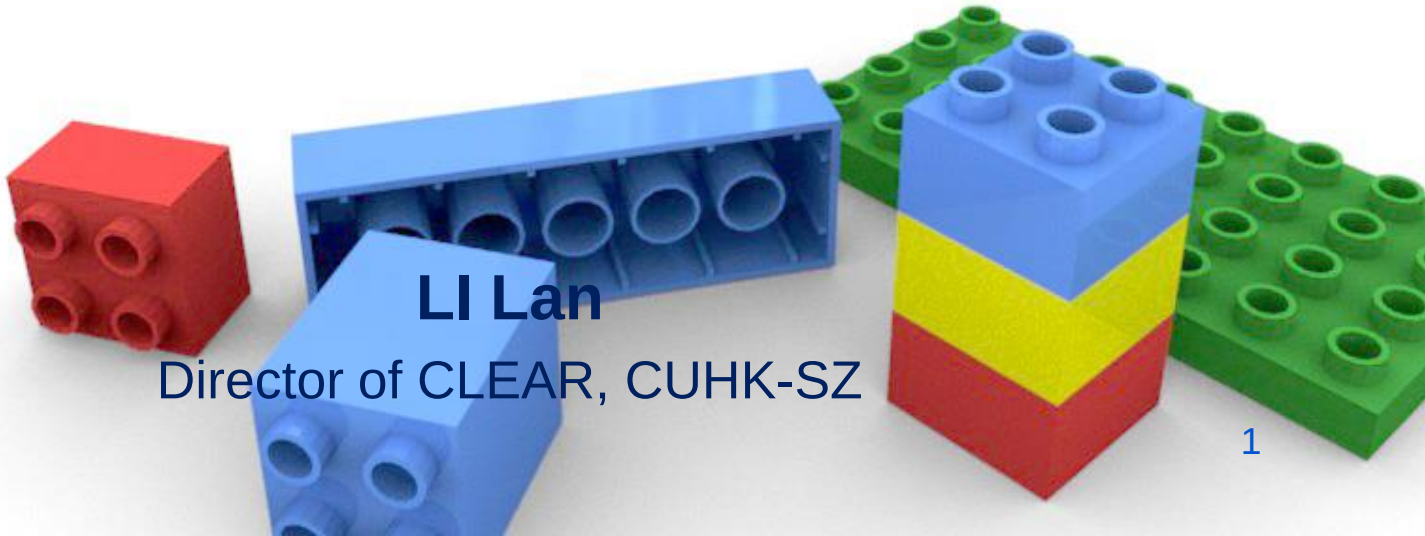
香港中文大學(深圳)
The Chinese University of Hong Kong, Shenzhen

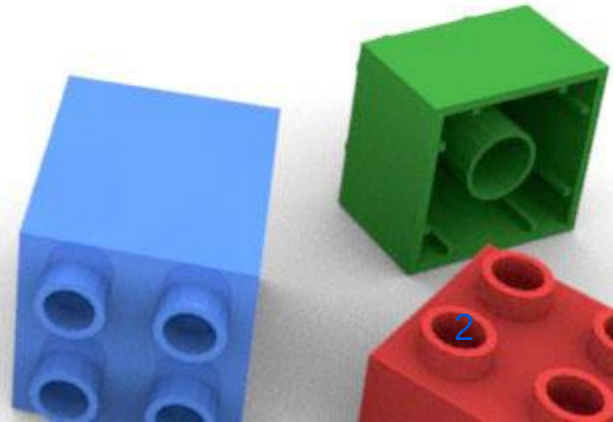
Interactive Teaching and Learning in Higher Education: Challenges and practice



LI Lan
Director of CLEAR, CUHK-SZ

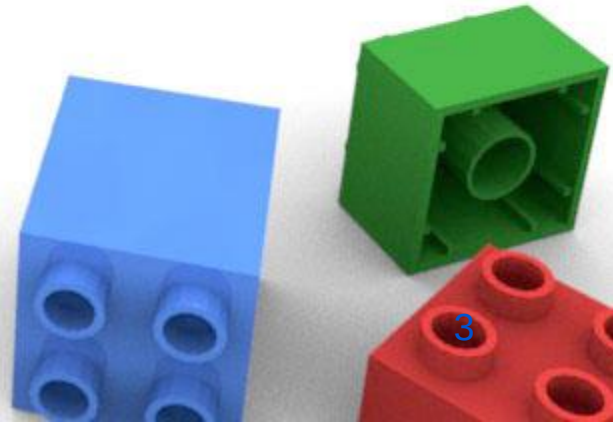
Contents

- Concepts and principles of interactive learning
- Problems in teaching
- Types of interaction
- Useful strategies
- Summary



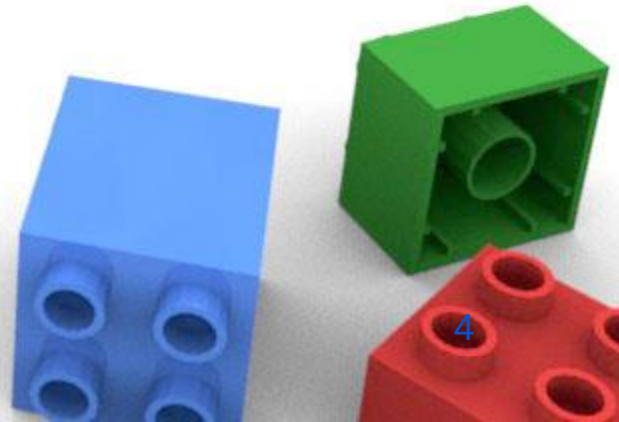
Interactive learning

- Interaction is the basic form of classroom teaching;
- The theoretical basis of classroom interaction is social and cultural theory (Vygosky; Piaget)
- Research has shown that classroom interaction has a positive impact on learning (Biggs 1982, 2003; Ellis 1991);



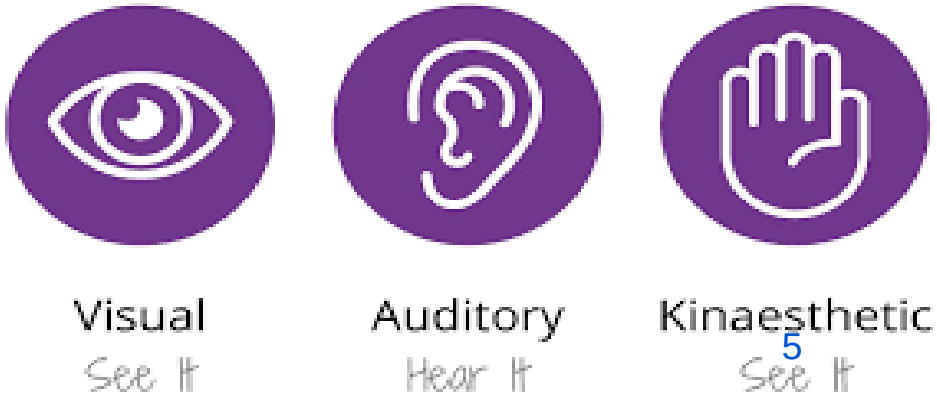
Lao-Tse
500 BC

If you tell me, I will listen;
If you show me, I will see;
But if you let me experience,
I will learn.



Learning styles

- Visual Learners： remember images, shapes and colors.
- Auditory Learners： remember voices, sounds and music.
- Kinesthetic Learners: remember by doing, moving and touching.



Lev Vygotsky

Soviet psychologist
1896-1934

- Sociocultural theory suggests social interaction plays a critical role in children's learning.
- Learners develop strong thinking skills through interaction with culture and surrounding.
- Children learn through experience. They adapt to situations based on what they have previously learned from other situations.

Jean Piaget

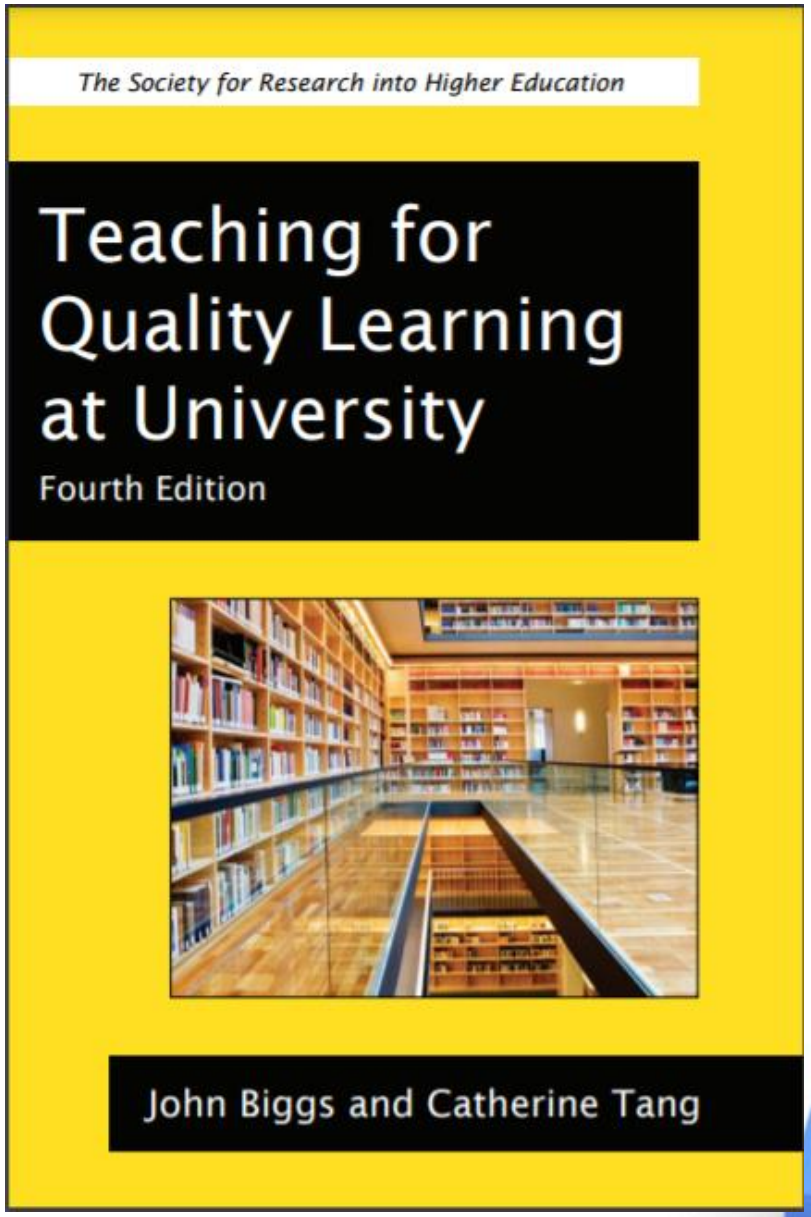
Swiss psychologist
1896-1980

Learning is caused by the blend of two processes: ACCOMODATION and ASSIMILATION. Children first reflect on their prior experiences to understand a new concept and then adjust their expectations to include the new experience, so they can continuously construct knowledge.

SCHEMA - Children sort the knowledge they acquire through their experiences and interactions into groupings.

ACCOMODATION requires the teacher to subsequently change to accommodate kids' needs.

ASSIMILATION can expand knowledge, to adopt, to learn new things.


The Society for Research into Higher Education
Teaching for Quality Learning at University
Fourth Edition
John Biggs and Catherine Tang

The SOLO Taxonomy of Levels of Understanding

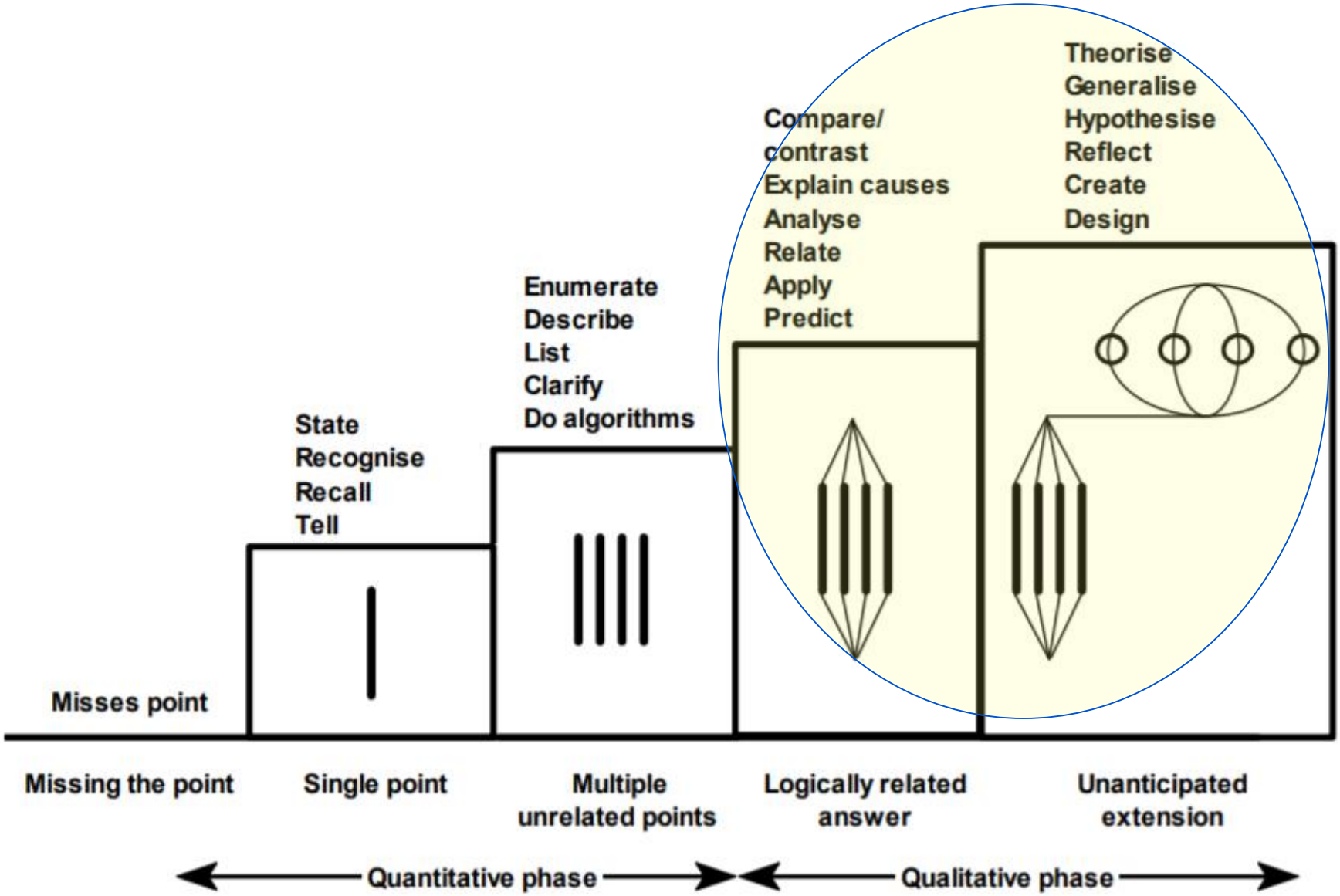


Figure 1: SOLO taxonomy (after Biggs, 2003)

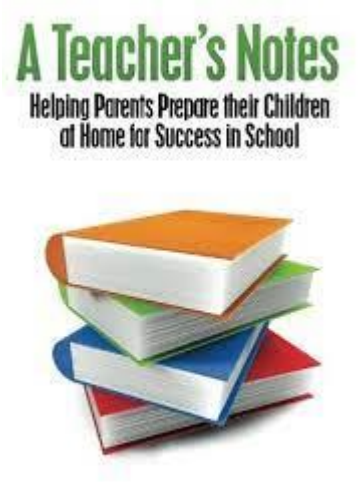
In an interactive classroom

Students are

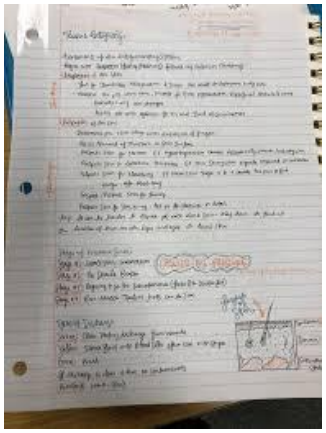
- engaged in the learning process;
- encouraged to “own” and construct knowledge;
- provided with real-life connections and experiences;
- required to think critically and creatively;
- learning with reference to their different learning styles;
- building on their prior knowledge/experience;
- evaluated using multiple authentic assessment strategies.

(Biggs, 2003)

Problem in teaching



Students' notes



X

X

Problems in teaching

- Findings from the surveys conducted by CLEAR last year: 54.5% teachers and students regarded classroom interaction/engagement a problem.
- Specific problems reported:

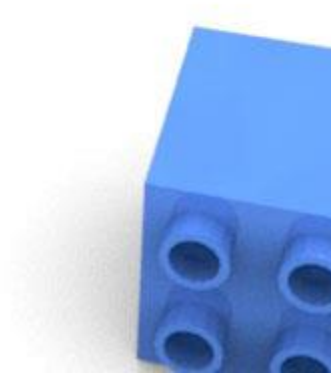
by teachers:

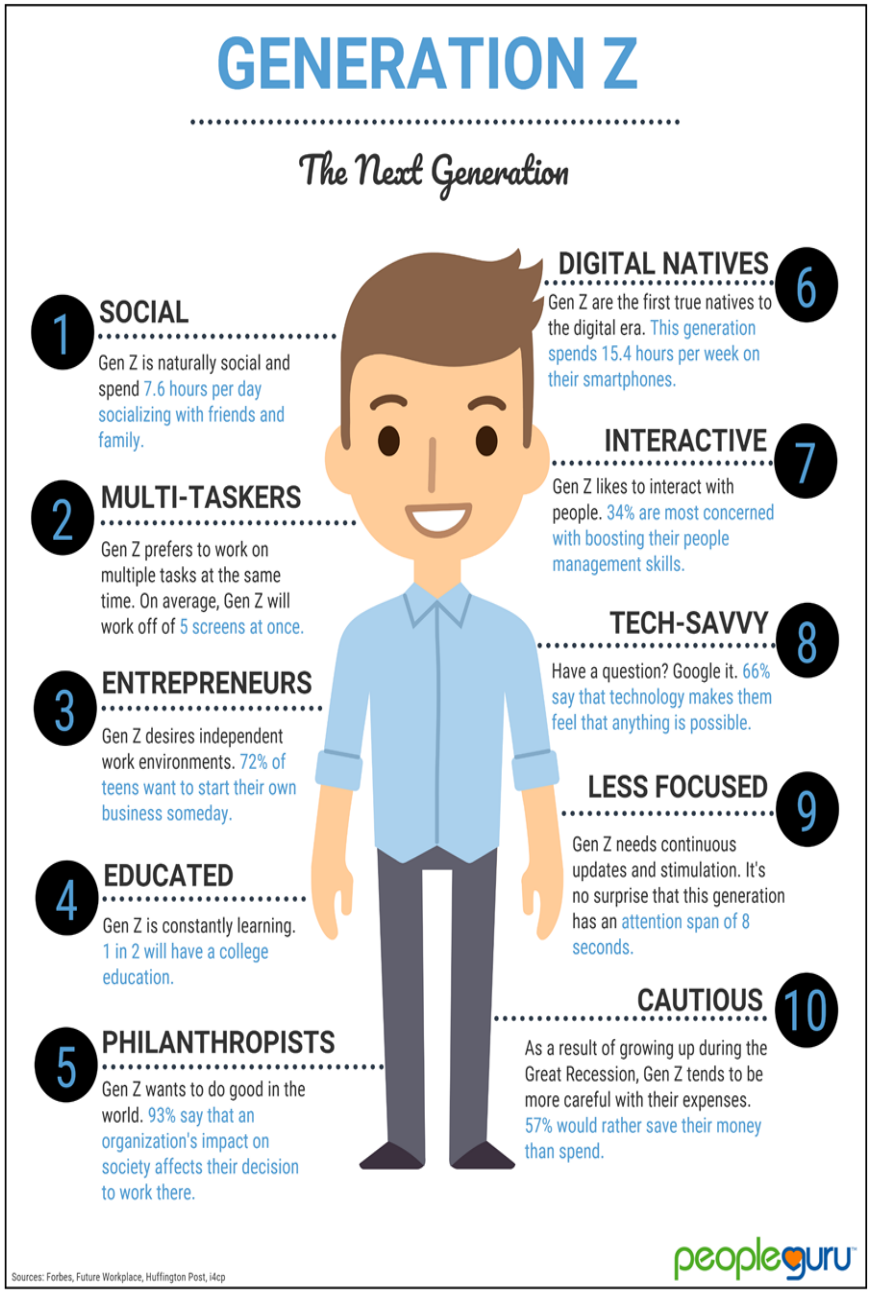
- Limited response
- Difficulty in inspiring students
- Different interest
- No facial expressions from students

by students:

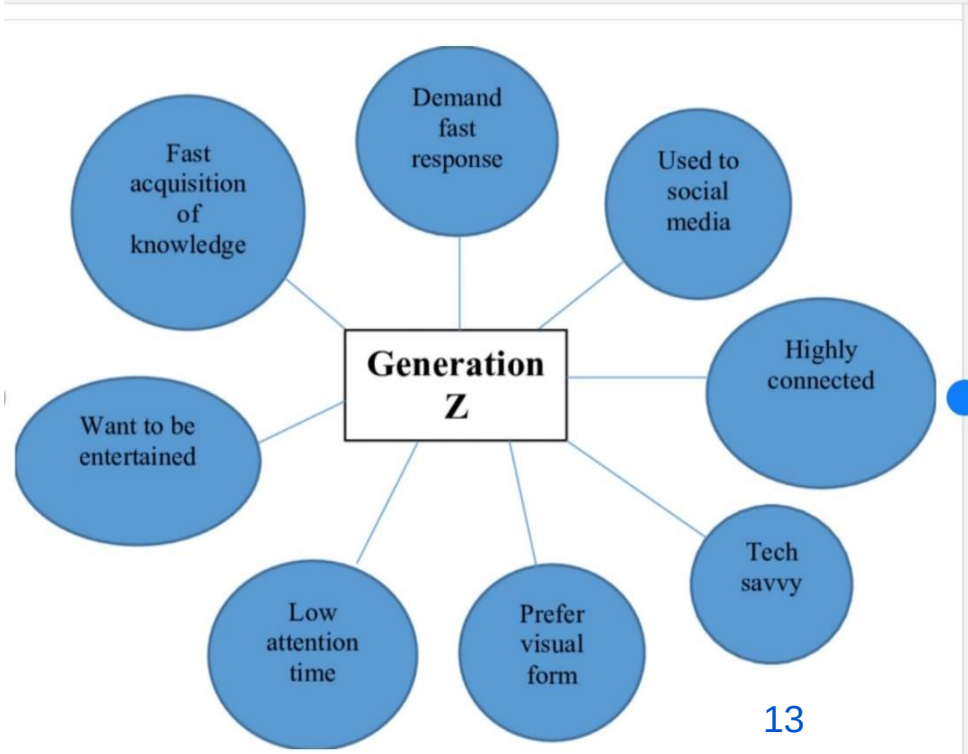
- Unclear instruction
- Unclear tasks
- Unclear aims
- Lack of interest

A quiz





Understanding students: Generation Z

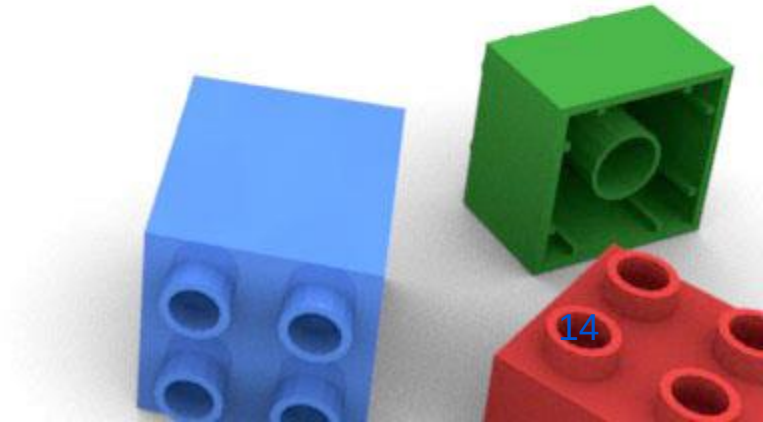


Generation Z characteristics [5, 8-10]

CUHK(SZ) student background

	Father	Mother
College and above	85.9%	80.5%
Full time job	91.6%	77.7%

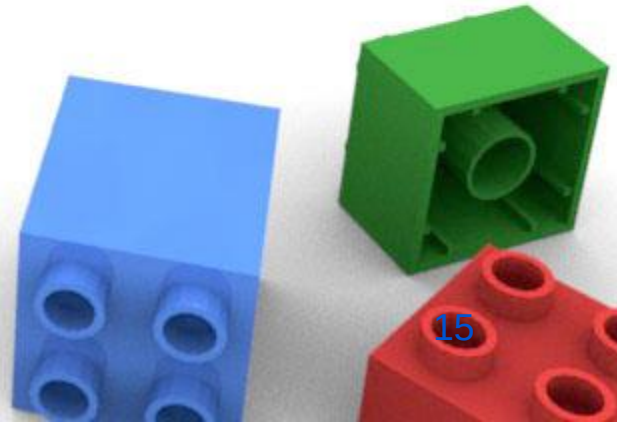
- From well-educated families.
- High expectation of the teahers / the University



The ideal classroom

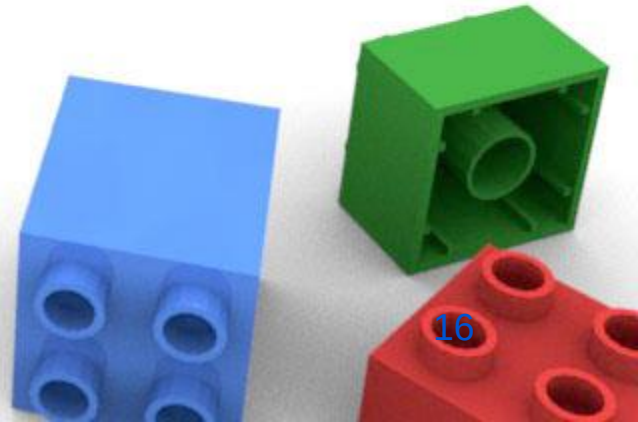
The ideal classroom is characterized by **three key features**:

- ***Thinking***: Students are motivated to think deeply about the concepts and theories in their respective disciplines, and to apply their new understanding to solve real-life problems.
- ***Task-focused***: Students are engaged in meaningful learning tasks.
- ***Teamwork***: Students are involved in learning activities that require them to work in teams with their peers.

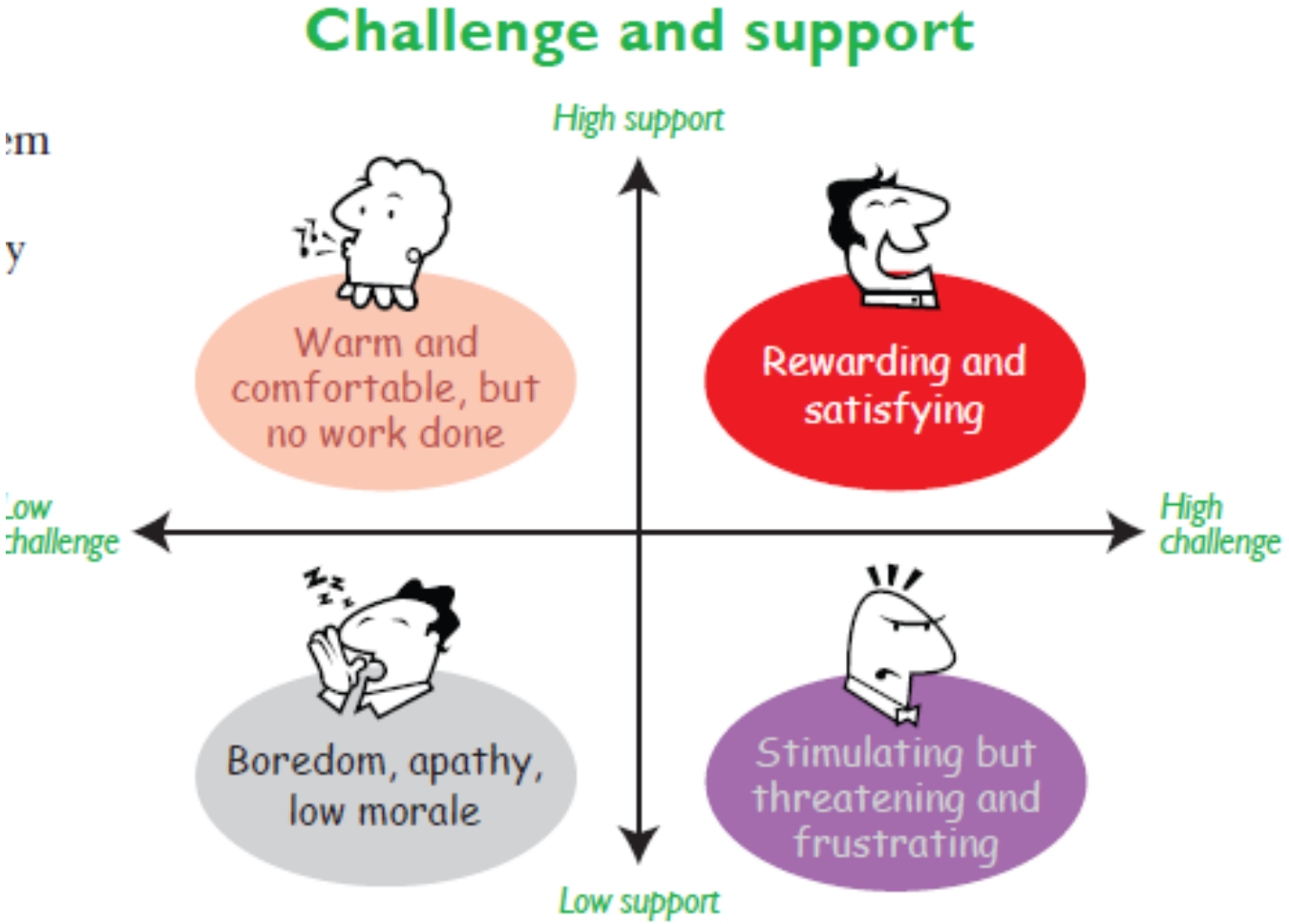


Teacher's role in interactive learning

- The teacher is *actively* engaged in facilitating and providing assistance, feedback and clarification.
- The teacher monitors *actively* during student work.
- The activity/task engages all students, all the time.

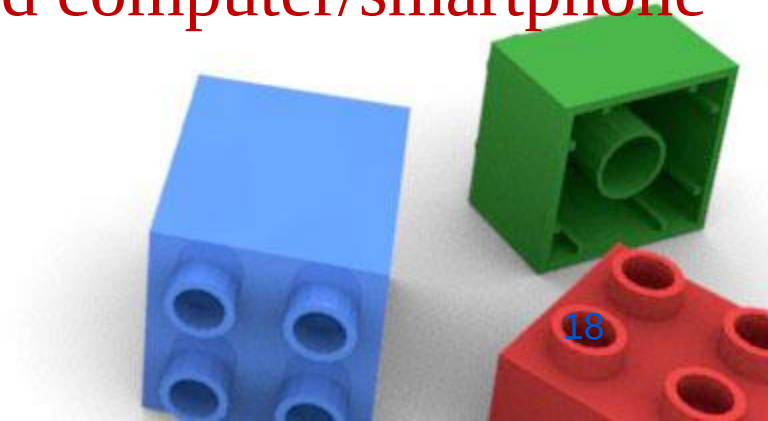


Teacher's role in interactive learning



Types of interactions in class

- Teacher-student interactions
  - Question
  - Meaning negotiation
  - Feedback
- Interactions between students
  - Paired activities
  - Group activities
  - Team projects
- Interactions between students and computer/smartphone
  - In-class quiz
  - Exercises



T-S Interaction 1: Questioning

Questions are a teacher's most powerful tool. They can keep a lesson flowing, highlight misconceptions or open up a discussion.

Forms of questions

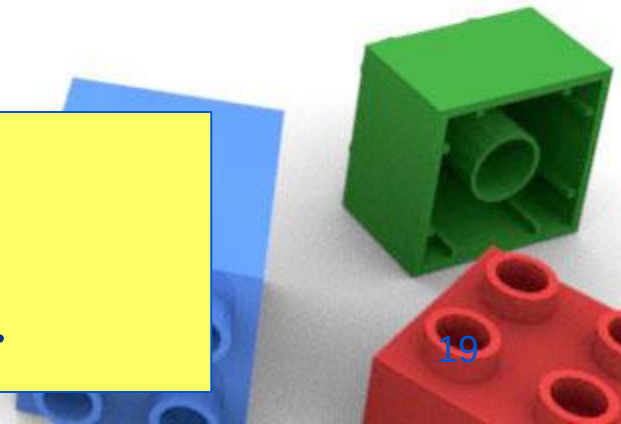
- General questions (*Yes/No*)
- Special/WH questions (*when*, *why*, *who*, *where*, *what*, *how)*
- Choice questions (*whether… or*)
- Tag questions (positive or negative)

Functions of questions

verification questions, truth questions, probing questions, hypothetical questions, exploratory questions

Good questions can inspire thinking.

Bad questions can be a waste of time.



Example: Ask questions based on the text

There are about 1.35 million homeless people in California, and 21% of these individuals are students. About 4% of all California students experienced homelessness at least once in the 2012-2013 school year, which was twice the national average. Many of the students who are homeless live in cars with their parents or stay with friends when their parents are on the street. Many of these students are also college students. While laws are in place to make education accessible to homeless students, there is a general lack of resources to adequately provide for the homeless, their nutritional needs, and their health care. Studies show that homelessness is a huge factor in student drop-out rates, which continues the cycle of poverty.

Close questions: (The teacher knows the specific answers.)

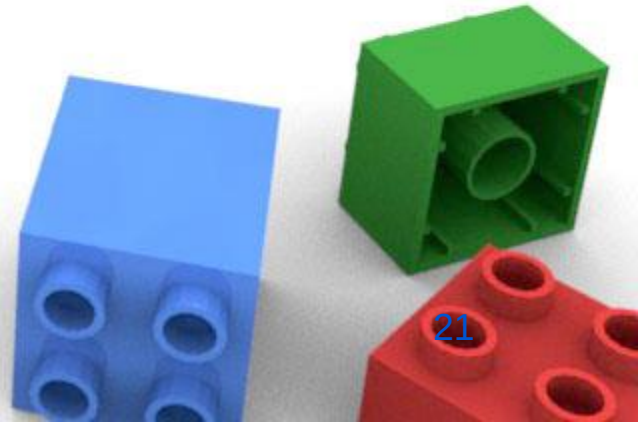
1. How many homeless students were there in California in 2012-13 school year?
2. Where do these student live when they are homeless?
3. Can homeless students go to university?
4. Why do they tend to drop out?

Open questions: (The teacher does not know the answers.)

1）What do you think are the reasons of homeless students?

2）Do you think the government has done enough to help homeless students? Why?

3) Why does the author say school drop-out rates continue the cycle of poverty?



Other types of questions

Use

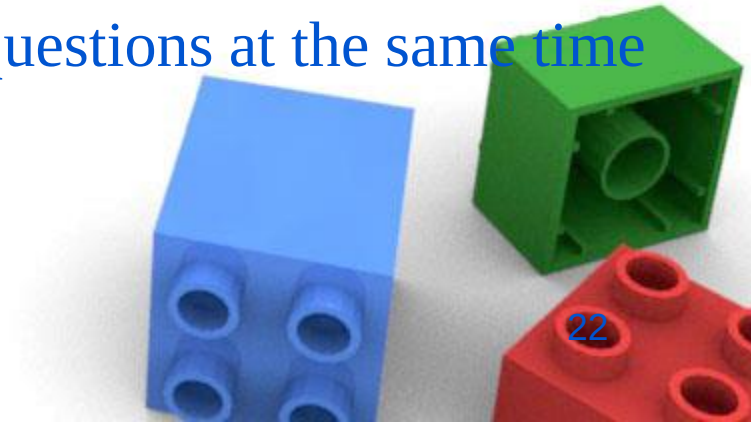
Hypothetical question: Use *if, whether, suppose.. under the condition that…* to check students' understanding of some theory or knowledge.

Exploratory question: Use *why…, describe…, or explain… t*o encourage students to focus on particular content.

Avoid

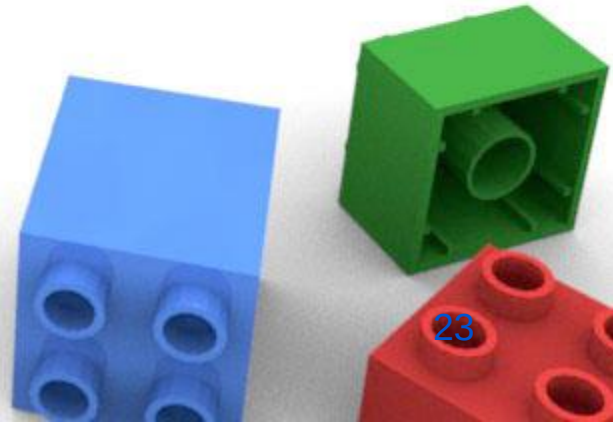
Leading questions: A tag questions indicates the answer the teacher wants, therefore is not conducive.

Compound multiple questions: Many questions at the same time would confuse students.



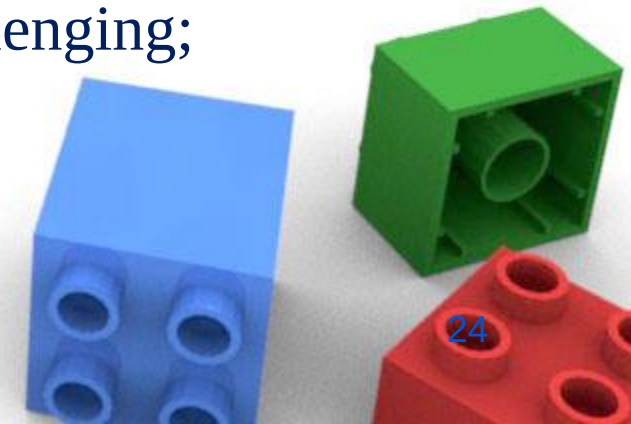
Research on questions in class

- There are more close questions than open questions in the classroom.
- Some teachers use more close questions at the primary level and more open questions at the advanced level.
- The close questions elicited more rounds of responses.
- The open questions lead to longer and more complex answers.
- Teachers prefer immediate answers, with shorter waiting times. The shorter the wait, the shorter the answers.



Principles and strategies for asking questions

- Do not ask simple and obvious questions;
- Ask more questions about the truthfulness to stimulate the interest of learning;
- The question should be specific and clear, avoiding the question of abstract ambiguity;
- The questions are diverse (knowledge question, understanding questions, analytical questions, evaluative questions).
- The questions are enlightening and challenging;
- The questions are relevant and logical.



Question design goals and tactics (Beatty et al., 2006)

Question design goals	Tactics
Direct attention and raise awareness	- Remove nonessentials - Compare and contrast - Extend the context - Reuse familiar question situations - Oops-go-back
Promote articulation/discussion	- Qualitative questions - Analysis and reasoning questions - Multiple defensible answers - Require unstated assumptions - Trap unjustified assumption - Deliberate ambiguity - Trolling for misconceptions
Stimulate cognitive processes	- Interpret representations - Compare and contrast - Extend the context - Identify a set - Rank variants - Reveal a better way - Strategize only - Include extraneous information - Omit necessary information
Formative use of response data	- Answer choices reveal likely difficulties - Use “none of the above”
	- Apply to real world setting

Examples

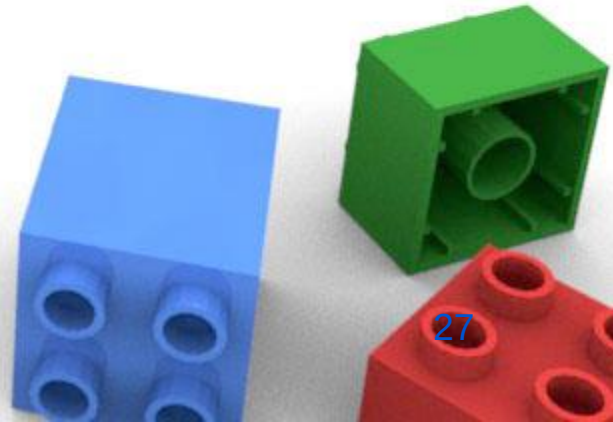
- *Write out four compounds.*
- *Write out four words with free morphemes only.*
- *Write out four words with bound morphemes only.*

- *Find the metaphor in the news report.*
- *Find the metaphor in the news report, and explain how the author used the metaphor? What emotion, attitude or stance does the metaphor convey?*

T-S Interaction: **Feedback**

Feedback is the first bridge between teachers' teaching and students' learning. Ignoring the importance of feedback can make teaching blind, and learning would become inefficient.

Specific content: avoid copy-editing, vague evaluation and judgmental feedback;
Timeliness: provide timely and effective feedback;
Sandwich feedback: to start from the positive points, then use *but/however*…



Making your feedback specific

Purpose

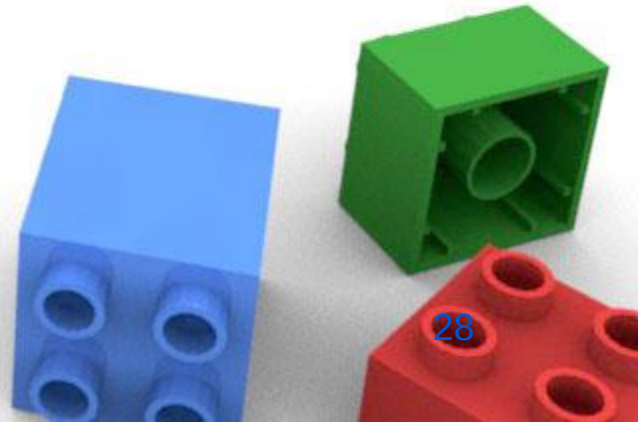
To give guidance but not do the work for the student;
To give suggestions that are specific enough so that the student can take concrete next steps;

Examples of Good Feedback

Using nouns and descriptive adjectives;
Describing concepts or criteria;
Describing learning strategies that might be useful;

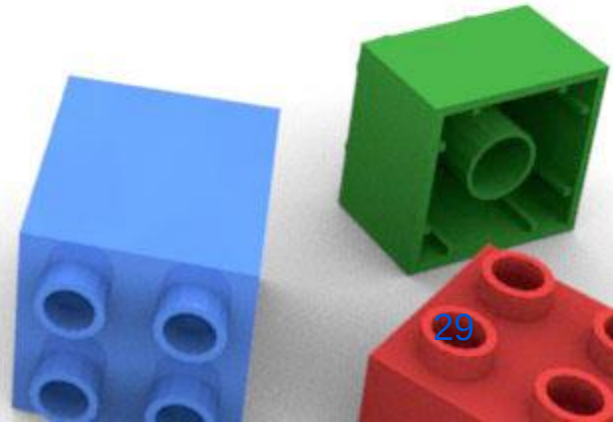
Examples of Bad Feedback

Using a lot of pronouns (*this*, *that*);
Copyediting or correcting every error;
Making vague suggestions "*Study harder*".

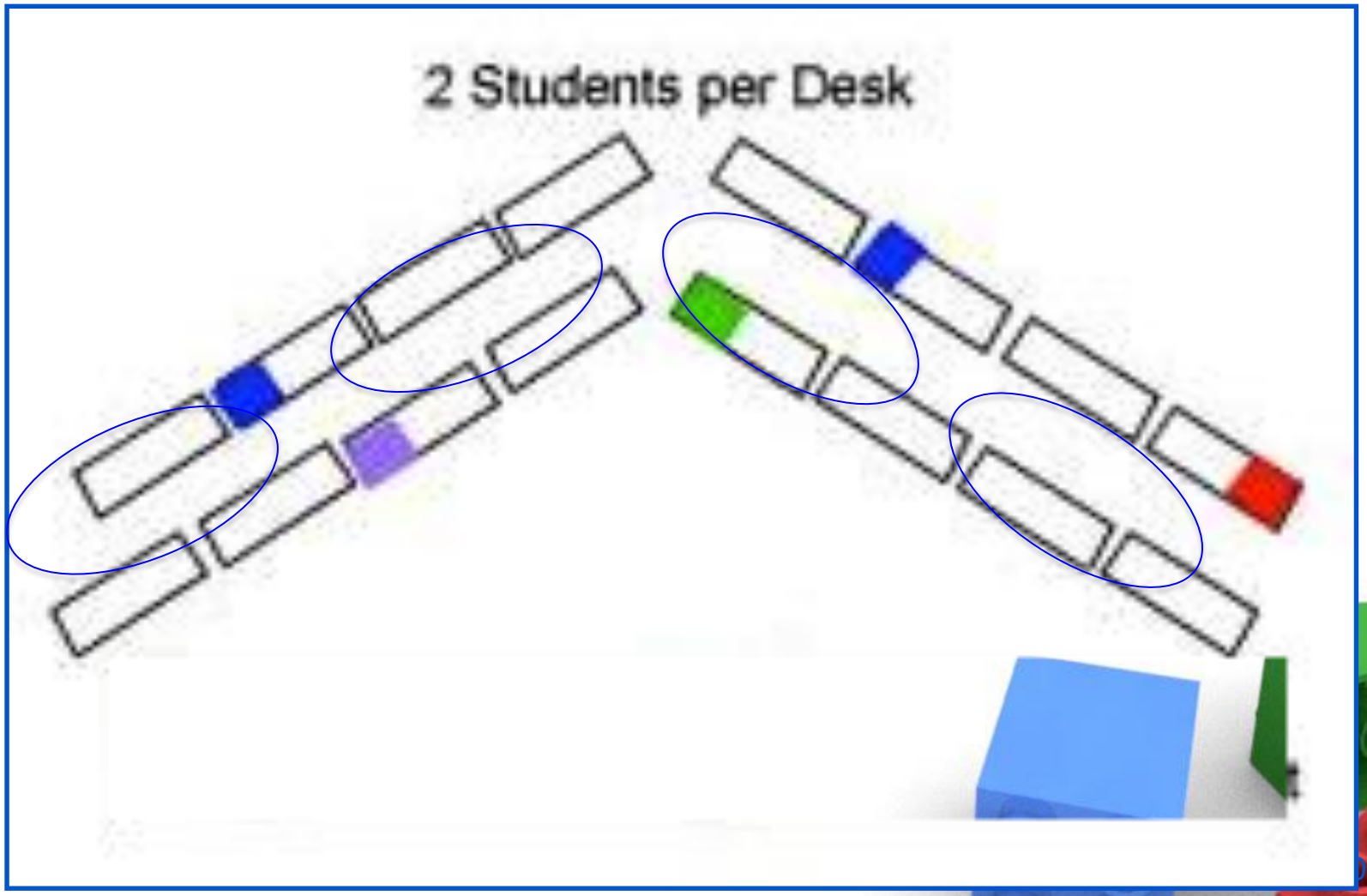


S-S interactions

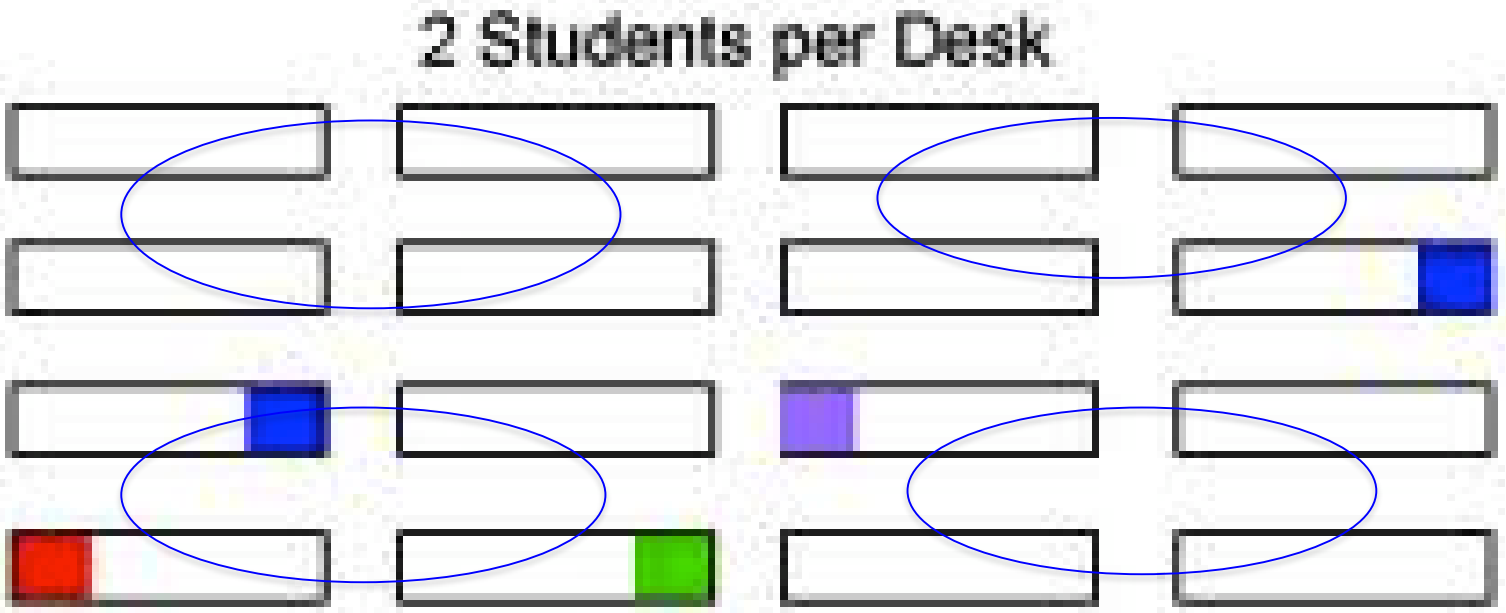
- Paired activities
- Group/Team activities
  - Jigsaw puzzles
  - Role play
  - Debate
  - Competition
- Peer review/assessment



Seating plan of interactive learning



Seating plan of interactive learning



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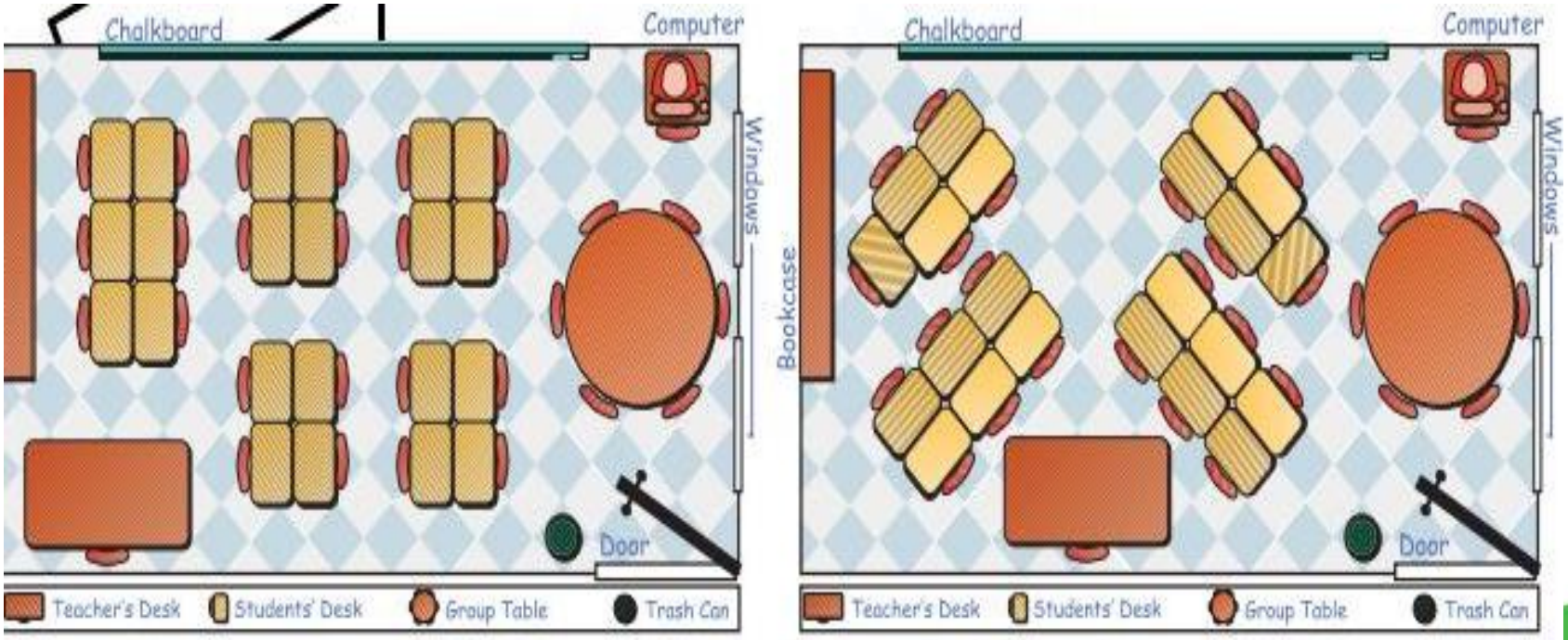


Possible arrangements for demonstration/ discussion:

Students - computer/smartphone Interaction

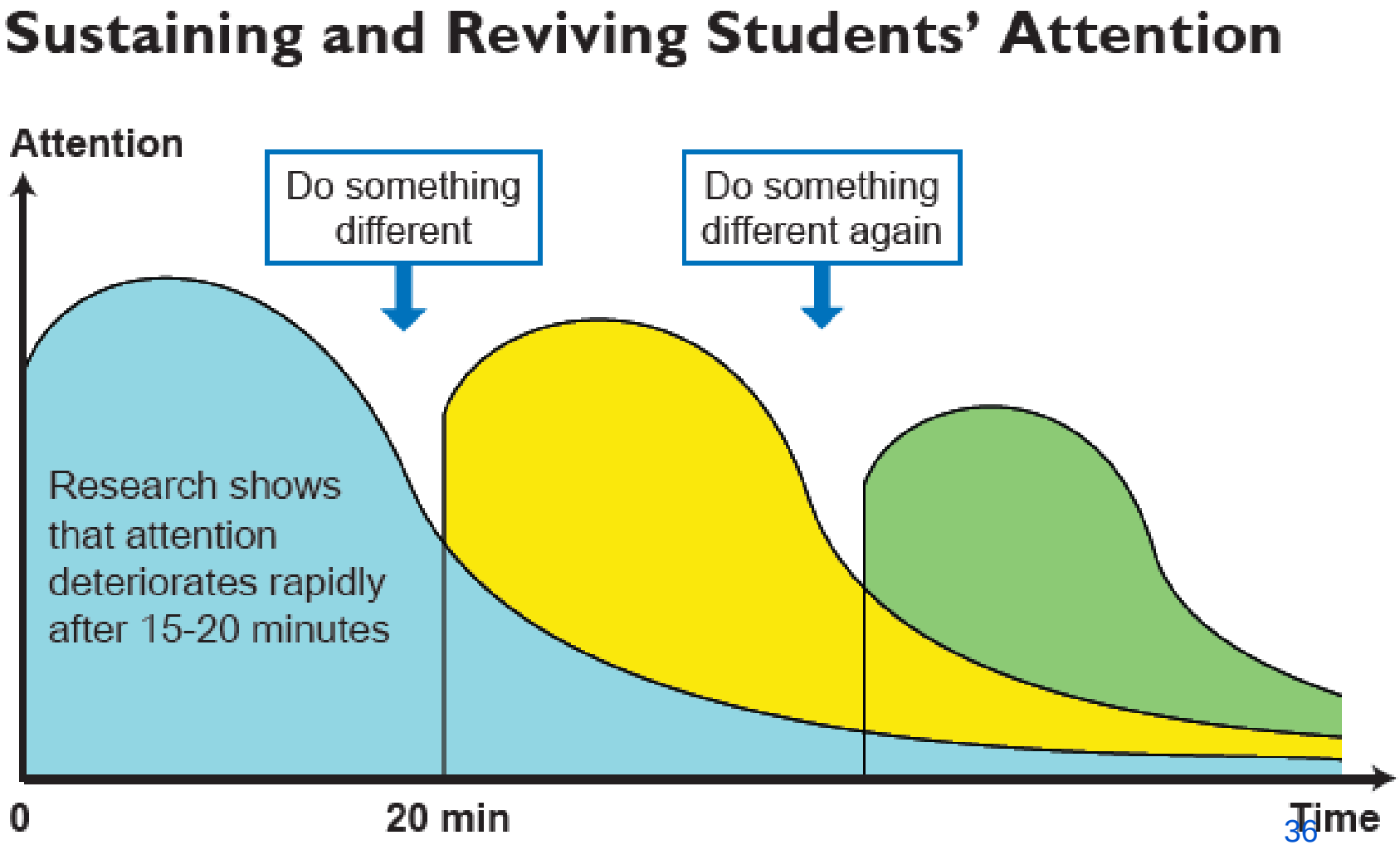
Technology can be used to encourage active learning and interaction between students in large classes with more than 100 students. Activities include:

- In-class quiz
- Online exercises
- Think-pair-share
- Student demonstrations
- Peer instruction
- Small group discussion
- Online research
- Questions and answers

interactive computer-based education (ICBE)

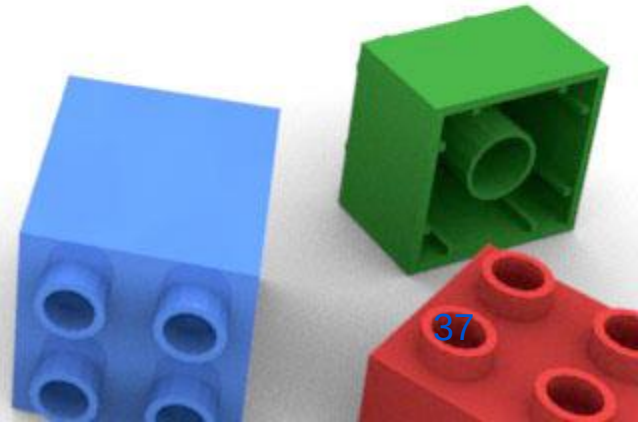

TECHNOLOGY WON'T REPLACE TEACHERS...
BUT TEACHERS WHO USE TECHNOLOGY WILL PROBABLY REPLACE TEACHERS WHO DO NOT.
UNIQUE TEACHING RESOURCES

When to have interactive activities?



Interaction is **task-based** learning

- A task is a basic unit for organizing teaching.
- A task is a goal-oriented activity.
- The focus of a task is the meaning.
- Participants need to use information resources to complete the task with clear results.



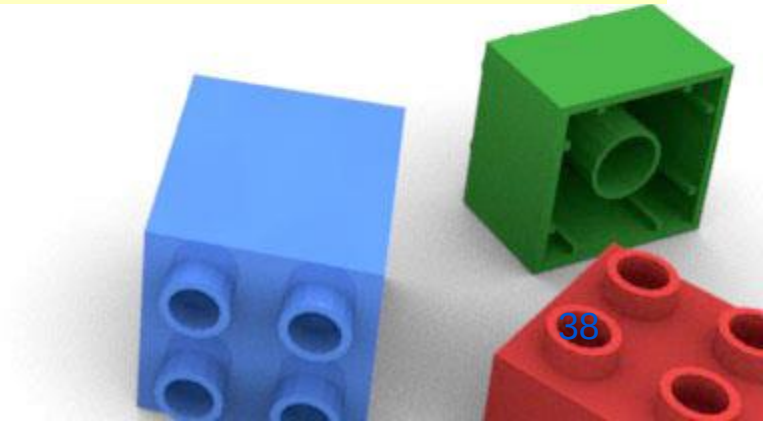
Differences between tasks and exercises

TASK

- meaning-oriented
- taking students as users
- incidental learning
- marginal learning
- challenging to design

EXERCISE

- form-based
- taking students as learners;
- conscious learning;
- focused learning;
- easy to design



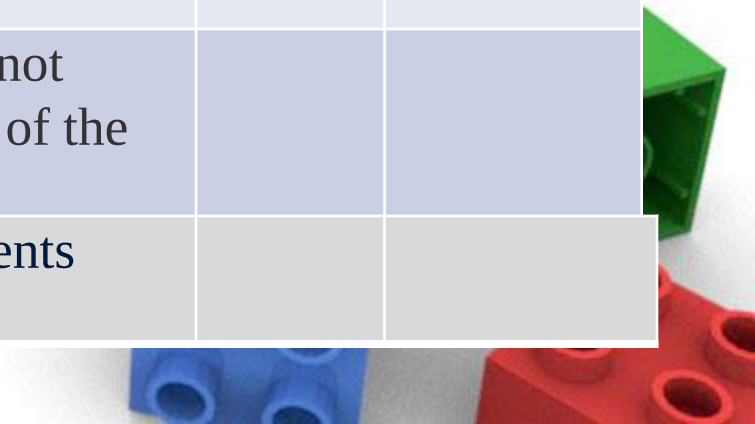
Activity 1：Quiz

Use 5-6 questions to quiz students on discrete knowledge and use class time to address questions and knowledge deficits.

- Individual work in a group.
- The group leader collects the answers to each question.
- Fill in the table on the whiteboard
- Compare the answers with other groups and give reasons for differences.

Quiz: Problems in Interactive Teaching

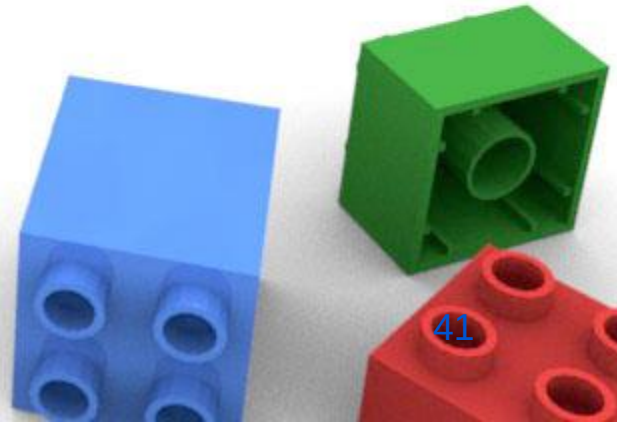
Statement	Agree	Disagree
1. Students don't like interactive teaching; they prefer to listen to teachers only.		
2. Students don't speak because they are lazy.		
3. Students don't speak because of lack of knowledge.		
4. Students don't speak because the topic is too difficult and the content is empty.		
5. Students don't participate because the interactions don't count in their grades.		
6. Large classes do not allow for interaction.		
7. Class discussion is a waste of time and is not conducive to the understanding and mastery of the learning content.		
8. The teacher can have a rest while the students discuss.		



Activity 2: Brainstorm

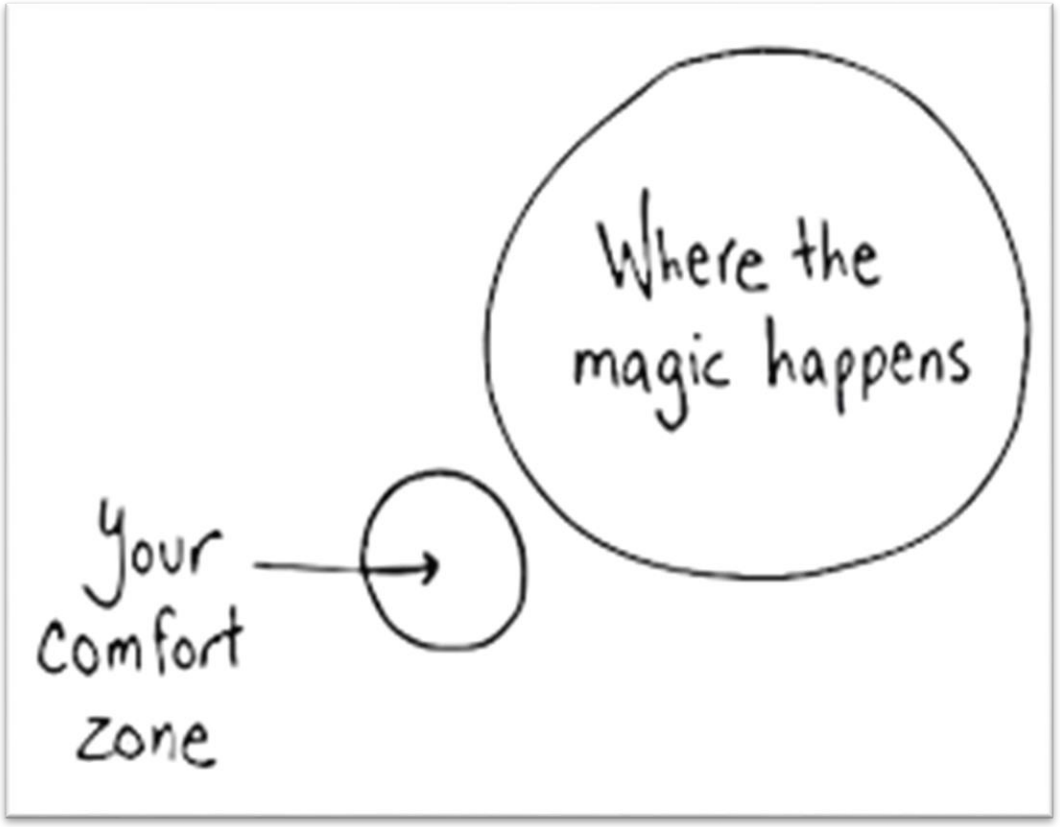
Task: Make a list of (interactive activities) that can be used in class in (5) minutes, using front and back whiteboards.

- See which team has more ideas.
- Do not criticize.
- Choose/vote for the best answer.



Activity 3: Interpreting data

Use a slide to illustrate a table, graph, or chart, and give students pair-share time to interpret, then discuss in class.



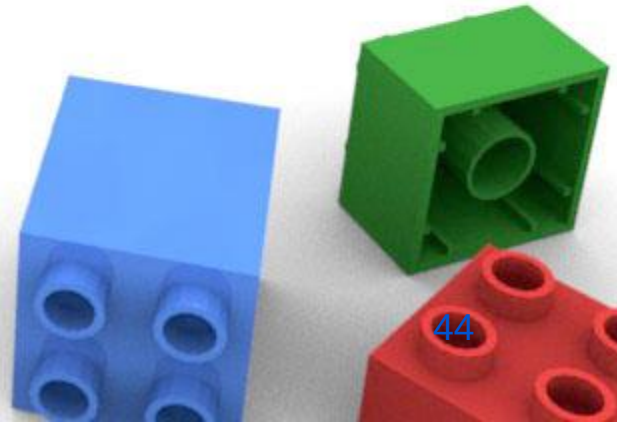
Life begins at the end of your comfortable zone.

Neale Donald Walsch

Summary

- What the student does is actually more important in determining what is learned than what the teacher does.
- Interactive learning is a process in which teachers and students work together. It is conducive to the consolidation and mastery of knowledge.
- Interactive teaching can be implemented in both large and small classes. Technology will help.
- Interactive teaching is demanding in preparation. A good lesson plan can benefit for a long time.

Just do it!



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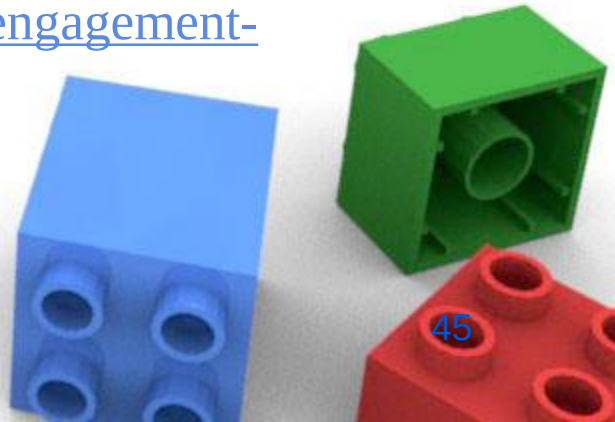

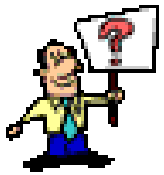

Q & A

THANK YOU!

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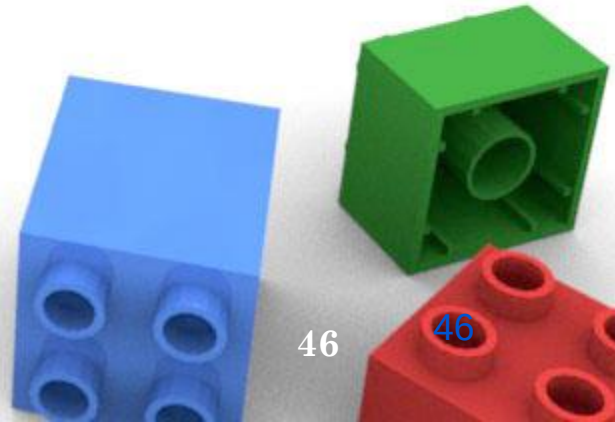

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