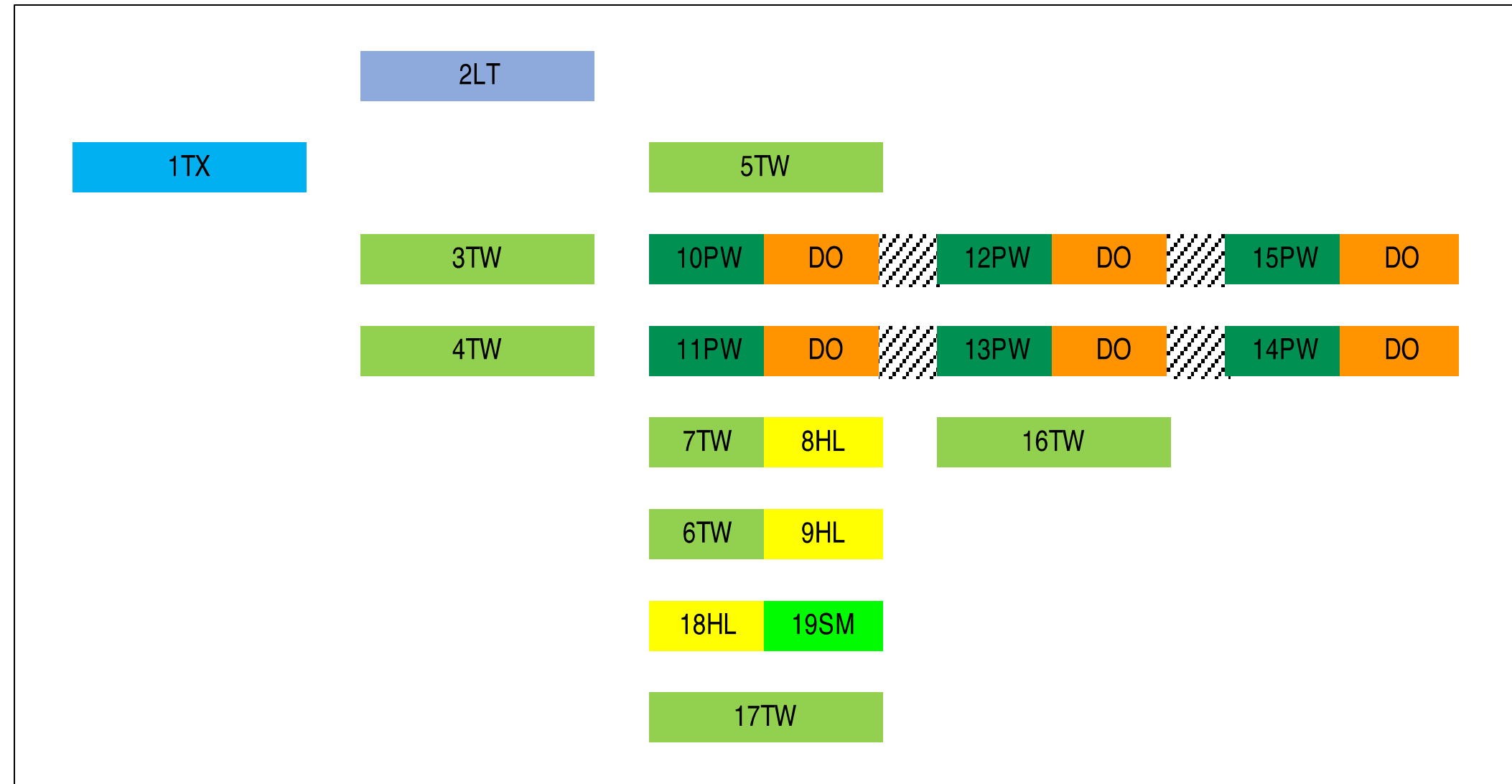
Coding scheme for bansho choreography

Element	Category	Code and colour
Teacher's instruction	Learning task/learning goal	LT
	Teacher's question/explanation	QE
	Content from textbook/learning material	TX
	Practice question	PQ
Pupil's idea	Summary	SM
	Pupil writes his/her idea(s) on the chalkboard	PW
	Teacher writes the pupil's idea(s) on the chalkboard	TW
Supplementary object	Use of multimedia	MM
	Use of display object	DO
	Use of highlighter	HL
	Use of nameplate	NP

Bansho choreography & transition

Bansho analysis
method 2:
Bansho
choreography &
transition

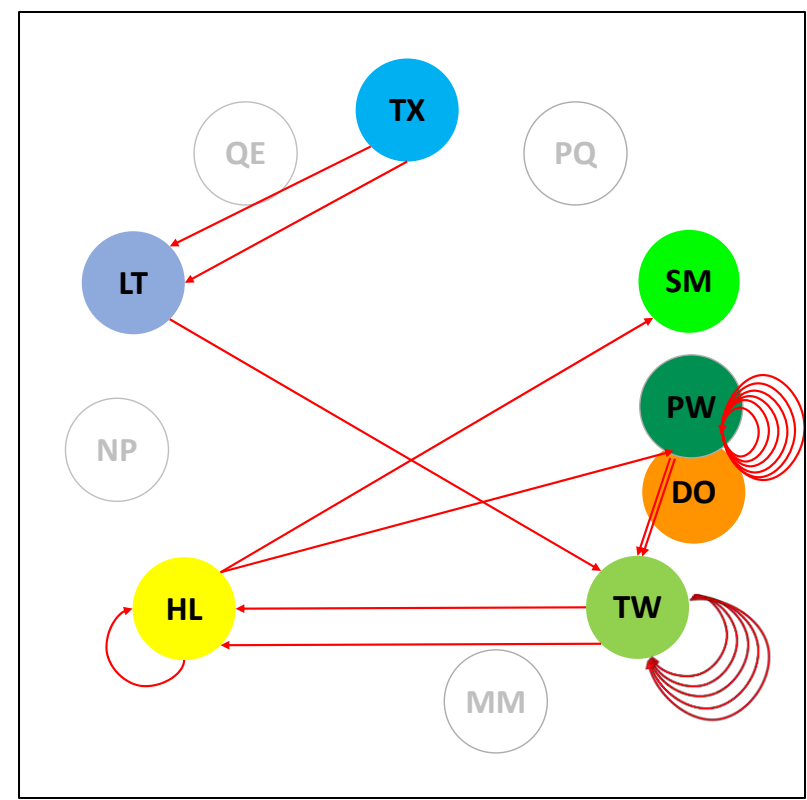
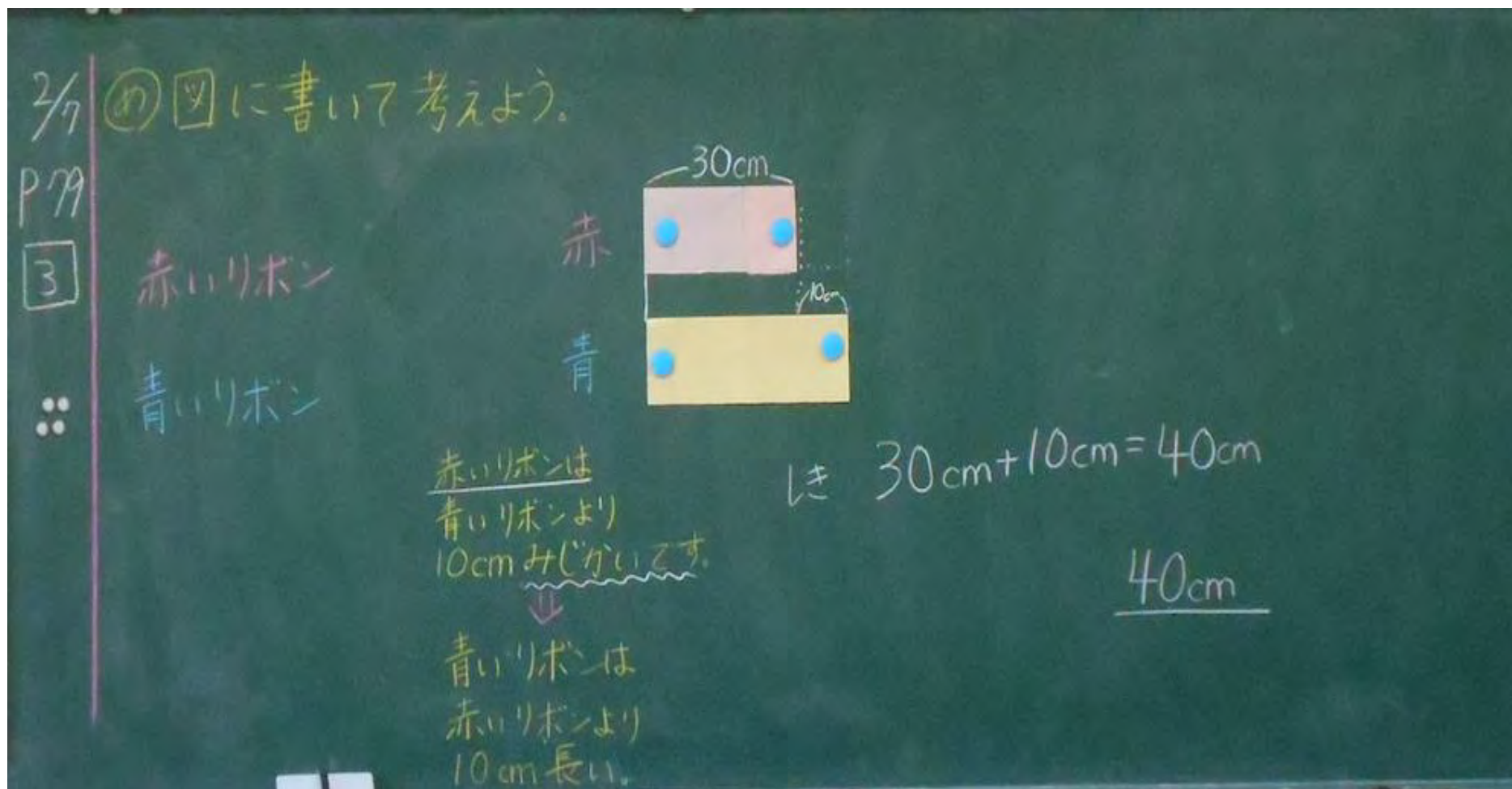
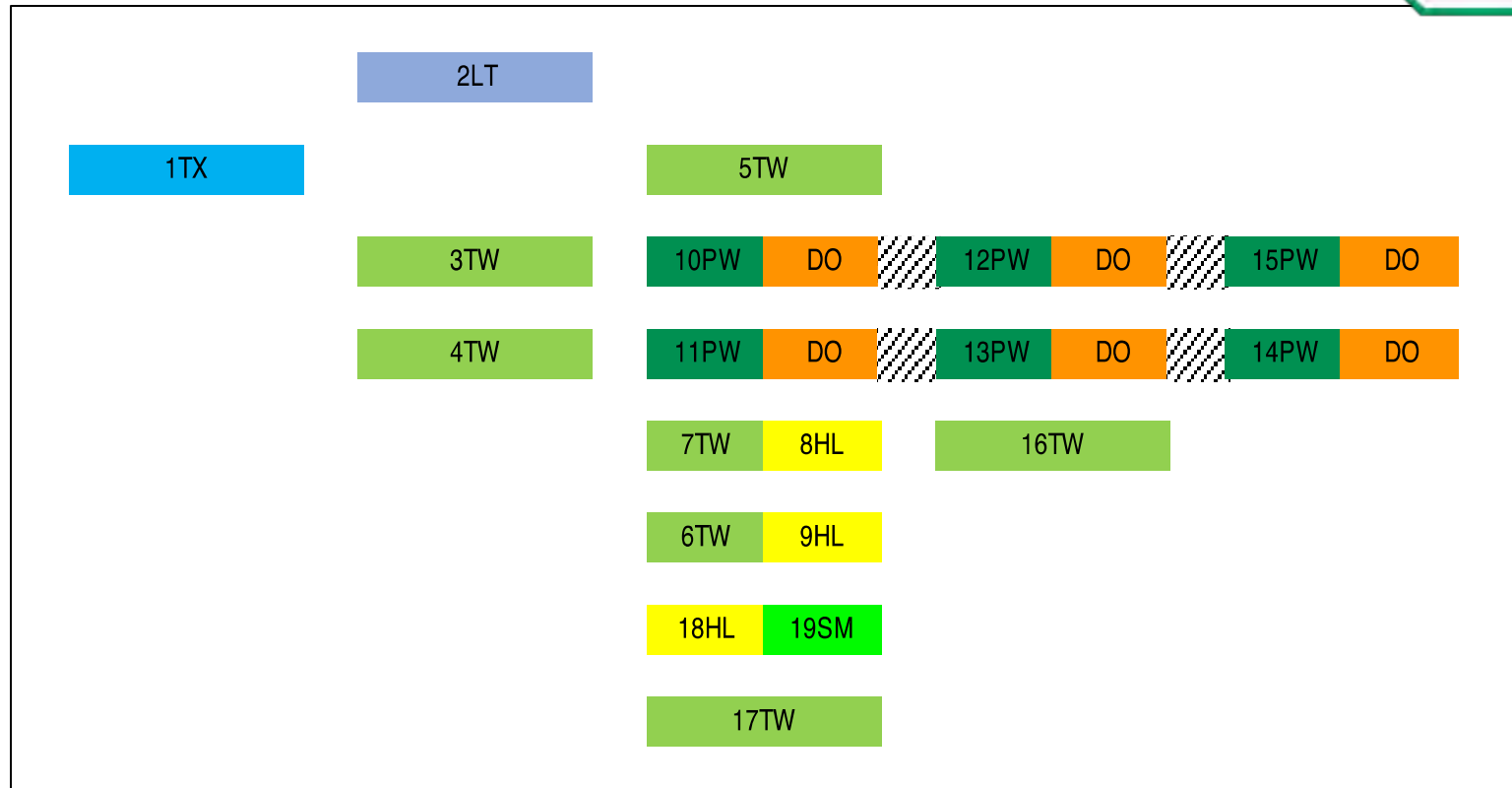
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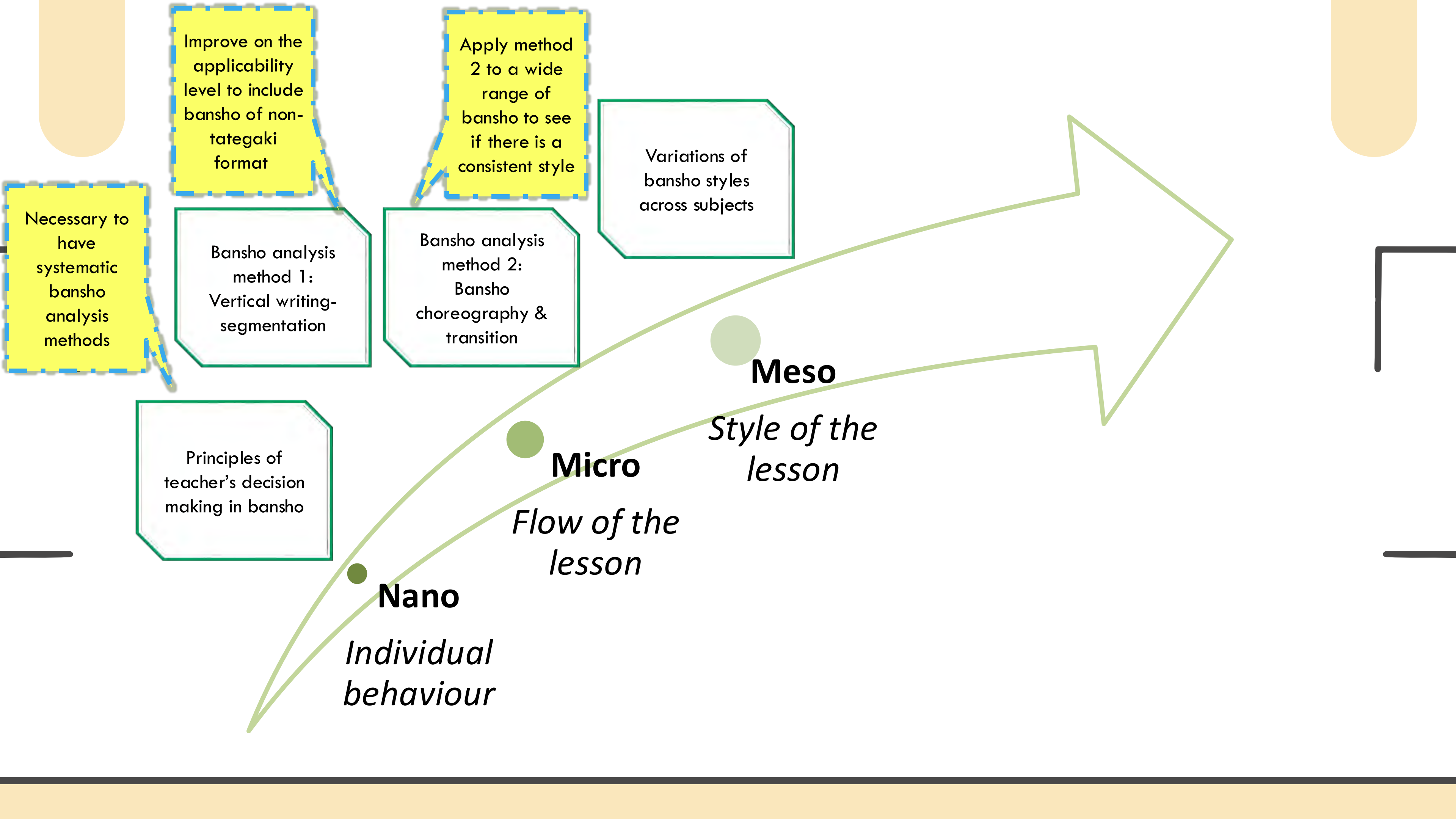


Bansho choreography & transition

Bansho analysis method 2:
Bansho choreography & transition

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	Use of nameplate	NP





Necessary to have systematic bansho analysis methods

Improve on the applicability level to include bansho of non-tategaki format

Apply method 2 to a wide range of bansho to see if there is a consistent style

Variations of bansho styles across subjects

Bansho analysis method 1: Vertical writing-segmentation

Bansho analysis method 2: Bansho choreography & transition

Principles of teacher's decision making in bansho

Nano
Individual behaviour

Micro
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Style of the lesson

Bansho styles

Variations of bansho styles across subjects

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	Use of nameplate	NP

Lesson	Grade	Subject
1	2	Mathematics
2	5	Mathematics
3	4	Mathematics
4	2	Mathematics
5	2	Mathematics
6	3	Mathematics
7	1	Japanese Language
8	1	Japanese Language
9	6	Moral education
10	4	Moral education

Mathematics

2月7日(水)

④ 図に書いて考えよう。

赤いリボン 30cm
青いリボン 10cm

赤いリボンより青いリボンより10cm長い。

赤いリボン 30cm
青いリボン 10cm

合計 30cm + 10cm = 40cm

2月8日

どんな計算になるの？

① $6 \times 4 = 24$ $24 \div 4 = 6$

② $4 \times 3 = 12$ $12 \div 3 = 4$

③ $4 \times 3 = 12$ $12 \div 4 = 3$

④ $4 \times 3 = 12$ $12 \div 3 = 4$

2月7日 P187

正多角形

正三角形 $60^\circ \times 3 = 180^\circ$

正四角形(正方形) $90^\circ \times 4 = 360^\circ$

正五角形 $108^\circ \times 5 = 540^\circ$

正六角形 $120^\circ \times 6 = 720^\circ$

正七角形 $127^\circ \times 7 = 900^\circ$

正八角形 $135^\circ \times 8 = 1080^\circ$

③ <今分っていること>

りんご 85円
みかん 45円

みかんが145円高い

りんご 85円
みかん ?円

$85 - 45 = 40$

40円

P83

⑤ だんの数が変わると、まわりの長さなどがどのように変わるのか調べよう。

① だんの数(だん) 1 2 3 4 ...

まわりの長さ(cm) 4 8 12 16 ...

② $4 \times 1 = 4$ $4 \times 2 = 8$ $4 \times 3 = 12$ $4 \times 4 = 16$

③ $10 \times 4 = 40$ $15 \times 4 = 60$

② $58 \times 30 = (58 \times 3) \times 10$

$= 174 \times 10$

$= 1740$

③ $23 \times 30 = (23 \times 3) \times 10$

$= 69 \times 10$

$= 690$

Japanese Language

2月7日(水)

これは、なんでしょう。

① かた い

② 小 学 生

③ ぼ ろ い

④ 六 十 八

⑤ 字 を かく こ と が でき る

⑥ つ か え ば つ か う ほ ど じ ゃ く なる

2月9日(金)

どうぶつのは

赤ちゃん (人げん)

はいはい

ねて

手が小さい

ゆびしゃぶり

りゅうしゃく

ミルク

あるけない。

カメラマンの選択

昔の夢

新しいこと

自分のできごと

必要とされる

意見と参考にする

家族と決める

Moral Education

2月9日(金)

たのまれた仕事

新聞配達をたのまれたとき、たかし君はどんな気持ちだったと思いますか。

新聞配達 やってくれよ

たかし 母

引き受ける

お金のめがけ

父

父や母もやれば？

やれたらいいよ

何となく

何？

三日目

もう、いやだよ

四日目

えらいね。がんばってね。

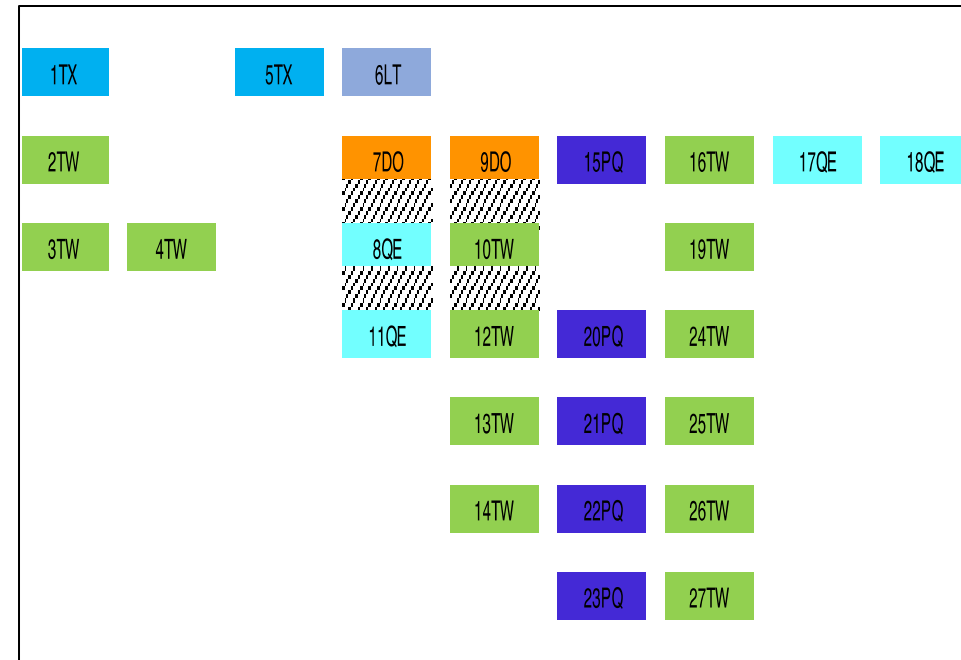
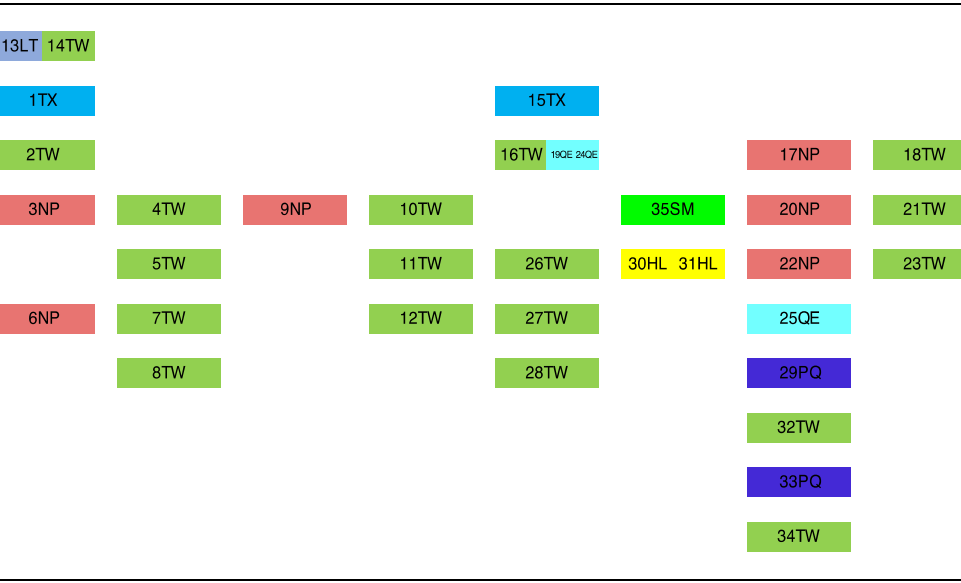
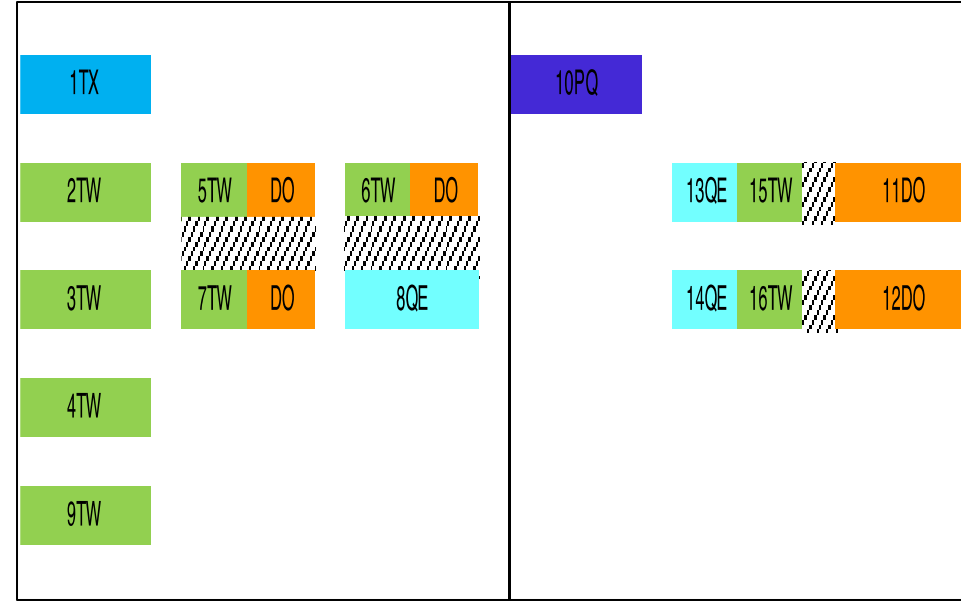
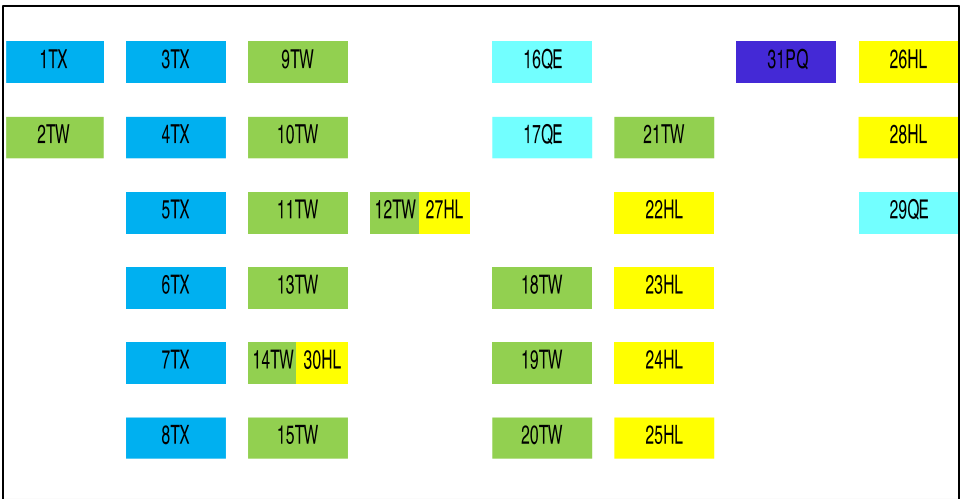
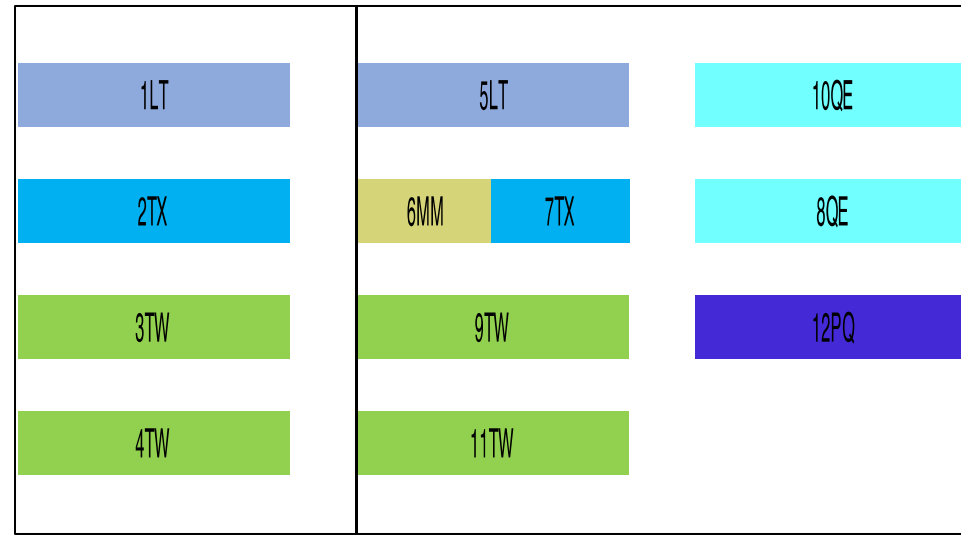
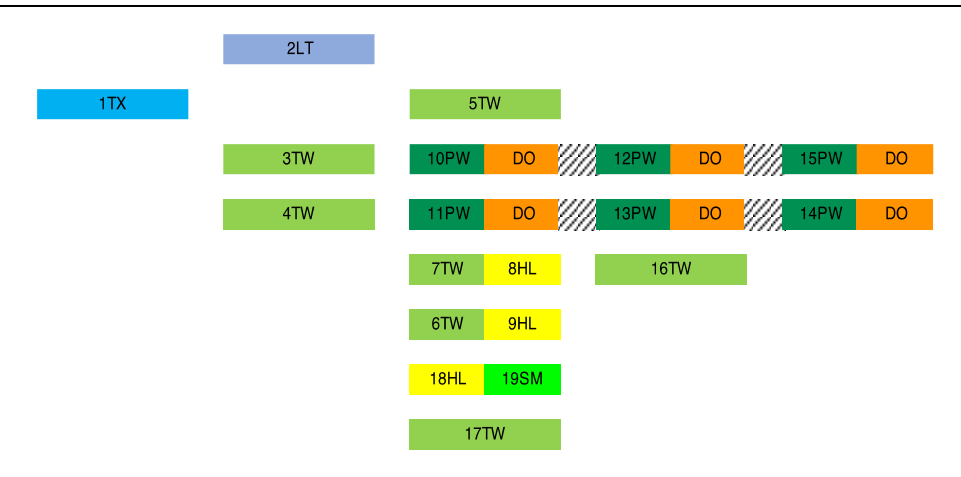
おじさん

最初は、嫌々新聞配達を手伝っていたたかし君が、なぜ「今度困ったことがあったら、いつでも言ってよ」と言ったのでしょうか。

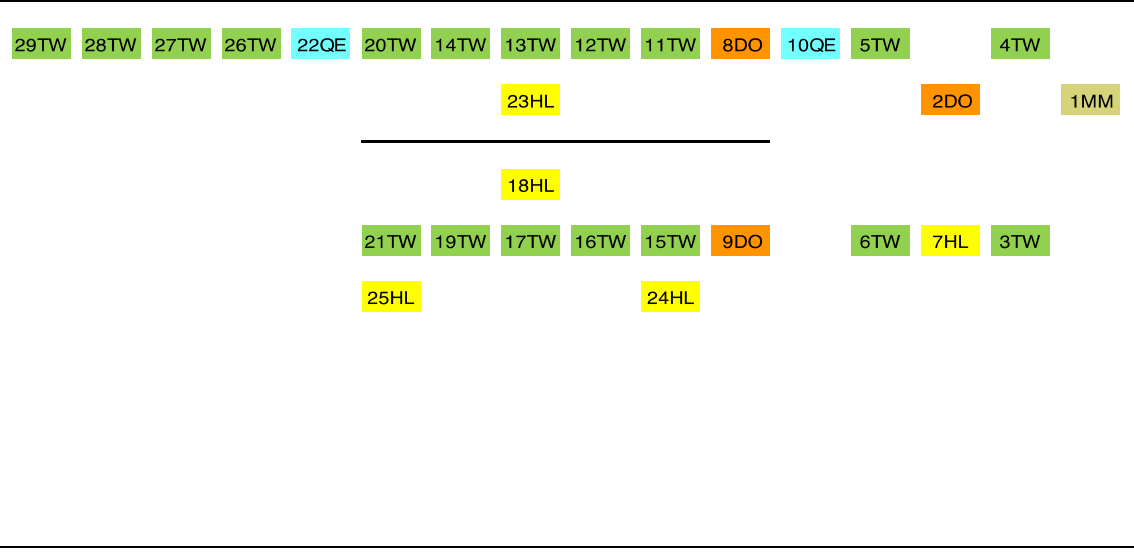
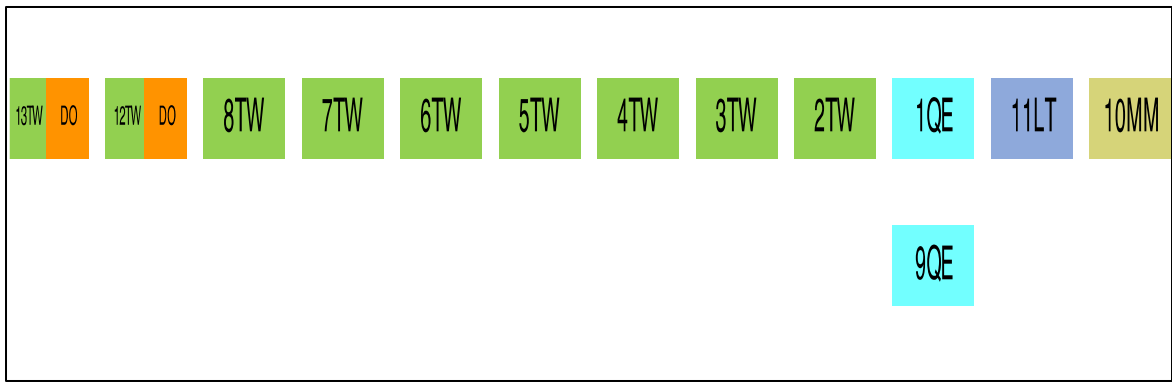
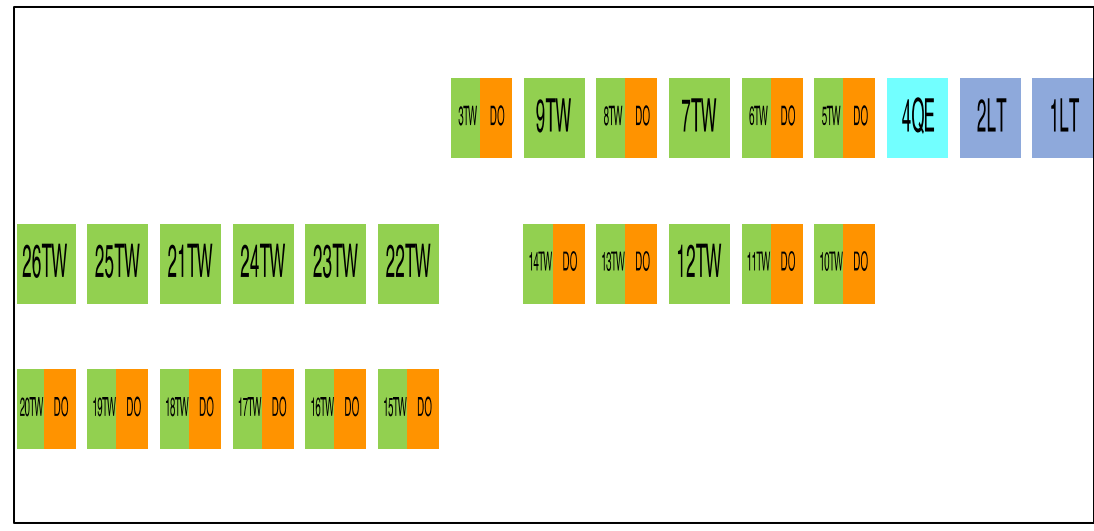
七日目

さましたことがあったら、いつでも言ってよ。

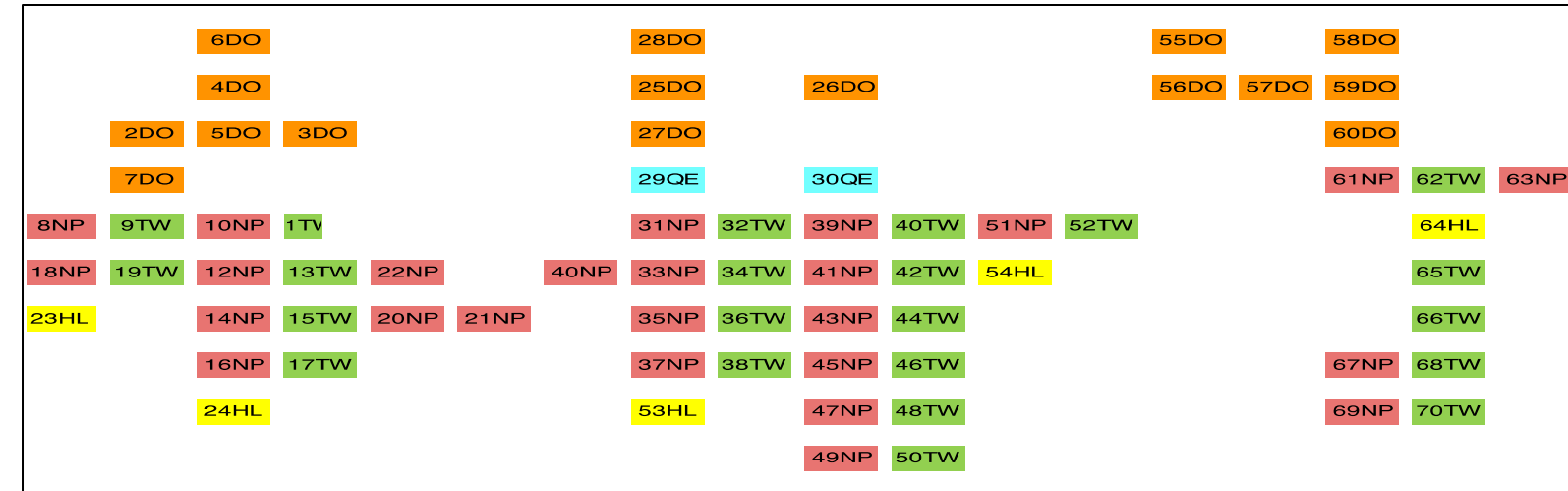
Mathematics



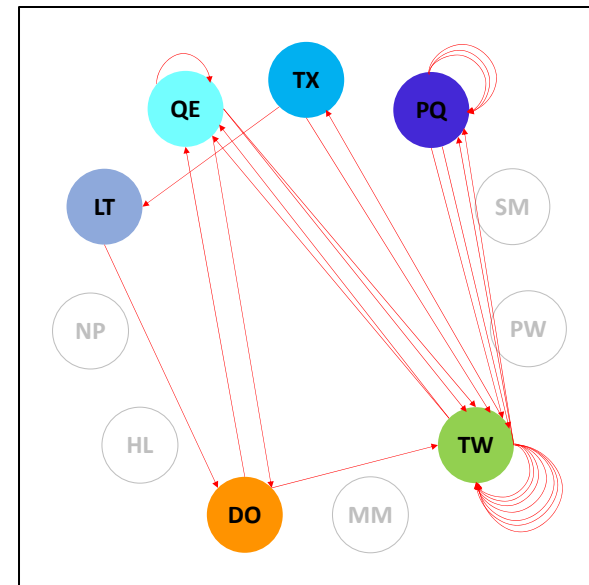
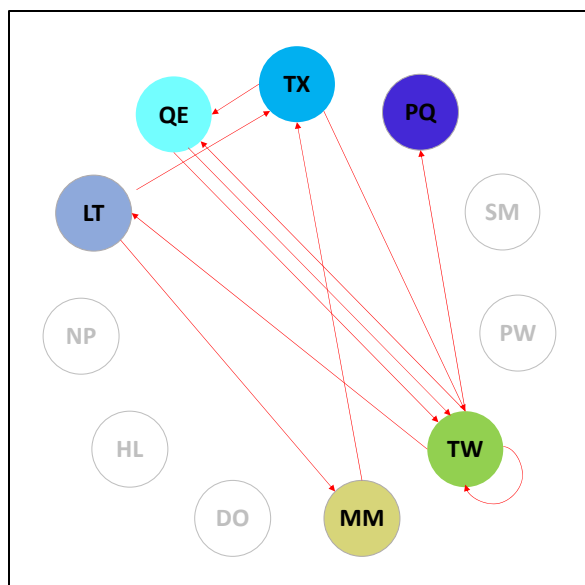
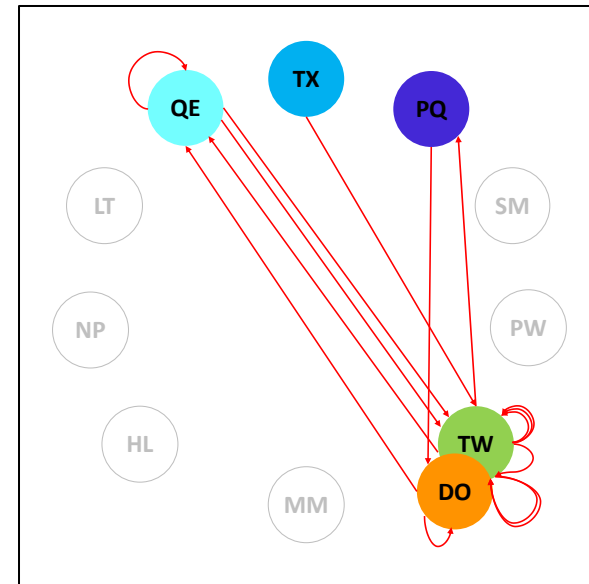
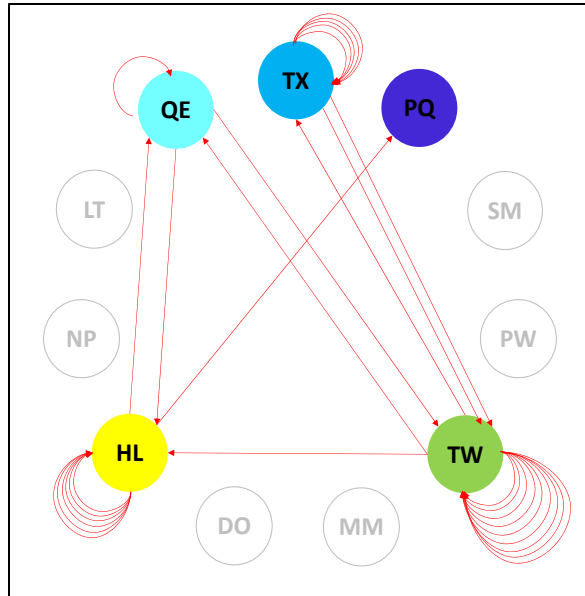
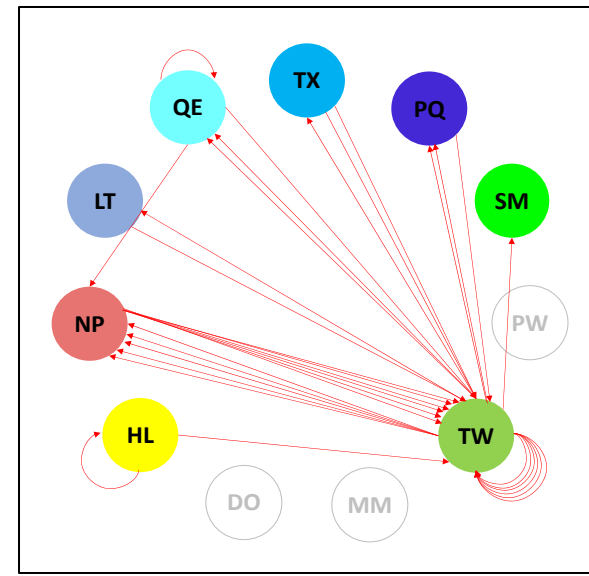
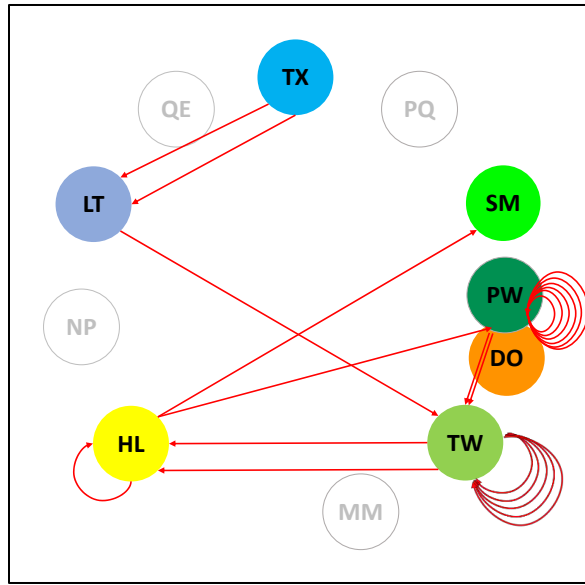
Japanese Language



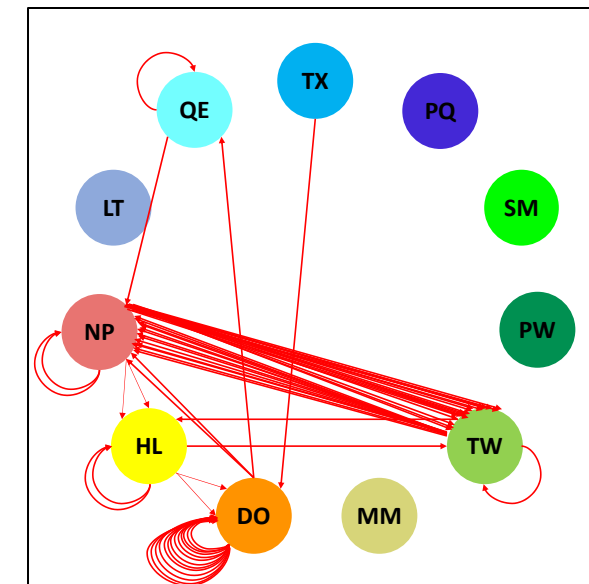
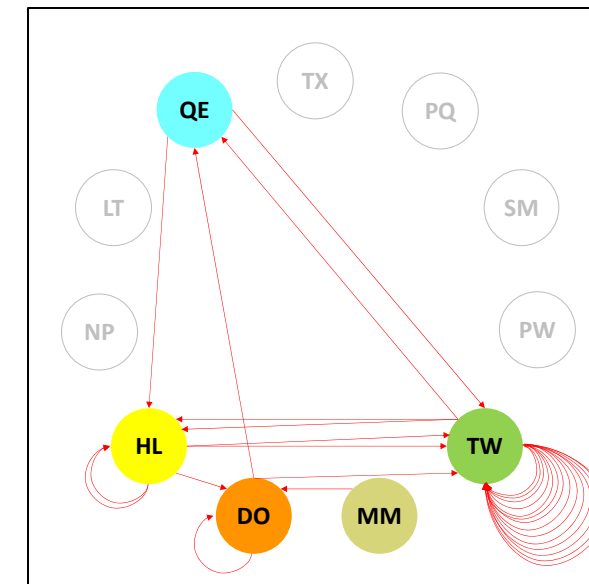
Moral Education



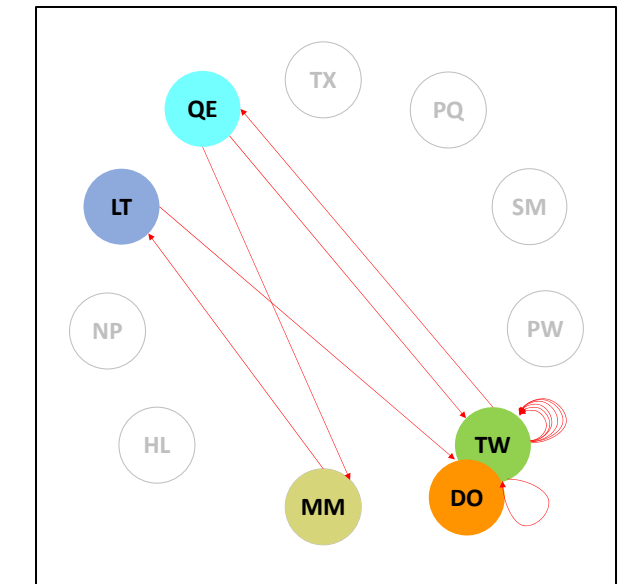
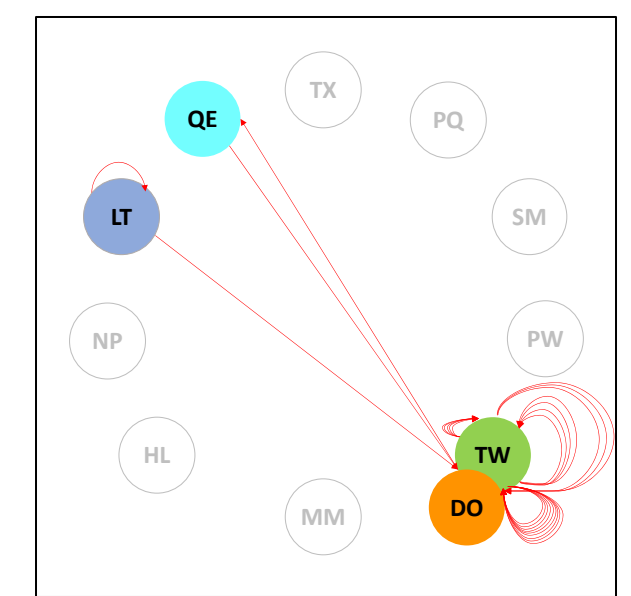
Mathematics



Japanese Language



Moral Education



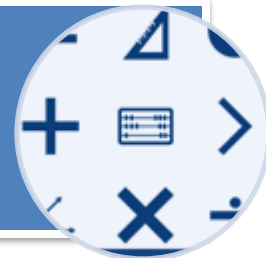
Bansho styles

Variations of bansho styles across subjects

Constructive

- stage-setting
- open for modification, reinvention
- materialisation of ideas

Mathematics



Inventory

- does not aim for standardisation
- personal and free expression of ideas

Japanese Language



Evocative

- Evoke emotions and reasonings
- Mediator between feelings and thinking

Moral education



- Park pupils' ideas on a common space
 - Learner-centred
 - Discovery-oriented
- Blank space: openness and co-construction
 - Maintain individual ideas
- Connect individual ideas to create new understanding

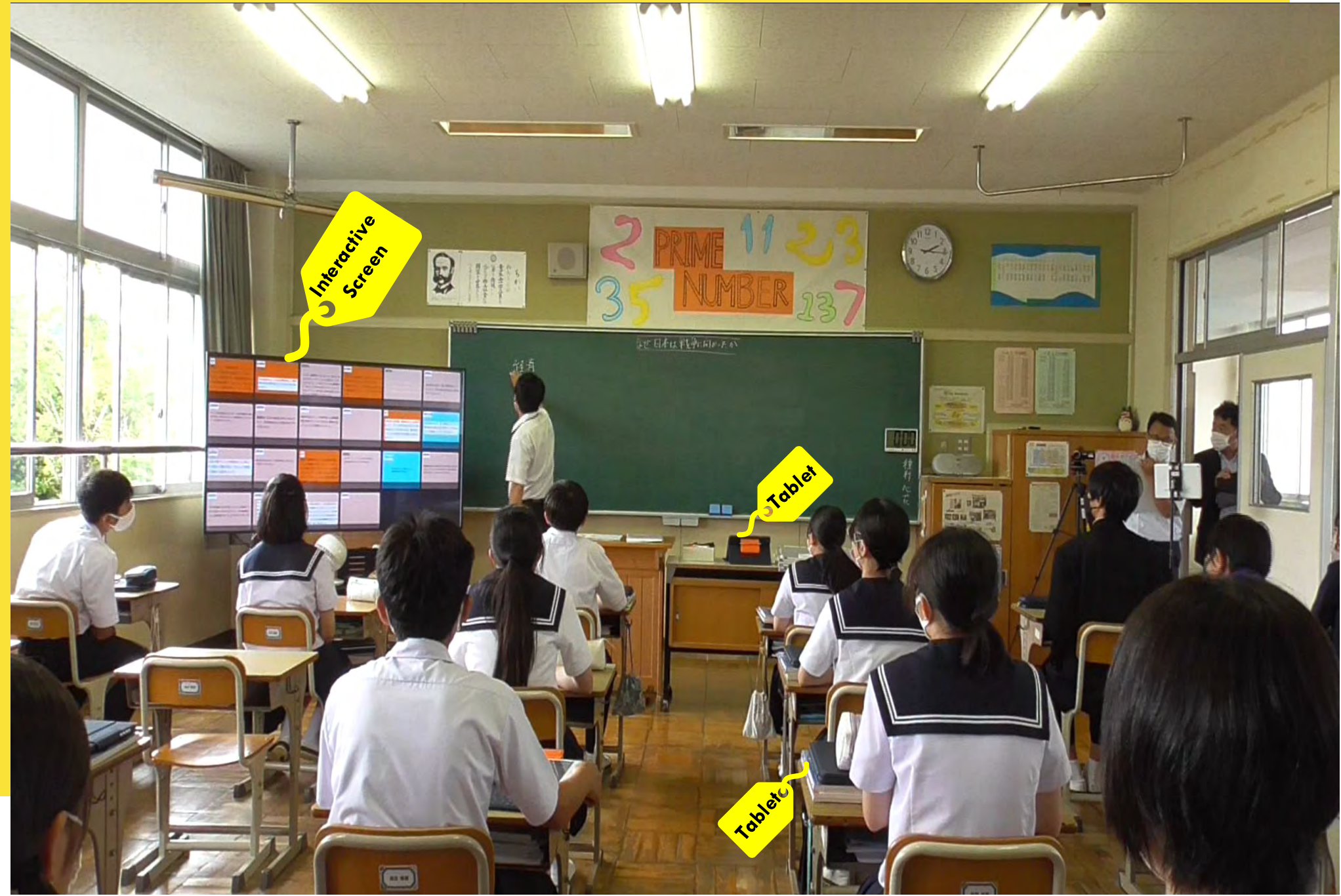


Does bansho still hold its value in the age of digital technology, especially in the post-pandemic world?

2012



2022



Data Site and Research Questions



country

Aichi Prefecture,
Japan



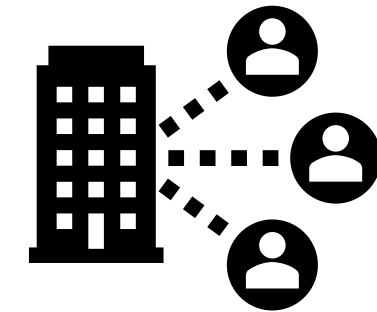
subject

Social Studies



grade

3rd grade, Junior
High School



context

Prefecture-level Lesson
Study

Research lesson

1.

How can distributed cognition be enacted through the interactions between board, ICT tools and individuals?

2.

What are the pedagogical functions of board and ICT tools?

Time	Monitoring	Off-loading	Translation	Connection
		●		
			●	
0:00:04				
0:00:08		●		
00:00:15		●		
00:00:24		●		
00:00:47				
00:01:11		●		
00:01:19		●		
00:01:24				
00:01:32				
00:01:41		●		
00:01:51				
00:02:14		●		
00:02:29		●		
00:02:36				
00:02:53		●		
00:03:13		●		
00:03:22		●		
00:03:34				
00:04:05		●		
00:04:07				
00:05:15		●		
00:05:42		●		
00:06:03				
00:06:29		●		
00:06:32				
00:07:11				

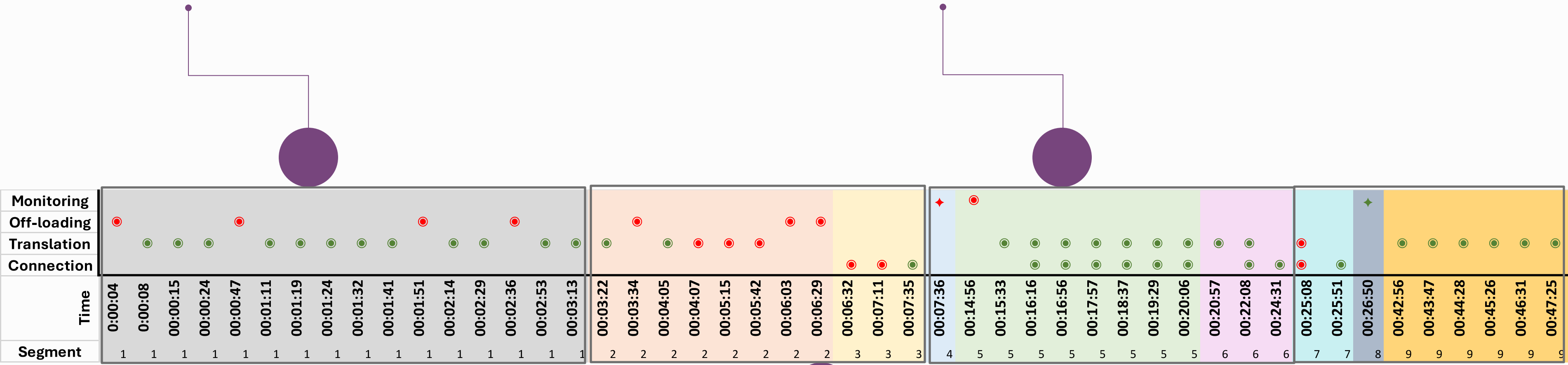
●	ICT Teacher
◆	ICT Student
●	Board Teacher
◆	Board Student

00:07:11	00:07:35	00:07:36	00:14:56	00:15:33	00:16:16	00:16:56	00:17:57	00:18:37	00:19:29	00:20:06	00:20:57	00:22:08	00:24:31	00:25:08	00:25:51	00:26:50	00:42:56	00:43:47	00:44:28	00:45:26	00:46:31	00:47:25
●	●	◆	●	●	●	●	●	●	●	●	●	●	●	●	●	◆	●	●	●	●	●	●
														●								
				●	●	●	●	●	●	●	●	●		●			●	●	●	●	●	●

●	ICT Teacher
◆	ICT Student
●	Board Teacher
◆	Board Student

- Most actions
- Offloading ICT → Translation Board

- 1st Monitoring; both on ICT
- Translation + Connection



- Most ICT actions
- Offloading → Translation
- 1st Connection

- Monitoring Board
- Series of Translation

DISCUSSION

01.

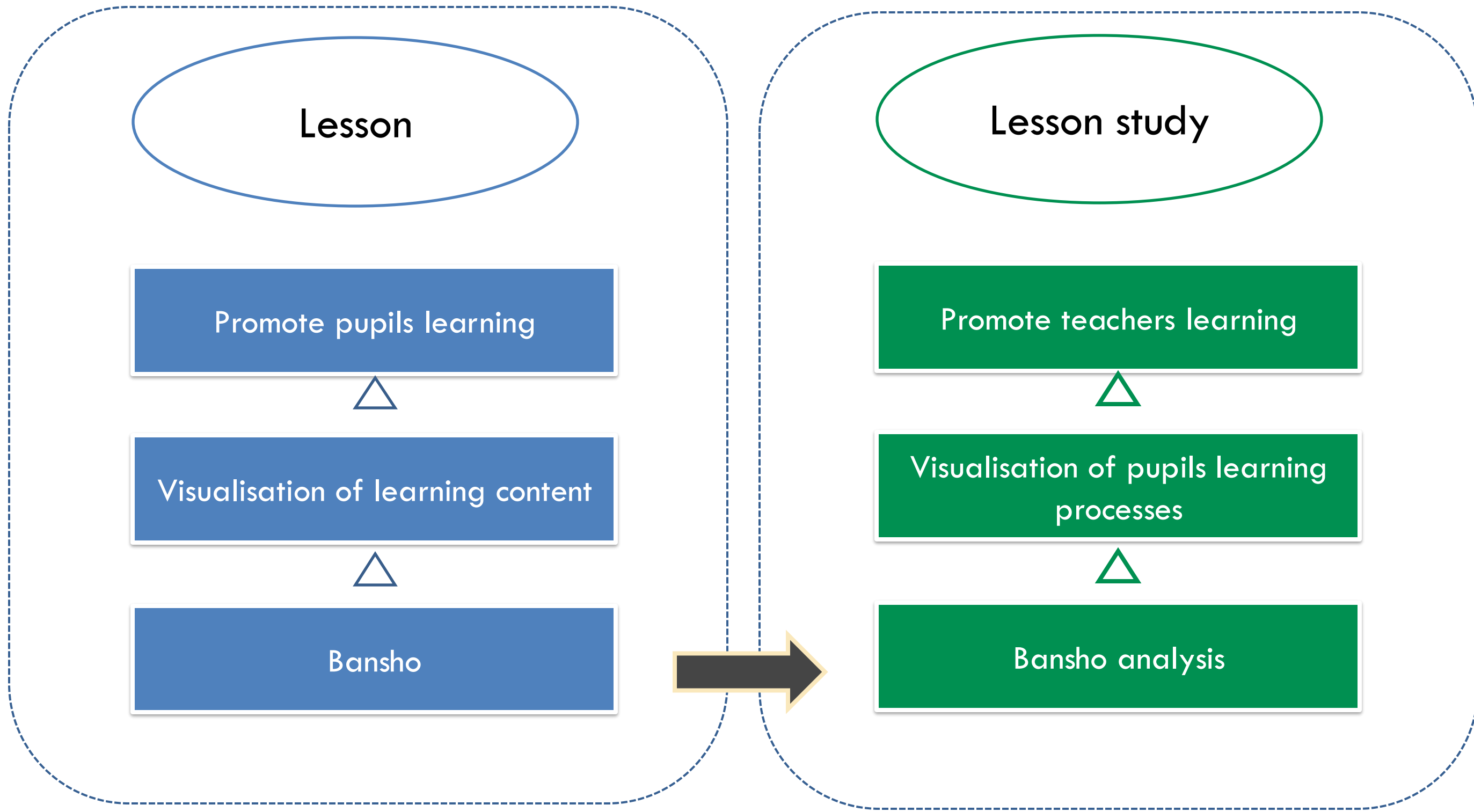
COMPLEMENTARY USE

- Expand possibilities for visual representation, access to resources and collaboration

02.

SEPARATED SPACES

- ICT does not replace board
- Individual ideas: ICT
- Group and Connection of ideas: Board



GATATTAGGTCCTGATTGCTAGCTAGCTAGCTAGCTAGCTAGCTGATTGCTAGCTAGCTAGGATTGCTAGCTAG
A**BANSHO**ATCGATCGATCGATTGGCTATCGATCGATCGATCGATCGATTGGCTCGATCGATTGGCTCGA
ATTCCGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGCTATATAGCTAGCTAGCTAGCTAGCGTAG
TCGATCGCTGCTAGCTATATCCGATGCGCTATGCTAGCTGCTAGCTATATCCGATGCGCTATGCTAGCTG
GATATTAGGTCCTGATTGCTAGCTAGCTAGCTA**BANSHO**TTTAGGTCCTGATTGCTAGCTAGCTAGCTA
ATCGTCGATC**BANSHO**TCGATTGGCTATCGATCGATCGATTGGCTATCGATCGATTGGCTATCGA
ATTCCGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGCTATATAGCTAGCTAGCTATAGCTAGCTA
TCGATCGCTGCTAGCTATATCCGATGCGCTATGCTAGCTGCTAGCTATATCCGATGCGCTATGCTAGCTA
G**BANSHO**GGTCCTGATTGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTA**BANSHO**
ATCGTCGATCGATCGATCGATTGGC**BANSHO**TCGATCGATCGATCGATCGATTGGCGATCGATCG
ATTCCGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGCTATATAGCTAGCTAGCTAGCTAGCGTAG
TCGATCGC**BANSHO**GCTATATCCGATGCGCTATGCTAGCTATATCCGATGCGCTATGCTAGCTATATCC
GATATTAGGTCCTGATTGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAG
ATCGTCGATCGATCGATCGATTGGCTATCGATCGATCGATCGATC**BANSHO**TTGGCTATCGATCGATCG
ATTCCGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGCTATATAGCTAGCTAGCTAGCTAGCGTAG
TCGATCGCTGCTAGCTATATCCGATGCGCTATGCTAGCTGCTAGCTATATCCGATGCGCTATGCTAGCTG
GATATTA**BANSHO**TGATTGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCTAGCT
ATCGTCGATCGATCGATCGATTGGCTATCGATCGATCGATGATTGGCTATCGATCGATCGATTGGCT
ATTCCGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGC**BANSHO**AGCTAGCTAGCTAGCTAGCGT
GATATTAGGTCCTGATT**BANSHO**CTAGCTAGCTAGCTAGCTAGGTCCTGATTTAGGTCCTGATTTAGGTC
BANSHOGAGCTAGCTATATAGCTAGCTAGCTAGCTAGCGTAGCTAGCTAGCTAGCGAGCTAGCTAGCTA
TCGATCGCTGCTAGCTATATCCGATGCGCTATGCTAGCTGCGCTATGCTAGCTGCGCTATGCTAGCTGCG
GATATTAGGTCCTGATTGCTAGCTAGCTAGCTAGC**BANSHO**ATTGCTAGCTAGCTAGGATTGCTAGCTA

Bansho is a *skill*.

From chalkboard to bansho

1883
Teaching tool

- “New Method for Teaching Primary School” by Kinoshita
- How to use a chalkboard
- Official recognition

1908
Bansho

- Research book by Katou
- Explicit use of the term “bansho”
- Bansho is a specific set of skills that requires scientific inquiry

1912-1926
Learning tool

- Research book by Sano: functions, techniques and types of bansho
- Testsuka (1922): Bansho as a tool for student’s learning and expressive activities

1975
Lesson Study

- Encyclopaedia of Lesson Study (Hatta)
- Three forms of bansho

2011
Canada

- Monograph produced by The Literacy and Numeracy Secretariat
- Ontario Bansho: Collective Thinkpad

2012
Thailand

- Student-Teachers use of Blackboard in Mathematics Classroom Using Open Approach (Sisavath, Toulavanh, Narumol Inprasitha, and Maitree Inprasitha, 2012)

2021
Indonesia

- The learning model of SPS-Bansho to improve student mathematics learning activities (Rini, 2021)

2022
Colombia

- Bansho mathematics strategy as a means for enhancing writing skills in second graders (Arias Rivera, 2022)

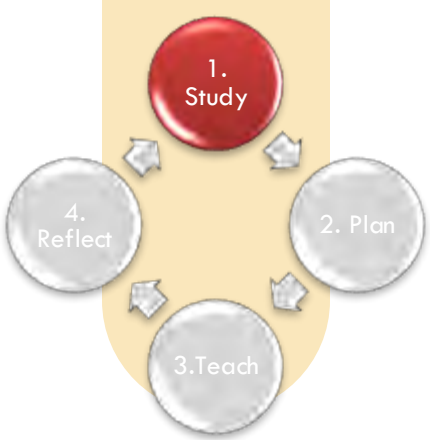
Exploring bansho: Insights, strategies and possibilities in boardwork



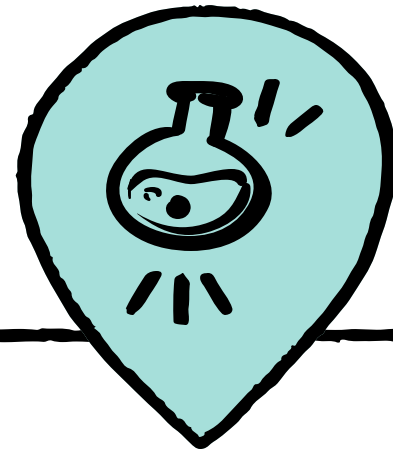
- Classrooms in Japan
- Lesson study in Japan
- Bansho (board writing and organisation)



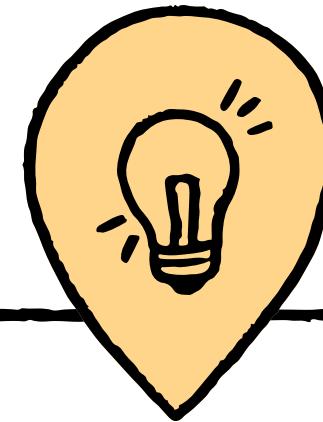
- Bansho strategies



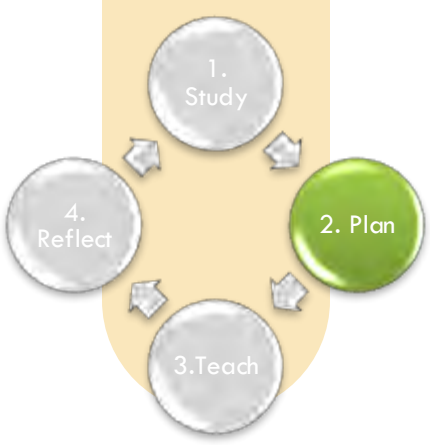
Bansho in Lesson Study



Identify a pressing issue in students' learning through research, books, students' notes etc



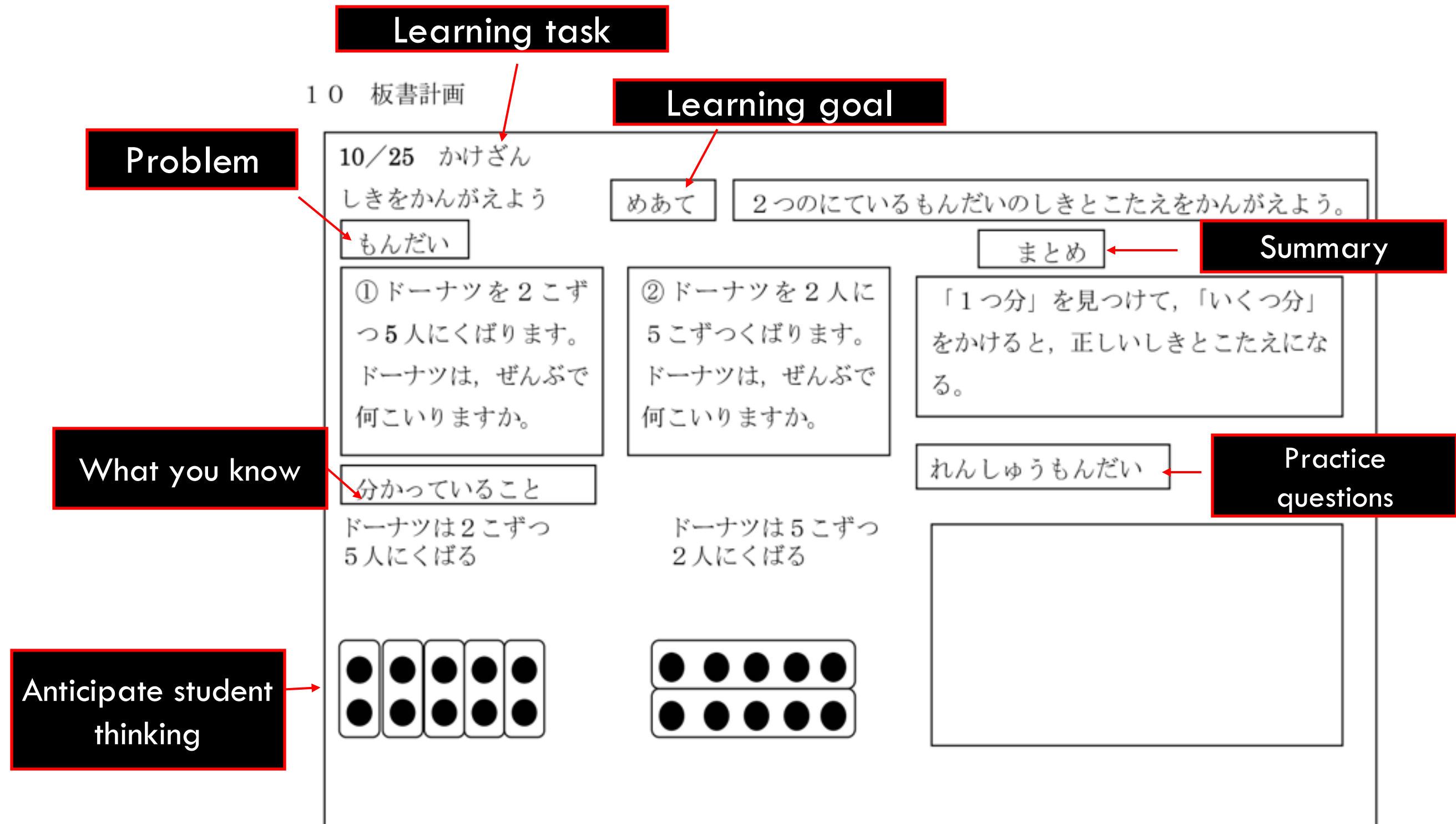
Think about the main elements of bansho content (e.g. the topic, the overarching goal)



Bansho in Lesson Study

Bansho keikaku (boardwork plan)

- Part of lesson plan
- Layout of the lesson
 - ✓ When
 - ✓ What
 - ✓ Where
 - ✓ Size
 - ✓ Colour
- Tells a coherent story



B

A

N

S

H

O

Balance

Attention-grabbing

Nameplate

Space

Highlighter

Order



Let's compare the number of pupils in 3 schools



School A
412 people



School B
398 people



School C
465 people

Question

Which school has more pupils?

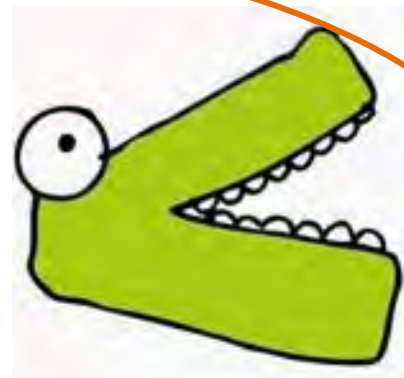
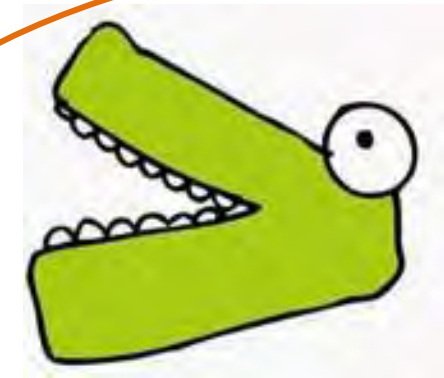
	hundreds	tens	ones		hundreds	tens	ones
A	4	1	2	A	4	1	2
B	3	9	8	C	4	6	5

412 is bigger than 398.
School A has more pupils than B.

412 is smaller than 465.
School C has more pupils than A.

$412 > 398$

$412 < 465$



the open side is the bigger number

line
circle
colour

Task

Use symbols to represent if a number is bigger or smaller than another.

Summary

- For "412 is bigger than 398"
I can use the symbol $>$
So it can be represented as $412 > 398$
- For "412 is smaller than 465"
I can use the symbol $<$
So it can be represented as $412 < 465$

Practice questions

1) 398 is smaller than 412
398 412

2) 465 is bigger than 412
465 412

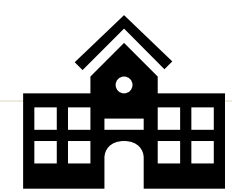
1) i) 389 387
389 is bigger than 387

ii) 259 261
.....

iii) 94 103
.....

1 Comparons le nombre d'élèves dans 3 écoles

date
p.6



École A
412 personnes



École B
398 personnes



École C
465 personnes

2 Tâche

Utiliser des symboles pour indiquer si un nombre est plus grand ou plus petit qu'un autre.

Questions d'entraînement

- 1) 398 est plus petit que 412
 Nom 398 412
- 2) 465 est plus grand que 412
 Nom 465 412

Question

Quelle est l'école qui compte le plus d'élèves ?

	centaines	dizaines	unités
A	4	1	2
B	3	9	8

	centaines	dizaines	unités
A	4	1	2
C	4	6	5

412 est plus grand que 398.
 L'école A compte plus d'élèves que l'école B.

412 est plus petit que 465.
 L'école C compte plus d'élèves que l'école A.

$412 > 398$

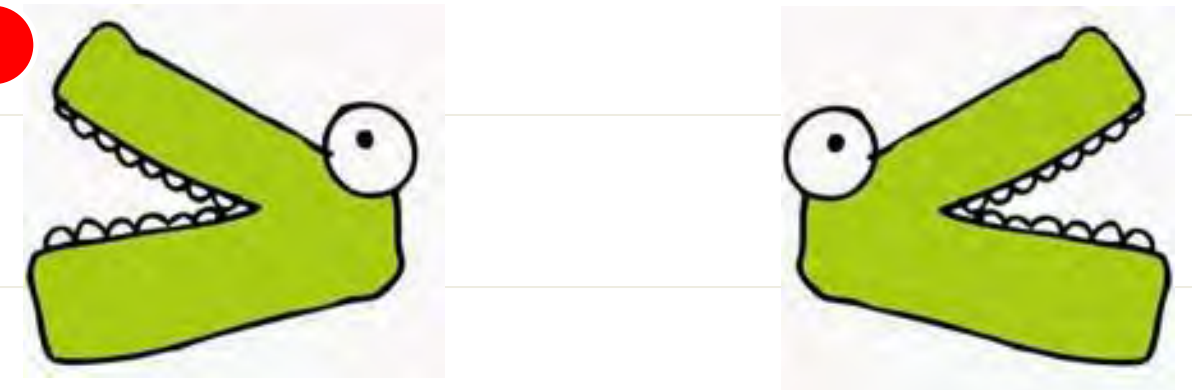
$412 < 465$

Résumé

- Pour "412 est plus grand que 398".
 Je peux utiliser le symbole $>$
 Il peut donc être représenté par $412 > 398$
- Pour "412 est plus petit que 465".
 Je peux utiliser le symbole $<$
 Il peut donc être représenté par $412 < 465$

- 1)) 389 387
 389 est plus grand que 387
- i) 259 261

- ii) 94 103



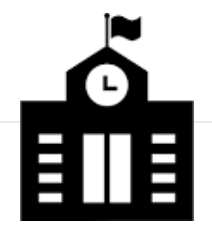
le côté ouvert est le plus grand nombre

1 Let's compare the number of pupils in 3 schools

date
p.6



School A
412 people



School B
398 people



School C
465 people

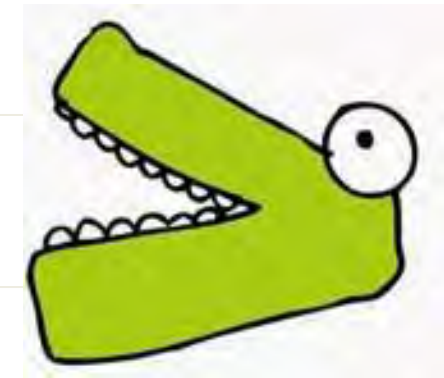
Question

Which school has more pupils?

	hundreds	tens	ones		hundreds	tens	ones
A	4	1	2	A	4	1	2
B	3	9	8	C	4	6	5

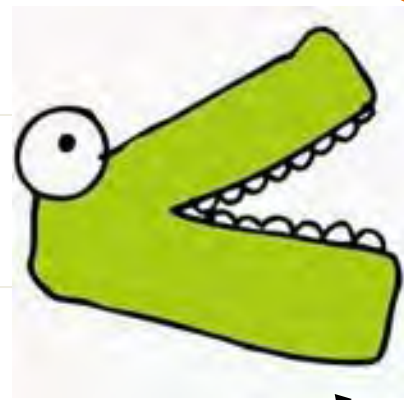
6 412 is bigger than 398.
School A has more pupils than B.

$412 > 398$



8 412 is smaller than 465.
School C has more pupils than A.

$412 < 465$



the open side is the bigger number

Task

Use symbols to represent if a number is bigger or smaller than another.

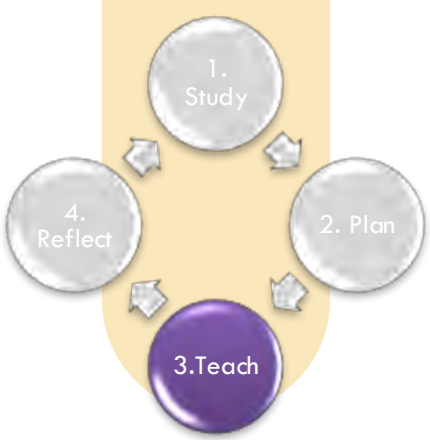
Summary

- For "412 is bigger than 398"
I can use the symbol $>$
So it can be represented as $412 > 398$
- For "412 is smaller than 465"
I can use the symbol $<$
So it can be represented as $412 < 465$

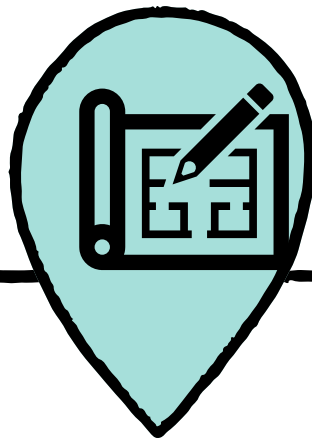
Practice questions

- 14**
- 1) 398 is smaller than 412
398 412
- 2) 465 is bigger than 412
465 412

- 15**
- 1) i) 389 387
389 is bigger than 387
- ii) 259 261
.....
- iii) 94 103
.....



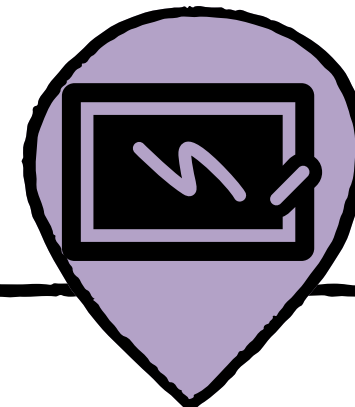
Bansho in Lesson Study



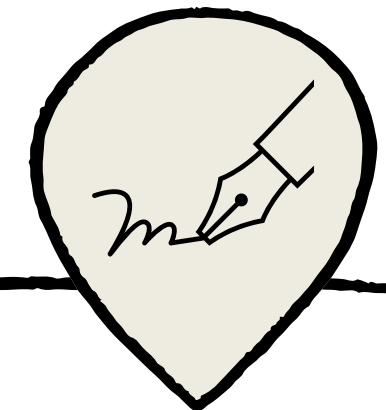
Have the bansho plan ready



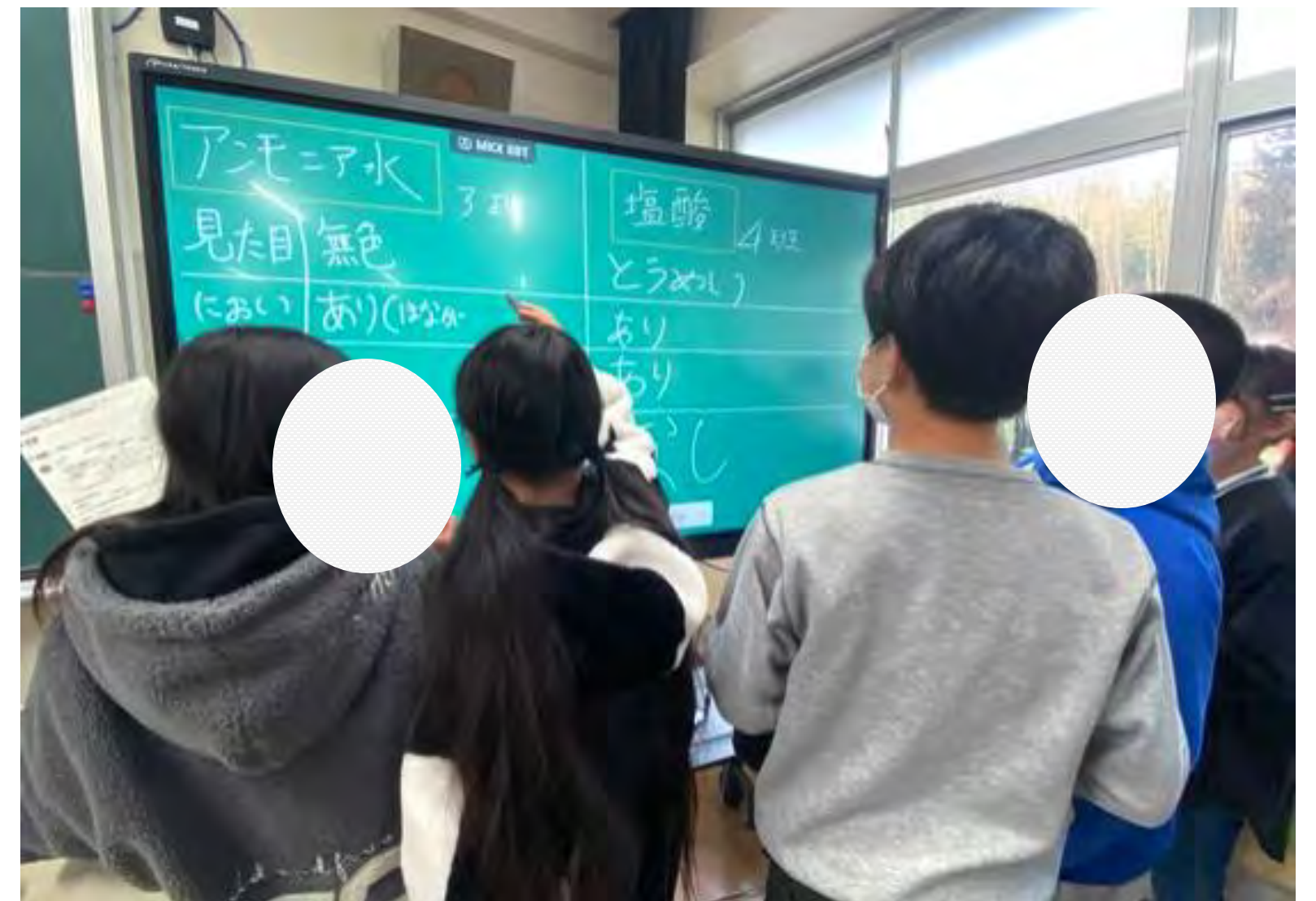
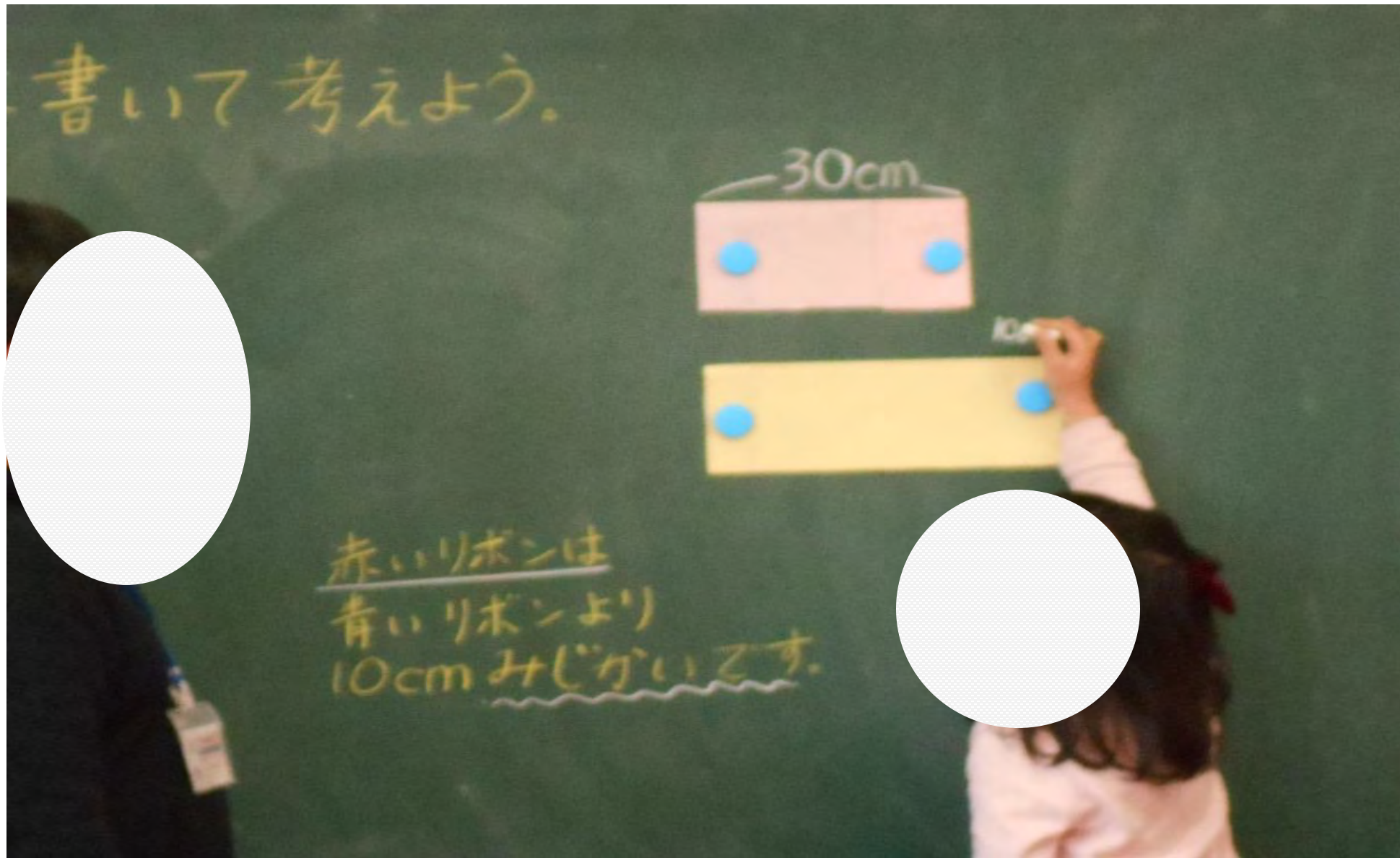
Be ready to change the plan

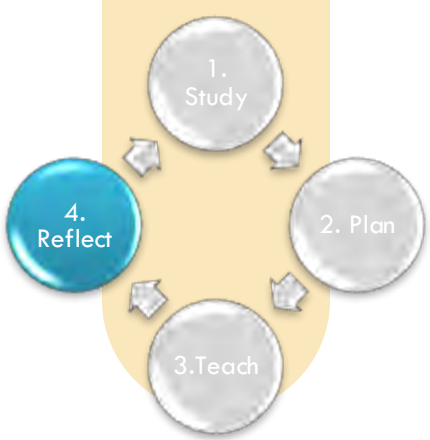


Pass the chalk/marker/smart board pen to the learners



Allow working time/thinking time (writing on the notebook)





Bansho in Lesson Study



- Photographs
- Compare bansho plan with actual bansho- Why?

Let's compare the number of pupils in 3 schools

School A: 412 people
School B: 398 people
School C: 465 people

Question: Which school has more pupils?

	hundreds	tens	units
A	4	1	2
B	3	9	8

412 is bigger than 398.
School A has more pupils than B.
 $412 > 398$

412 is smaller than 465.
School C has more pupils than A.
 $412 < 465$

the open side is the bigger number

Task
Use symbols to represent if a number is bigger or smaller than another.

Summary

- For "412 is bigger than 398"
I can use the symbol $>$
So it can be represented as $412 > 398$
- For "412 is smaller than 465"
I can use the symbol $<$
So it can be represented as $412 < 465$

Practice questions

1) 398 412
2) 465 412

NP

1) 389 387
389 is bigger than 387

ii) 259 261

iii) 94 103

どちらの人数がおおいですか。

東小	④	1	2
西小	3	9	8

412は398より大きい。
 $412 > 398$

東小	④	1	2
南小	④	⑥	5

412は465より小さい。
 $412 < 465$

めあて
数の大きさを記号をつけてあらわそう。

まとめ
•「412は398より大きい」ことは、「 $>$ 」をつけて「 $412 > 398$ 」であらわすことができる。
•「412は465より小さい」ことは、「 $<$ 」をつけて「 $412 < 465$ 」であらわすことができる。

① 398は412より小さい。
 $398 < 412$

② 465は412より大きい。
 $465 > 412$

③ (1) 389 387
389は387より大きい。
(2) 259 261
259は261より小さい。
(3) 94 103
94は103より小さい。

まなんだこと



Bansho in Lesson Study

- Compare actual bansho with students' notes

2016年～ 18歳から選挙権

240万人

変わらない。 → よくなっていく。

悪くなる。 関心がある。

責任感 育たれるか

選挙行かない!

願い

親子で

自分の意見を反映させた。同じ気持ちの人いるのか?

2月17日 卒業まであと...

選挙について考えたこと、分かったこと、疑問など

選挙に行く人と行かない人を分けるべき?

賛成 反対

賛成: 27人 (5%)
反対: 519人 (95%)

2016年 18歳から選挙権

賛成: 18人 (5%)
悪く: 4人 (11%)
良: 5人 (14%)

27人 残り9人 4人 残り5人 5人 残り0人

考え

私は選挙のことは、世人世人知らなかたけれど、選挙権のことはあまり知らなくてある意味すごいと思いた。知らないことがすごい!



Bansho in Lesson Study



- Photographs of bansho from every lesson
- Reflection tool, a database of lesson record
- **Board photo book** as a reflection tool (Uchiyama & Kubota, 2018)
 - easy and effective reflection tool
 - highly effective in the aspect of “pupil’s learning” and “teacher’s instruction”
 - development of the unit and the relationship between the preceding and following lessons.
 - useful in recalling the details of the lesson
 - look back on pupils’ activities and the composition of the board from the pupils’ perspectives

Exploring bansho: Insights, strategies and possibilities in boardwork



- Classrooms in Japan
- Lesson study in Japan
- Bansho (board writing and organisation)



- Bansho strategies



- Bansho beyond Japan
- Future possibilities



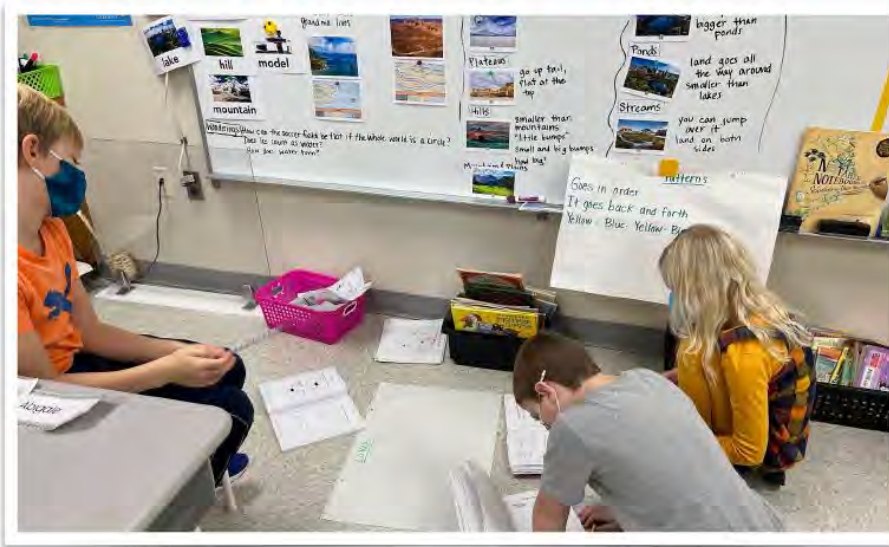
Bansho beyond Japan

WALS 2023

Bansho/Boardwork

An essential part of Lesson Study

Beth Ann Skelly-Kempf



Students use the board during lessons in the Science units.



Students show their parents the Boardwork they have contributed to during the lessons.



Boardwork is available for students to see and work with throughout the day.

As a classroom teacher in grades Kindergarten through 6, I have engaged in Lesson Study cycles in Kindergarten, first, and second grade levels. An initial comparison of Boardwork prior to Lesson Study and Boardwork after engaging in Lesson Study cycles has been completed. The comparison shows that Boardwork using the Lesson Study method is fluid, live, and a valuable resource in the classroom as opposed to “Boardwork” before Lesson Study where it was static and a one way communication tool for students’ learning. Additionally, Boardwork after lesson study resulted in a higher engagement and usefulness of the board from students, additions or deletions in Student Notebooks, and an ownership of knowledge posted on the board.



Before my classroom board was filled with what we were doing for the day in every subject. It was not specific for any idea. Now, it is very specific, highlighting the ideas of the day for Science or Math. It is purposeful and useful for students to use and change when new ideas come up.

“The key to effective Boardwork is doing the problem yourself and then anticipating how your students will solve it. It is from this perspective you monitor, select, and sequence the student work to share on the board.” -Alex Johansen-Laughlin, Prieto Math and Science Academy, Chicago.



PRELIMINARY RESEARCH

- ◆ In my preliminary findings about Boardwork in the Classroom I found that once teachers understand Boardwork they are more likely to use it in their classrooms.
- ◆ When it is available to students they utilize it as a resource.
- ◆ As of now, teachers surveyed only use Boardwork for math and science.
- ◆ Math is a daily board and Science is a unit board.
- ◆ I will be continuing my research with teachers.

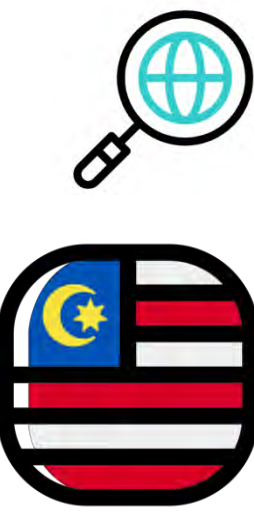


Boardwork is an essential part of Lesson Study. When used daily in a classroom setting it goes beyond the Lesson Study framework and changes the teaching and the physical space of learning in classrooms. As we get more comfortable with Boardwork in math and science from Lesson Study, how can we extend it to other subjects?

If we, as teachers, are anticipating and mapping out what students will say and think about their learning, we will not only gain an advantage to teach a better lesson, but also give students the opportunity to record and make changes based on their learning and thinking.

More often than not, teachers do not have the time to go over a unit or lesson as deep as they get to in a Lesson Study cycle. Anticipating students’ responses and questions helps prepare for the lesson more efficiently and makes for a richer learning experience.

Bansho beyond Japan



Bansho beyond Japan



Task: Divide the paper $\frac{8}{8}$ into 8 equal parts.

give Robert = 1 part \rightarrow 1 part out of 8 (Eighth = $\frac{1}{8}$)

give Katie = 3 parts \rightarrow 3 parts out of 8 (three-eighths = $\frac{3}{8}$)

Practice page 173 (TB)

HW WB pg 109-111

① Jason, Samantha

② Jovan, Harvey

③ Angel, Nia

④ Brielle & Jason

⑤ Richard

will it be the same amount of paper left?
size?
Sisa berapa?

left? parts left = $\frac{4}{8}$

Summary

one-eighth \rightarrow eight $\rightarrow \frac{1}{8}$ & $\frac{3}{8}$

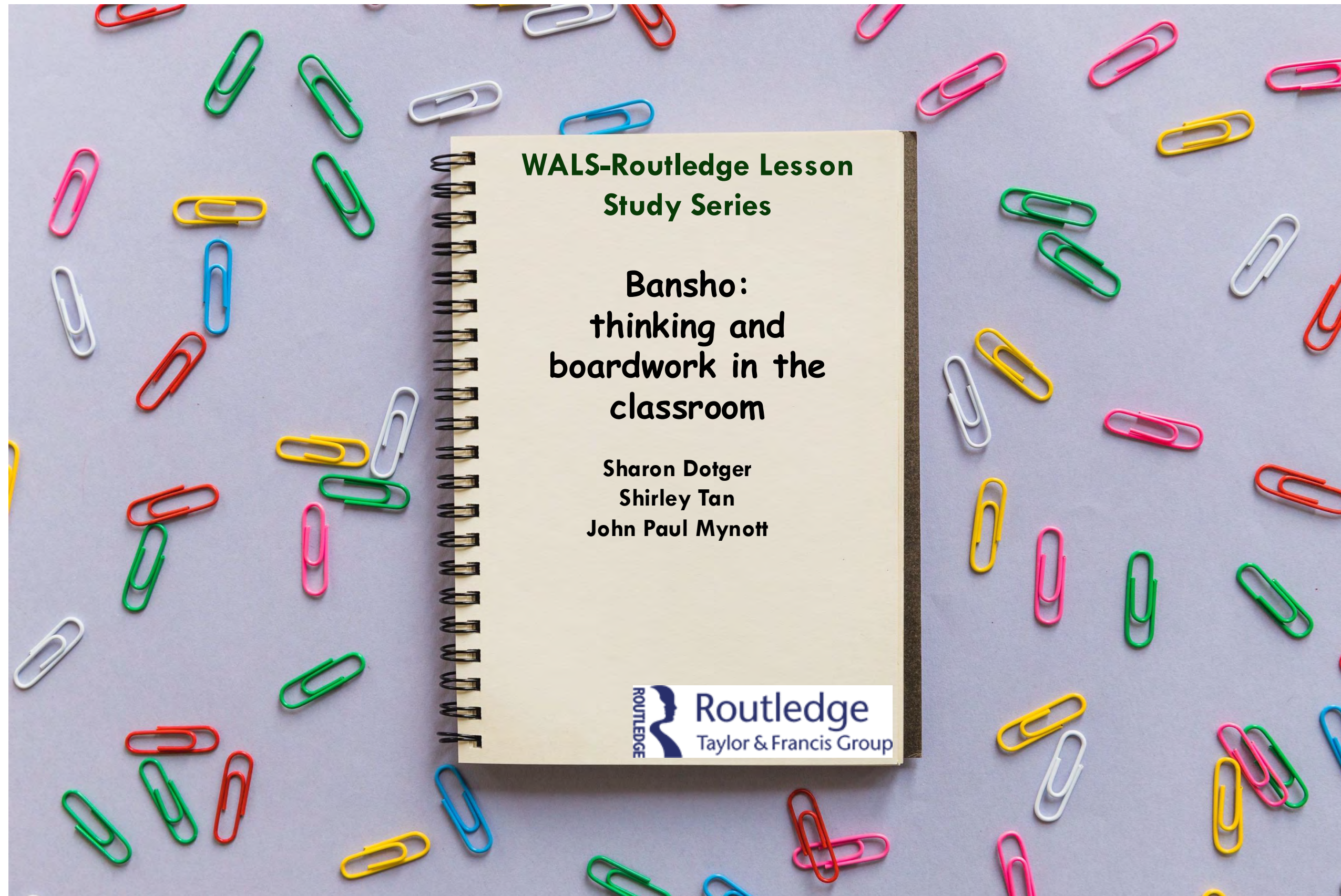
Make 8 equal parts

$\frac{8}{8} = 1$

Shaded \leftarrow 3

total \leftarrow 4

Bansho beyond Japan



Bansho beyond Japan



bansho.net
Get on Board

English

What is Bansho 板書? Latest Research Works Best Teaching Practices

BANSHO

The chalkboard image shows a complex Bansho board. On the left, there's a drawing of a staircase with 6 cubes and the text "Comment faut-il de cubes pour construire un escalier de n marches?" with the formula $\frac{(1+n) \cdot n}{2}$. The main part of the board is a timeline from 1905 to 1945, with various historical events and dates. Labels like B1, C1, D1, E1, F1, etc., are placed around the board, likely representing different levels of understanding or teaching points. A white diagonal line is drawn across the board from the top-left to the bottom-right.

Co-founders: Shirley Tan & Stéphane Clivaz

Supported by: International Center for Lesson Studies, Nagoya University, Japan

Bansho beyond Japan



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Sign up for our mailing list to be the first to receive updates from our team.

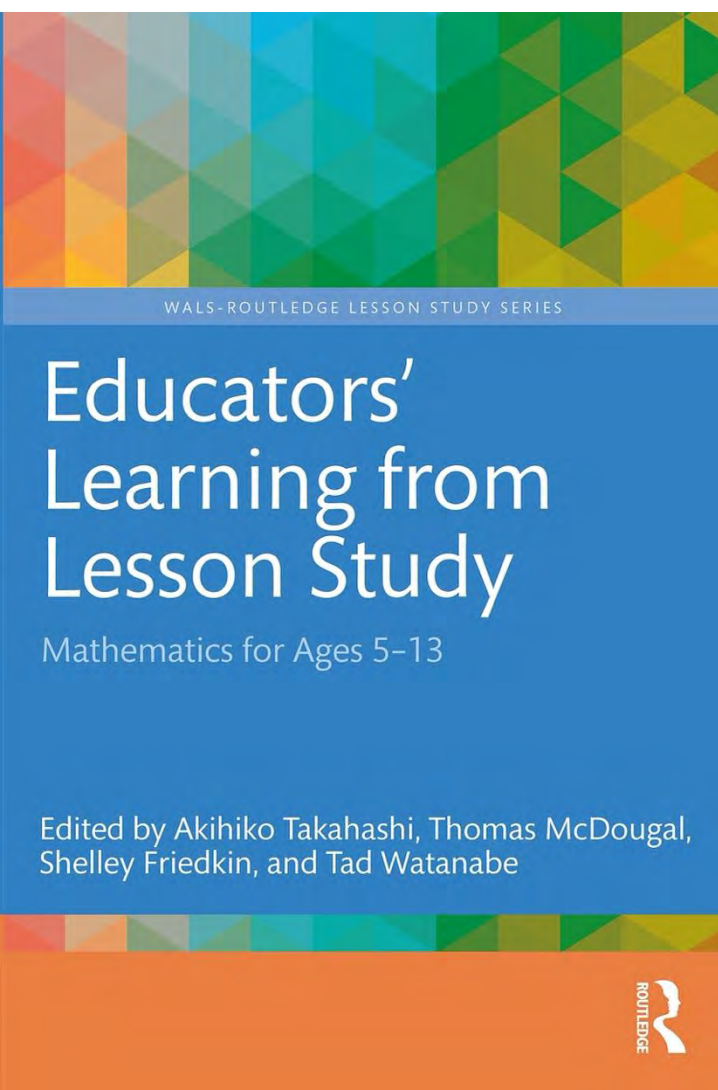
bansho.net

**In the *Swiss* context,
what opportunities and
challenges do you see to
implement bansho?**



“One of the **most crucial things** I have learned through my **lesson study** experience is the significance and importance of **boardwork**. Thinking about and planning board work had transformed the way that I think about teaching and planning for student learning.”

—**Aubrey E. Perlee, Teacher**
Educators' Learning from Lesson Study (2022,p.94)



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