1. Teacher's Comments

00:00:00 General Comments: This lesson is part of a unit on forensic science. Clearly, it is not purely physics, chemistry, biology, or earth science; but it is an integrated unit involving different areas of science. We consider it important in Australia to teach science as being relevant so that our students see science as being applicable to the real world.

My focus for this unit was one of process—observations, scientific method, technique, recording and tabulation of data, problem solving, organisation, and cleaning up the work area. Of course there is a good deal of content in the forensic science unit—we teach them microscopy and chromatography for example—but there was certainly a strong emphasis on process.

The focus of this lesson was essentially one of process—technique, organisation of data, and problem solving. The students were expected to work in small groups, and I also try to encourage teamwork and groupwork within my science classes.

This science laboratory had separate theory and laboratory areas. All science classes are well supported by laboratory technicians in physics, chemistry, biology, and junior/middle school science.

Prior to the lesson some key points were written on the whiteboard. Arrangements had previously been made with the laboratory technician to set up for the laboratory work. Hence, students walked into a classroom which had been set up for practical work. Students do not have a general textbook. They have a topic, "Forensic Science," booklet and a workbook for entering their written work during the class.

00:00:42 Some students need advice to get on task right from the outset!

00:00:44 Students were expected to read up about the practical activity for homework the night before. They should have come to class with a general idea of what the class was about. This also means that less class time is wasted while the students read up about the activity. I expect all practical classes to be read up by students the night before.

00:01:05 I like to start each lesson with a brief summary of what we covered in the previous class and to link it with the current class. A sense of continuity and connection is important. Getting students to tell me about what we did and what they learnt gives me good feedback on where they are at, whether I need to recap some important aspects of the previous lesson, and whether I can now proceed with my planned lesson.

00:01:40 Students were a bit conscious of the camera during the initial phase of the video taping in the classroom. They relaxed and became more natural as the lesson progressed.

00:03:20 I feel that it is important for teachers to move around the classroom and not be anchored out at the front, particularly when running practical activities. I try to avoid the impression of running a teacher-centred classroom. Certainly I enjoy moving around the class and addressing students from different parts of the classroom. Sometimes I will deliberately place demonstration equipment at the rear of the room so that I then move to the rear and ask the students to reposition themselves in order to observe. This also

has the added benefit of keeping the front bench free so that the boardwork is always visible to the students and the board is always available for me to use.

00:07:06 At this stage I felt that I had covered quite a good deal of information. I had talked quite a bit, so I wanted to give the students a break to gather their thoughts so that I could again check that they were clear about what they had to do. (Once students start on practical work it is often difficult to again get them paying full attention. I don't let students start on practical work until I am confident that they are quite clear on the purpose, safety, method of recording observations, and the clean-up details!)

00:09:43 At this stage I am again checking, via a specific student, that they have a clear understanding of what they are to do before they leave their desks and get started on the practical activity. I normally plan for no longer than a 10-minute introduction to practical sessions. This then allows plenty of time for completing the activity and maybe a brief class discussion at the end.

00:10:54 After looking again at the video I can see that at times I am a little stiff (not relaxed) in my presentation—hence, the student comment that I am "acting." Actually, this video is quite a fair representation of my teaching style.

00:11:04 In this initial stage of the practical activity, the presence of the moving camera in the classroom resulted in a few students becoming unsettled. They soon got back on task.

00:12:15 Some personal interaction with the students is often important in developing good working relationships. As long as the students keep on task with the academic work then this is probably okay. Of course, there is a danger of being a bit too familiar, and this needs to be avoided.

00:12:25 It is interesting to note that I have to talk much louder if I need to convey information once the practical activity has started. All the more reason for ensuring that the session is as well organised as possible and that students are very clear before starting the activity.

00:14:00 As the practical session progresses, I try to get around the groups and check on progress. Some groups need help with their observation and technique. Others are often well organised and simply need to be affirmed in their progress. The ability to be working with a group while keeping an eye on the entire class is a skill that science teachers need to develop.

00:16:12 This was a demanding class in terms of cleaning up and maintaining a reasonably tidy work area. I also realised that a major issue with this class would be the clean-up at the end, so I was working hard to ensure that this was under control throughout the session. I was monitoring the state of the laboratory benches as the practical session continued. Simple advice on washing hands down in the sink, rather than above the sink and splashing water, is always an issue in junior science classes.

00:19:03 At this stage during the practical activity it became clear that the second part of the activity (dusting) was not well understood. I quickly realised this when some of my more highly focused students had obviously not understood what to do. (In fact, on looking back over the introduction to the lesson I can see that I did not explain this second activity clearly enough!)

00:21:36 Students do seem to be working well at this activity. Most of them are on task and progressing well according to the timeline that I had estimated for each activity. I am also pleased with the level of organisation of the students; they appear to be giving due regard to getting their results down and into their workbooks. I am also pleased with the questions that the students are asking. This shows that they are certainly in tune with

what was expected of this activity. I am able to help with improving technique and the quality of the observations, and this is always nice for a science teacher to see.

00:29:58 Students are still working well and on task. Their interest in the work is quite pleasing and their questions demonstrate a solid understanding and an enthusiasm for the practical work. The second activity was proving a bit more difficult to obtain prints and the students' efforts to do so was gratifying. One problem was that the first activity involved washing the hands and so there was not enough oil or grease remaining to leave a strong enough imprint.

00:32:00 We have now reached a stage whereby some students have nearly finished the activity while others still have a fair way to go.

00:34:22 It is also quite interesting to note that as the lesson heads towards the end, there are many more students now approaching me about their results and how they should enter it into their book. They are keen to have something good and a nicely finished product in their workbook.

00:35:18 Now comes the part that I was aware would be an issue with this lesson—cleaning up and packing away equipment. I am probably starting to pack up a bit earlier than I would for a normal practical activity. Once the final bell goes it becomes more difficult to get students to clear up their own workspace. I am planning to have time for cleaning up, and then have the students sit down prior to ending the lesson.

00:36:05 At this stage of the lesson some students are tidying up, some are transferring their observations into their notebooks, and some are still completing the practical activity—three different aspects of the lesson going on at the same time!

00:36:48 After watching the video, I noticed that earlier in the lesson a student had used the blowing technique rather than brushing. My back was turned to her at the time so I missed it. At this point of the lesson I finally picked it up and noted that this method was probably better. I acknowledge to the students that I can learn a lot from them.

00:37:42 It is interesting to see some of the close-ups of the student notebooks. Some are well organised but some lack headings and an overall sense of organisation. However, this was one of the aspects of the lesson that I wanted to focus on, so I will have addressed this in the following lesson.

00:38:16 As is often the case, some students take full responsibility for cleaning up their workstation and others try to avoid this. I always try to be aware of this and monitor the recalcitrant ones!

00:39:56 Students are still working well and organising their observations. The background sound level suggests a productive working noise and that students are still reasonably well focused.

00:40:46 At this stage I am helping tidy up. I have another class after this, of course it is in a different room, and I do not want to be late for the next group of students.

00:41:19 At this stage I try to check the work of a few students to ensure that they have done the work and entered it into their notebooks. I tend to count the quality of their notebooks as part of their final grade in science.

00:44:20 The final bell has now gone and we seem to have ended on a positive note. The laboratory is clean and tidy, and most students achieved what was expected of them. I am pleased with this lesson in terms of what the students achieved and how they performed in the session. Desks are tidy, chairs have been put in, and equipment is all on the trolley.

00:44:36 Although not shown in this video, I ended the class with a debriefing with my

laboratory technician. We discussed the aspects of the class that were successful and those that we needed to revise for future classes. We also checked off the equipment and discussed cleaning requirements.

In my final impression of this lesson I was pleased with what all students achieved. Every student made a contribution to this class and this was most satisfying. As for my teaching, I probably tried to get through a bit too much within a single class, and I might chunk the lesson activities in future teaching of this topic.

Finally, I would have preferred some more time at the end of the class so that the class and I could have had a brief discussion about what we all achieved and for any homework instructions.