4.1 Lesson Planning Assessment

TEACHING SESSION PLAN	
Module: *Quality Management 1* *MGMT07045 2015*	**Level: *7*** **Year: 3**
Duration: *3 hours - 6:30pm to 9:30pm*	
Title of session/ topic: *Control Charts*	
Mark the type of session: **Lecture ☐✓ Tutorial ☐ Lab ☐ Studio ☐ Workshop ☐**	
Module Outcome (What module outcome(s) is the class/session aligned to)**:** ***Learning Outcome No.5 from the Module Descriptor:*** *"Use statistical basic process control tools".* **Class/Session Outcomes :** Upon completion of this session, you should be able to: (Share with students e.g. Write on board /slide/ project image at beginning of lecture for students) 1. *Understand what Statistical Process Control (SPC) is.* 2. *Be aware of the various type of Control Charts that are used in industry.* 3. *Construct an Xbar/R Control chart*	

Select & Prioritise Your Content:

For the session, decide what material is used in class and what material the students should study independently and/or online. To do this, think about the material and its relative importance and prioritise and list in the appropriate quadrant.

	Independent Learning – Teacher led	**Independent Learning – Student led**
Priority **(Need to know)**	**1** *Class notes on Control Charts, part 1 on my Quality Management 1 (QM 1) Moodle page* *Statistical Building Block tools on my QM 1 Moodle page.*	**2** In advance – flipped classroom *Read the lecture notes on Moodle* *Use the Data Simulator tool on Moodle to create data distributions and distributions of the mean.*
Supplementary Learning **(Nice to know)**	**3** *Read and understand the "Statistical Building Blocks" tools on my QM 1 Moodle page.*	**4** *Review the Khan Academy video on Control Charts on the QM 1 Moodle page* *I have advised students to review the use of any SPC tools (that will be covered in this lecture) in action/use in the workplace.* *Bring graph paper and a ruler to the Control Chart lecture.*

Material in quadrants <u>1 and 3 typically become the focus during classes</u>. Quadrants 2 and 4 represent material students could study themselves and use the VLE/Moodle and online learning objects to support this learning.

Think about how you might incorporate *Technology Enhanced Learning Tools and Blended Online Learning Objects,* that will develop students learning and engagement with the module.

Teacher Activity (what you will do during the class):	**Student Activity** (what students will do during workshop/lecture):
Stage 1: 0 to 30 mins. *Recap on the previous lecture's learning outcomes on the sampling distribution of the mean and related statistics asking open ended questions so as to check for understanding.* *Gather prior knowledge of SPC and Control Charts (Xbar/R) from the students* ***Stage 2: 30 to 90 mins.*** *Introduction of a statistical topic using Power Point slides and illustrations and examples using the document camera* ***Stage 3: 90 to 120 mins**.* *Set the students up in groups to work through a past exam question (Xbar/R) Control Charts together. Walk through and check in with each group to ensure all are attempting the question.* ***Stage 4: 120 to 150 mins.*** *Do a model answer of the same exam question that the students have worked on in their groups. Through the use of the document camera in the lecture room, record the working out of this mathematical exam question live in an in-class short video explaining the method as I am writing it out as a model answer for the exam question.* *This video will be uploaded to Microsoft Stream, with a link to Moodle and made available to the students as a reusable learning object on my QM 1 Moodle page after the class.* ***Stage 5: 150 to 180 mins.*** *Recap on the learning objectives for the lecture and work through and questions and concerns the students may have. Outline the topics for the following week's lecture and outline the expected pre-reading.*	***Stage 1: 0 to 30 mins.*** *Encourage the students to answer the questions that I am asking and encourage them to ask any questions about what they may not fully understand.* ***Stage 2: 30 to 90 mins.*** *To make the difficult topic as easy as possible to follow, I give the students printed lecture notes, which are exactly the same notes as are on the slides on screen, so they can concentrate on only writing supplementary notes and information and can better concentrate on the new topic as the material is printed in front of them.* ***Stage 3: 90 to 120 mins**.* *Group activity: The students will work in pairs, with the person beside them, to solve a Control Chart question from a past exam paper. The students will get to practice the theory they have just learned and they will learn to collaborate to solve a problem* ***Stage 4: 120 to 150 mins.*** *The students will interact with me during the recording of the video and will ask questions throughout the construction of the model answer recorded on the document camera.* ***Stage 5: 150 to 180 mins.*** *Students will get an opportunity to demonstrate their knowledge and comprehension of the topics covered in the lecture and to ask for clarification of any of the statistical elements covered. The students will leave the lecture with the confidence that they have achieved the learning outcomes and are clear on the expectations and plan for the following week.* 

Online Student Engagement Tools:

All my lecture notes and study aids are on my Quality Management 1 Moodle page on the institute's Virtual Learning Environment (VLE).

I have also placed the past Exam Papers from the last 8 years on the QM 1 Moodle page for easy student access and to encourage engagement and practise of past exam papers as a study and revision tool.

On my Moodle page, there are a number of videos that I have recorded in the Quality Management 1 class that the students can view (and re-view) as a learning resource (a reusable learning object).

On the QM 1 Moodle page, there are links to relevant professional bodies and websites that use the tools and topics covered in this module so that the students get an insight into these topics in practice in the workplace.

Teacher Reflection:

What worked?

I believe the lecture went very well as most students were actively engaged throughout the 3-hour lecture and were able to work out the exam question by the end of the lecture.

What worked very well was, after delivering the theory and knowledge on Control Charts, I set the students the task of doing a past exam paper question on Control Charts, in pairs whilst I was available to guide them and answer questions, as needed. This, I have come to discover in my learnings as part of the Certificate in Teaching and Learning, is what Lev Vygotsky (1896 – 1934), a Soviet psychologist and social constructivist, coined as using the, "Zone of Proximal Development" (ZPD). The ZPD refers to the difference between what a learner can do without help and what he or she can achieve with guidance and encouragement from a skilled facilitator/teacher. This demonstrated to the students what they can "learn with help" whilst still working a problem out for themselves which results in a better understanding of the subject matter, even if mistakes are made. The added benefit is, the confidence they build in their ability to successfully apply what they have learned in one of my lectures.

Making a live video in class of the exam question and sharing the video on the Virtual Learning Environment (VLE) – Moodle proved very successful. I had informed students at the start of the class that I would do this which allowed them to then relax and try the question for themselves as they would have nothing to lose as they would be able to watch the construction of the model answer as a video, after class. The feedback from my students regarding this reusable learning object has been very positive.

What did not work?

What did not work so well (in a small number of cases), was the group size of two that I selected to work on the exam question activity. In most cases, the pairs worked well together and worked as a team to get the question complete but, in a few of the pairings there was little communication and each individual seemed to work on his/her own. This would have suited the person who was capable of doing the problem but not the person who would have needed help from their team-mate to achieve the goal. I did get around to check in with all 20 pairs during the group activity but as it was a class of 40 students, there was not a lot of time available to spend with each pair and I also wanted them to try the question initially without too much input/help from me.

To what extent did you address different domains of learning?

The three domains of learning are:

1. *Cognitive: mental skills (knowledge)*
2. *Affective: growth in feelings or emotional areas (attitude or self)*
3. *Psychomotor: manual or physical skills (skills)*

Cognitive: mental skills (knowledge):
The Cognitive Domain of learning was addressed with the delivery and absorption of the lecture content – the students received new knowledge about Control Charts that most of them did not have before this lecture. The students at the end of the lecture were able to recite the important points and rules of the use of Control Charts during stage 5 of the lecture. Comprehension and application of the new knowledge was demonstrated by use of this knowledge in a new situation i.e. the successful completion of the Control Chart exam question in the group activity – the students would not have attempted that type of exam question to date.
As part pf the group activity, the students had to demonstrate whether the process that was reviewed, was in statistical control or not, by their use and analysis of the Control Charts which demonstrated their ability to differentiate facts and data and draw conclusions from same.

Teacher Reflection (continued):

To what extent did you address different domains of learning? (continued)

Affective: growth in feelings or emotional areas (attitude or self):
The Affective Learning Domain involves our feelings, emotions and attitudes. In the group activity, each pair had to listen attentively to each other in order to develop a plan to solve the problem (complete the exam question) in the time allocated. This involved (in all cases) active participation of the learner and (in most cases) active participation as a team as most students were able to appreciate the value of working as a team for effective problem solving. They also had to demonstrate their organisational skills to get a fairly complex problem solved in a short time and their ability to prioritise what had to be done in that time.

Psychomotor: manual or physical skills (skills):
The psychomotor domain is concerned with utilising motor skills and coordinating them. As part of the group activity, the students had to draw a complex graph using graph paper and a ruler. This has to be done at speed as in an exam setting this graph will need to be drawn accurately and quickly. This was the first time in a long time that many of the students had drawn a graph by hand as in industry, a computer would be used to draw the graphs (which we cover in a separate lecture) but in the exam, the graph has to be constructed manually. These motor skills were demonstrated and developed as part of the group activity in this lecture. The required speed that would be necessary for the exam will come with practice which will ensure students' proficiency and confidence in the method.

What would I do differently next time?

Overall, the lecture worked very well and as per my lesson plan (outlined on the previous pages of this document). One thing I would do differently though is to increase the group size to 4 the next time I run a similar group activity. The larger group size for this type of activity would ensure that no one person would be working on their own even if one or two of the group members were reluctant to work as a team.
After reviewing the module descriptor before I wrote the lesson plan for this module, I would recommend that we review the module descriptor for Quality Management 1 at the next Programme Board meeting of the BSc in Quality for Industry.

I would like to thank my students for aggreging to having an observer in this class on the evening of the 6th Nov. '18.
I would also like to thank. Karen Gibbons, one of my classmates on the Certificate for Teaching and Learning, who did the peer assessment for me that evening.

Regards,
Rachel