

BUILDING A THINKING CLASSROOM GENERAL FINDINGS – ALL NINE ELEMENTS

[From <http://peterliljedahl.com/wp-content/uploads/Building-Thinking-Classrooms-Feb-14-20151.pdf>]

The results from research on students' work space and grouping methods are indicative of the findings of research into each of the nine aforementioned elements. From the designed-based research on each of these – independently or in conjunction with others – emerged a set of teaching practices that are conducive to either the building, or maintenance, of a thinking classroom. In what follows Briefly, these are:

1. The type of tasks used, and when and how they are used

Lessons need to begin with good problem solving tasks. At the early stages of building a thinking classroom these tasks need to be highly engaging collaborative tasks that drive students to want to talk with each other as they try to solve them (Liljedahl, 2008). Once a thinking classroom is established the problems need to emerge rich mathematics (Schoenfeld, 1985) that can be linked to the curriculum content to be 'taught' that day and permeate the entirety of the lesson.

2. The way in which tasks are given to students

Tasks need to be given orally. If there are data or diagrams needed these can be provided on paper, but the instructions pertaining to the activity of the task need to be given orally. This very quickly drives the groups to discuss what is being asked rather than trying to decode instructions on a page.

3. How groups are formed, both in general and when students work on tasks

As presented above, groupings need to be frequent and visibly random. Ideally, at the beginning of every class a visibly random method is used to assign students to a group of 2-4 for the duration of that class. These groups will work together on any assigned problem solving tasks, sit together or stand together during any group or whole class discussions.

4. Student work space while they work on tasks

As discussed, groups of students need to work on vertical non-permanent surfaces such as whiteboards, blackboards, or windows. This will make visible all work being done, not just to the teacher, but to the groups doing the work. To facilitate discussion there should be only one felt pen or piece of chalk per group.

5. Room organization, both in general and when students work on tasks

The classroom needs to be de-fronted. The teacher must let go of one wall of the classroom as being the designated teaching space that all desks are oriented towards. The teacher needs to address the class from a variety of locations within the room and, as much as possible, use all four walls of the classroom. It is best if desks are placed in a random configuration around the room.

6. How questions are answered when students are working on tasks

Students only ask three types of questions: (1) proximity questions – asked when the teacher is close; (2) stop thinking questions – most often of the form “is this right”; and (3) keep thinking questions – questions that students ask so they can get back to work. Only the third of these types should be answered. The first two need to be acknowledged, but not answered.

7. The ways in which hints and extensions are used while students work on tasks

Once a thinking classroom is established, it needs to be nurtured. This is done primarily through how hints and extensions are given to groups as they work on tasks... Hints and extensions need to be given so as to keep students in a perfect balance between the challenge of the current task and their abilities in working on it. If their ability is too high the risk is they get bored. If the challenge is too great the risk is they become frustrated.

8. When and how a teacher levels their classroom during or after tasks

Levelling needs to be done at the bottom. When every group has passed a minimum threshold the teacher needs to engage in discussion about the experience and understanding the whole class now shares. This should involve a reification and formalization of the work done by the groups and often constitutes the ‘lesson’ for that particular class.

9. Assessment, both in general and when students work on tasks

Assessment in a thinking classroom needs to be mostly about the involvement of students in the learning process through efforts to communicate with them where they are and where they are going in their learning. It needs to honour the activities of a thinking classroom through a focus on the processes of learning more so than the products, and it needs to include both group work and individual work.