Classroom Management – For Inquiry-Based Science Classrooms

What makes an inquiry class different?
The role of the teacher and the student sets inquiry based learning apart from other ways of teaching and learning.

In an inquiry based classroom:

<table>
<thead>
<tr>
<th>Students</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>are interested and engaged</td>
<td>are interested and engaged</td>
</tr>
<tr>
<td>are researchers / investigators</td>
<td>are also enthusiastic learners</td>
</tr>
<tr>
<td>view themselves as scientists</td>
<td>use effective pedagogies for students engagement and development of understanding</td>
</tr>
<tr>
<td>engage in investigations that develop from their own questions</td>
<td>support students seeking to investigate their own questions, providing encouragement while maintaining safe operating procedures</td>
</tr>
<tr>
<td>take responsibility for their learning</td>
<td>integrate assessment throughout the teaching and learning process</td>
</tr>
<tr>
<td>use evidence to substantiate claims</td>
<td>use effective questioning to encourage the development of higher order thinking</td>
</tr>
<tr>
<td>work cooperatively and collaboratively</td>
<td>encourage students to work cooperatively and collaboratively</td>
</tr>
<tr>
<td>reflect on their learning</td>
<td>reflect on their teaching and on the learning taking place in their classrooms</td>
</tr>
<tr>
<td>communicate thoughtfully and effectively</td>
<td>communicate thoughtfully and effectively</td>
</tr>
<tr>
<td>use high order thinking skills</td>
<td>provide opportunities for metacognitive strategies</td>
</tr>
<tr>
<td>connect new knowledge and prior learning</td>
<td>identify prior knowledge of students and use this as a basis for learning/teaching</td>
</tr>
<tr>
<td>act as reflective and critical friends to their peers</td>
<td>encourage and support students to participating in peer teaching assisting them to refine their metacognitive skills</td>
</tr>
<tr>
<td>seek and use many sources of information e.g. mentors / experts, internet, text and multimedia,</td>
<td>seek evidence that a variety of sources have been consulted to elicit information</td>
</tr>
</tbody>
</table>
Teaching in an Inquiry-Based Science Classroom

The teacher’s ABCs (attitudes, behaviours and competencies) are paramount in Inquiry-based classrooms. They set the stage for teaching and active learning. It is the role of the teacher to stimulate and nurture the curiosity of their student. (Llewellyn, D, 2005)

By inviting your students to explore before you explain will require you to plan for lesson flexibility. You will need to balance the need to be prepared for lessons, to book equipment and resources, with a desire to be able to respond to student questions by enabling them to suggest activities and investigations.

Most students and teachers are not ready to begin with full student inquiries at the start of the school year. During the first few weeks of school, teachers need to establish expectations for classroom management, laboratory practices and routines. Without taking the time to establish some essential guidelines, inquiry classrooms can become unruly and unmanageable.

The information below provides some ideas that could be useful.

**Getting the attention of the students**

Develop a way to get the students attention within 10 seconds without raising your voice.

- Some ways to do this:
  - have a recognized place in the room that you stand
  - make sure that when you talk you have a reason. Try to limit the teacher talk to that which they need and want to know.
  - develop a signal and train your students to recognize it eg looking at your watch; putting your hand up, turning the light on and off
  - have a signal on the whiteboard ….. you move the hands for the visual signal and then stand and wait ….
  - bring an ipod or CD Player into the room. Start playing music as the signal that students need to pay attention to you. Students may want to bring in their own CD’s to use for this
  - have a weekly allowance of ‘Waiting Time’ (5-10 minutes) and develop a system of tallying it up on the board. Record the time you have to wait for the whole class to pay attention, over the course of the week and involve your students in keeping track of the time spent. If the allocated allowance of time has not been expended reward the students for their prompt response time eg students could spend the saved wait time in some preferred activity.
  - have a mnemonic – use it and train your students in its use e.g.

<table>
<thead>
<tr>
<th>SCIENCE</th>
<th>SLANT</th>
<th>CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>S Silent, when the teacher is talking</td>
<td>S Sit up straight</td>
<td>C Commonsense</td>
</tr>
<tr>
<td>C Concentrate</td>
<td>L Listen</td>
<td>C Cooperation</td>
</tr>
<tr>
<td>I Interested</td>
<td>A Actively interested</td>
<td>C Courtesy</td>
</tr>
<tr>
<td>E Engaged</td>
<td>N Nod when spoken to</td>
<td></td>
</tr>
</tbody>
</table>
Guidelines for acceptable behaviour

Negotiate a set of guidelines for acceptable behaviour for all people in your classroom.

Clearly identify consequences that are fair, and based on logical consequences for breaching the guidelines. Reinforce the guidelines by holding:
- class meetings to reflect on the guidelines that have been developed and whether they continue to be appropriate
- class meetings to discuss issues when the need arises e.g. after an unexpected incident – guidelines may need re-visiting
- display the set of guidelines in prominent locations in the classroom.

Using non-verbal clues

Develop a set routine for students to gain attention and help

Some ways to do this:
- establish routines and teach them to the students
- link routines to class guidelines, rights and responsibilities
- expect to remind students of routines, guidelines, rights and responsibilities. Model the guidelines yourself eg don’t interrupt when a student is speaking, avoid put-downs and sarcasm.
- develop a series of non-verbal cues to help students with routines and teach these to the students

hands up if you need assistance from the teacher

point to the garbage bin – for getting rid of rubbish

point to the chart of “Clean our Lab” procedures

mimic lifting a hat or cap off.

Establish routines

Some aspects of classroom management need routines. Do I have these routines in place?
- managing equipment, distributing and collecting equipment
- cleaning and tidying up
- moving from one area of the room to another
- changing from one type of task to another eg group discussion to doing a practical activity
- entering and leaving your room
Group work, safety, questioning, packing up equipment and materials

Before and during practical work:
- is there a systematic way of assigning students to groups? Do the students understand how it operates?
- are the roles of each group member clearly identified and reinforced regularly?
- do I move from group to group facilitating and interacting with each, making sure that they are on task and being successful?
- do I ask effective questions, including questions that require higher-level and critical thinking skills?
- do I deal effectively and promptly with unacceptable behaviour?
- do I have effective routines established for cleaning up?
- do I have a system for recording any incidents or breakages?
- do I check for tidiness before the students leave?
- am I aware of safety issues?
- do I know where the fire blanket/fire extinguisher is located?
- do I have risk assessments in place?
- have I checked Material Safety Data Sheets?
- do I think through and plan how to distribute materials and equipment?

Student and Teacher Engagement

Is my lesson engaging, student-centred and tapping into students’ curiosity?
Am I engaging their interest by letting them explore and question before any explaining of concepts?
Am I engaged and interested? Do I know what all my students are working on?

Managing it All

Do I have the ability to do several things at once? This is called ‘Overlapping’, and it is the ability to attend to multiple things at the same time. Such as, giving some instructions to start an engaging activity, while at the same time moving through the room and preventing student misbehaviors, whilst also handling any notes being delivered from the office.

Becoming an Inquiry Based Teacher

Many teachers will admit that the journey to become an inquiry-based teacher is a very personal experience. Each of us makes the journey in different ways by constructing our own path to instructional renewal and reform. Regardless of the path one takes, the transition to become an inquiry based teacher usually follows four distinct stages: starting at the traditional approach, next exploring inquiry, followed by transition to inquiry and finally practicing inquiry. (Llewellyn, 2002)

References