TALE - 2 Course Design and Instruction of Engineering Courses

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Lecture - 13
Implement Phase 2

Greetings; welcome to TALE, Module-2, Unit 13, we were looking at the implement phase. We will continue with the remaining part of the Implement Phase.

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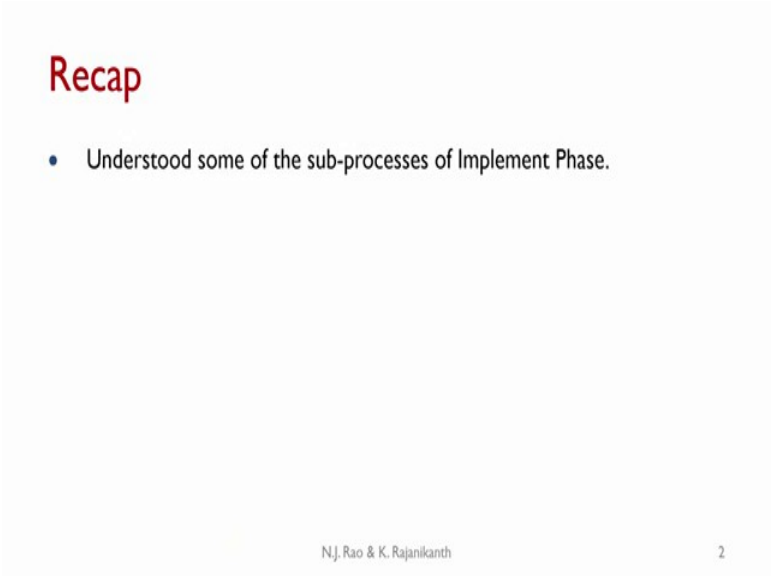

In the earlier unit, we looked at some of the sub-processes of implement phase. There are many and we looked at some of them and their role, especially how to write a good syllabus of a course which we felt should be communicated to the students right in the beginning of the course which acts as a guide both to the teacher as well as the student. We were strongly urging you to write the syllabus of your own course in the format that is suggested.

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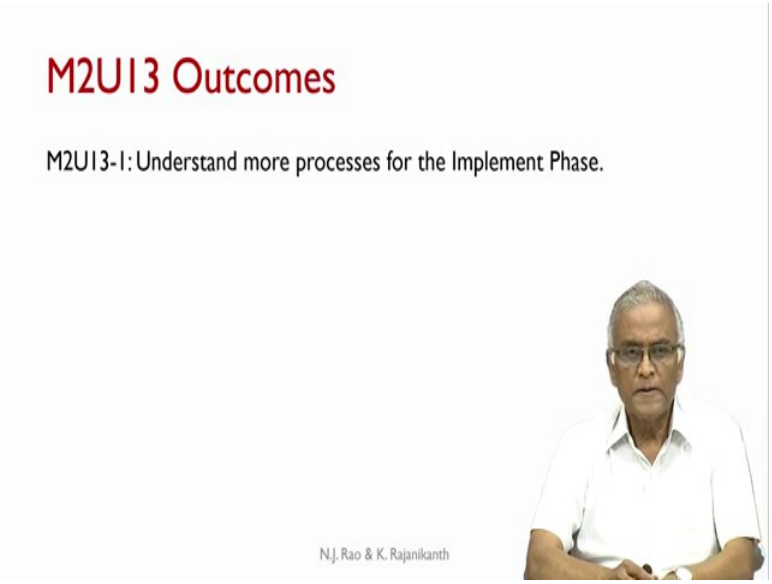

In this unit we try to understand the remaining processes of the implement phase.

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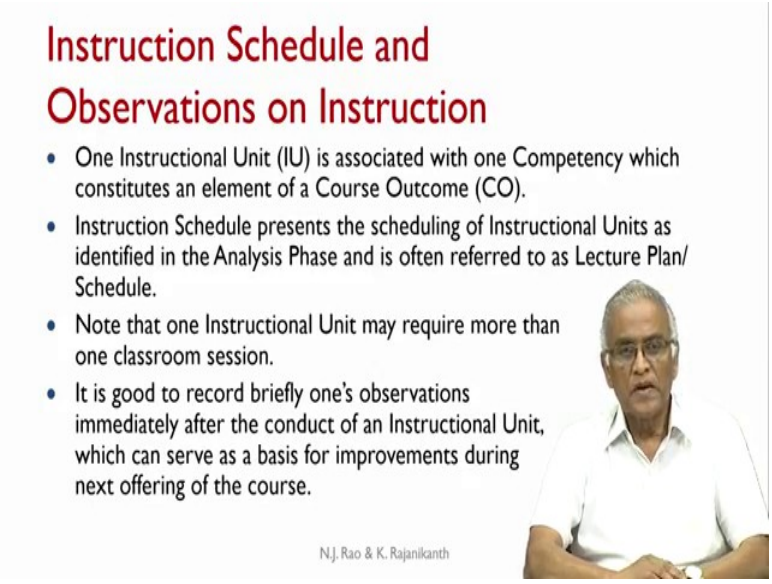

What are these processes? First there is an instruction schedule which can be called as lecture schedule or lecture plan etc. Here schedule/planning is not as per timetable of one hour sessions, but it is as per the instructional unit. An instructional unit may take 1 hour, 2 hours or 3 hours, but it will be seen always together as a unit. That means, an instructional unit maybe conducted over 3 timetable hours, but those three dates will have to be entered in the instruction schedule.

Our entire reference for all our activities will be the instructional schedule or the schedule of instructional units. One instructional unit is associated with one competency. A competency is an element of a course outcome. A course outcome maybe elaborated into 2 competencies 3 or 4 sometimes even 5 depending on the scope of course outcome, and an instructional unit also may vary from 1 hour to generally about 3 to 4 hours maximum.

At the end of conducting each instructional unit (which may take 1 to 3 hours generally) the teacher would have experienced various facets how the students received it, where they found it difficult, or where as a teacher himself/herself did not felt fine and their performance is adequate/not adequate or satisfactory/not satisfactory. It is a good idea to record one's own observations related to how it has been conducted, where it can be improved etc. immediately after the conduct of every instructional unit. They need to be recorded immediately after the conduct of an instructional unit in a form like this.

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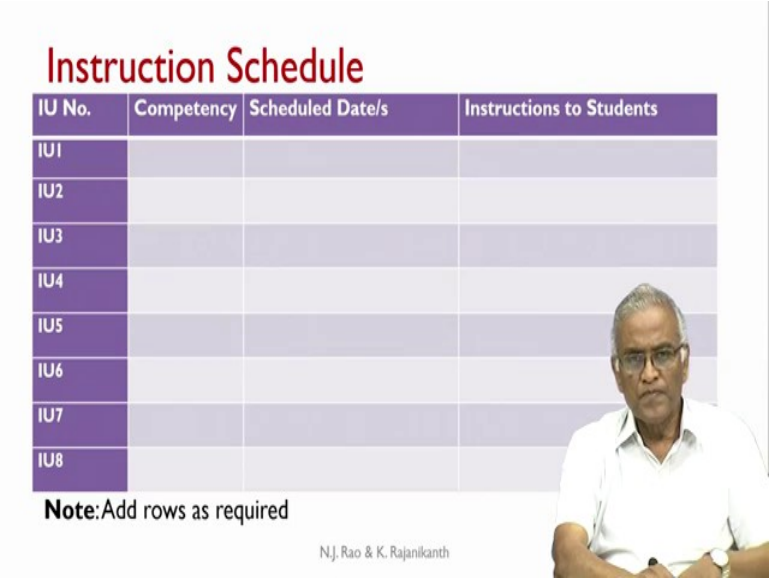

You have instructional unit numbered as shown, though it shows up to 8, you can add more rows as required. Then write the competency, write the scheduled dates for each competency and then if there are any instructions you want to give to students before for that unit, that is before you start with IU2 unit what is the that you want your students to be prepared for? Those instructions could be in the form of 1 or 2 sentences and this constitutes the instruction schedule.

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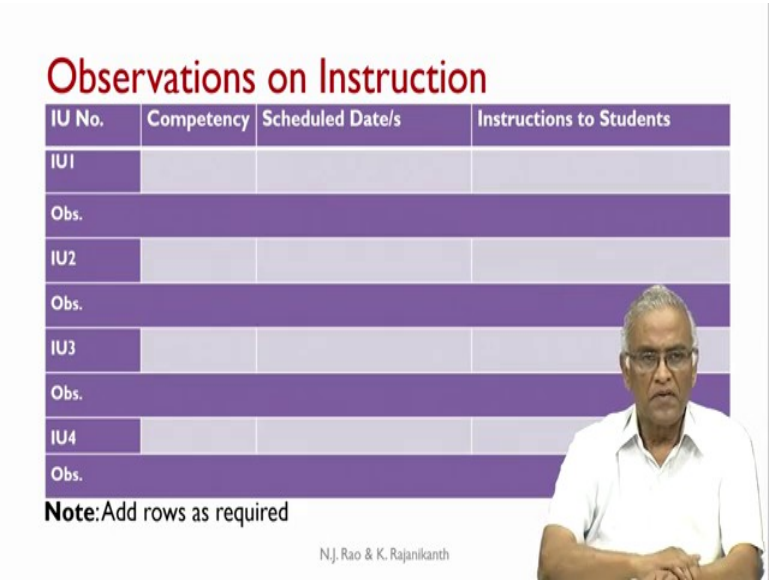

After every instructional unit you create another row (we call it observations) where you will write your observations in 2 or 3 sentences. This forms an excellent input to the instructor after the course is completed. What exactly, where exactly you have issues? For example, I might be underestimating the time required for a unit or I have overestimated the time required for a unit and so on. All these observations should be written in this format which we will use later to plan for corrections.

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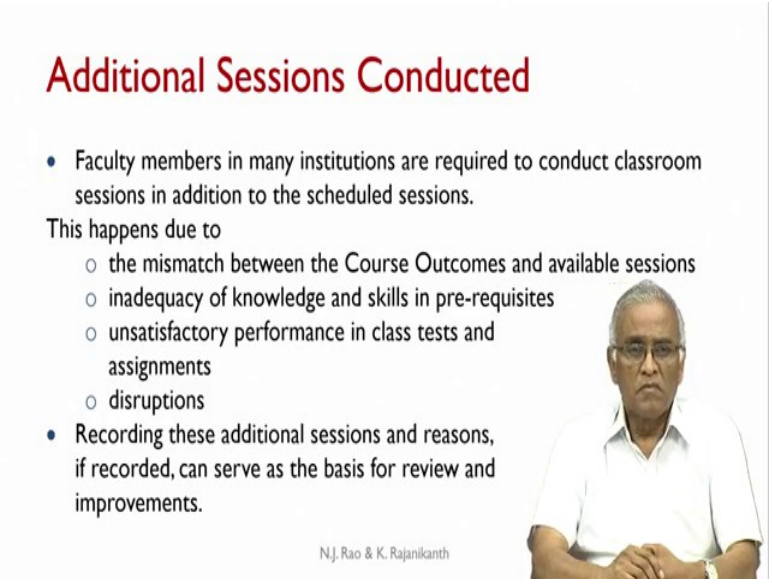

Many times, in many of the colleges, faculty members take many more class sessions than timetabled. For example, a 3-credit course will take, even if you take 15 working weeks, 45 lectures in a semester. There are instances where teachers have taken 70-80 lectures for a 3-credit course, which in some sense extremely stressful to the students and teachers. All these additional sessions are conducted outside the timetable, which means the faculty member is burdened with finding empty slots available and persuade the students to come and attend those lectures.

We need to understand why these additional sessions are required. Generally, this happens due to, in my opinion, the mismatch between the course outcomes and the available sessions. That means, the design of the curriculum itself is very bad that the content that is addressed in the course is far beyond the allotted time; over ambitious with respect to what the students need to learn.

There would not be time because if you want your students to learn well you have to spend more time making students practice things, but if you have too much of content then you keep on taking lectures and lectures, and end up taking a larger number of sessions. One can understand if 2-3 classes are missed for a reason or the other to make up for that. But absolutely there is no academic justification for any teacher wanting to take 30-40 sessions beyond what is scheduled.

Additional sessions may be required because of mismatch between the course outcomes and the available sessions, and sometimes the teacher may find that the students do not have the prerequisite knowledge. In the sense that the students do not have the necessary prerequisite skills and knowledge for coming in to the class, then you end up taking extra classes to make up for that. This kind of thing should be avoided.

These days with the kind of internet facilities and the access to the internet, the teacher you can create a website/webpage on the required prerequisite knowledge, and ask the students to prepare accordingly before they come to the class rather than teacher spending time. Essentially you are repeating what has been done earlier either in the high school period or in the previous semesters in the same institution; that means, you are trying to teach the same material twice or thrice like that.

Sometimes you have unsatisfactory performance in the class tests and assignments. You may want to take an extra session to re-explain something where people seem to have

generally misunderstood. Finally, there could be disruptions of various kinds in some States all the time for one reason or the other strikes; that means, college is closed or there are other activities that college is involved in, during which period the classes may get canceled and so on.

You can take additional sessions because of disruptions, unsatisfactory performance in the class tests, not for mismatch between course outcomes and available sessions and lack of prerequisite knowledge. If you are taking extra sessions, you should record what sessions are you taking and why are you taking. If every teacher can prepare such records then the department at some point of time can pool all this and talk about how to take corrective actions.

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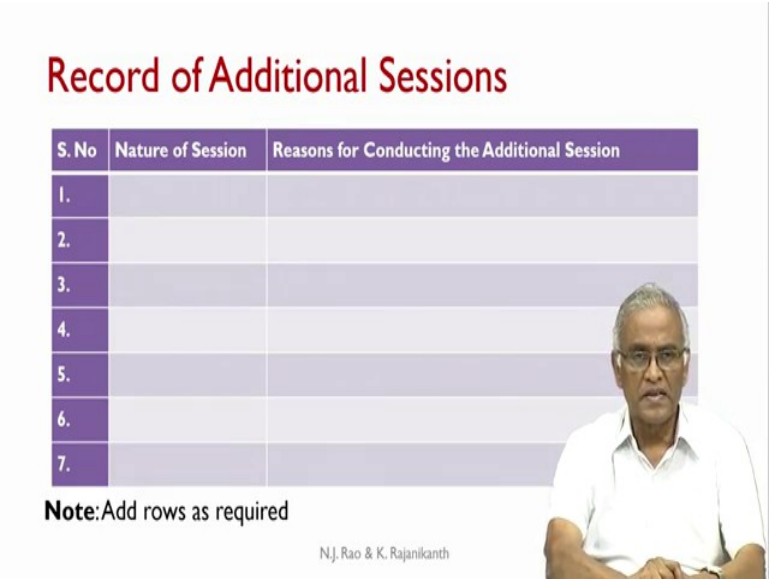

For example, one can write like this: the additional nature of session - what exactly are you doing - extra lecture on CO5-C2. Then reasons for conducting that additional session. If you can record this will serve as an excellent means to realign your curriculum to the kind of students you have, and the time that is available to you to facilitate good learning. Record of additional sessions is a good feedback to the department itself.

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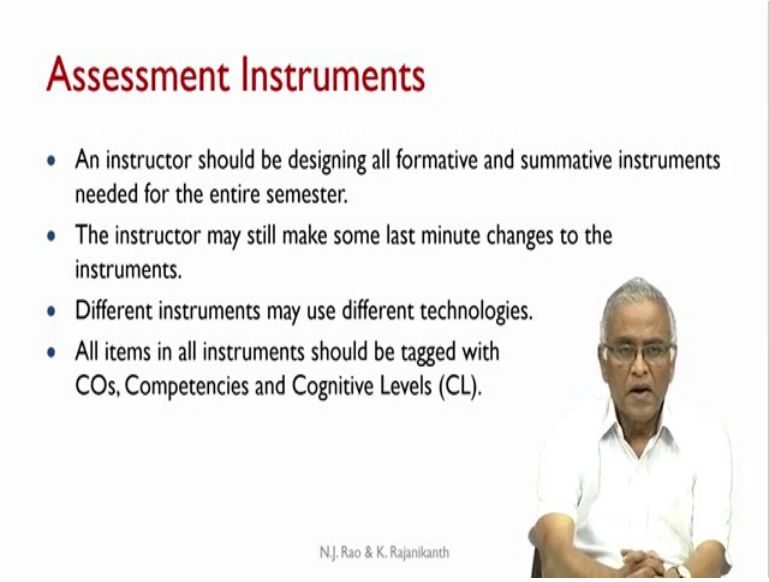

One of the activities in the implement phase is designing assessment instruments. This has been extensively dealt in the design phase. When we are talking of implement phase, we are talking of one instance of course delivery. The instructor should be designing all formative and summative instruments needed for the entire semester.

If there are 3 tests, 2 assignments, 3 quizzes and 1 end semester examination; then they all need to be designed a bit in advance, paying attention to how well-balanced test and SEE should be designed. Prepare Item Bank right in the beginning of the semester. Because COs and competencies are very clear and if an instructor has planned well, that is, if he has some kind of item bank (though to do that first time it will take a lot of effort) then designing these instruments should be relatively easy.

Well balanced assessment refers to the right amount of weightage to each CO and adequate weightage to the cognitive levels associated with the COs and competencies. Even if you prepared assessment instruments in the beginning of a semester, the instructor may still want to make some lastminute changes in the instruments. With everything being computerized these days, it should not be difficult to make these lastminute changes and run the tests.

Depending on the type of items that you are designing you may want to use different technologies like you can use LMS for quizzes - and quickly get the results. You can

make the student submit the assignments in a specified format. For example, they can take a picture of that and send it to you in WhatsApp or into an LMS,.

All items in all instruments should be tagged with COs, competency and cognitive levels. These three tags are compulsory and with that we can do all our subsequent calculations about attainments or keeping track to see how well the instrument is balanced and so on. Designing assessment instruments is a major activity, especially if you are giving the course for the first time or second time, but after that things should stabilize. Designing good assessment instruments should be lot less stressful.

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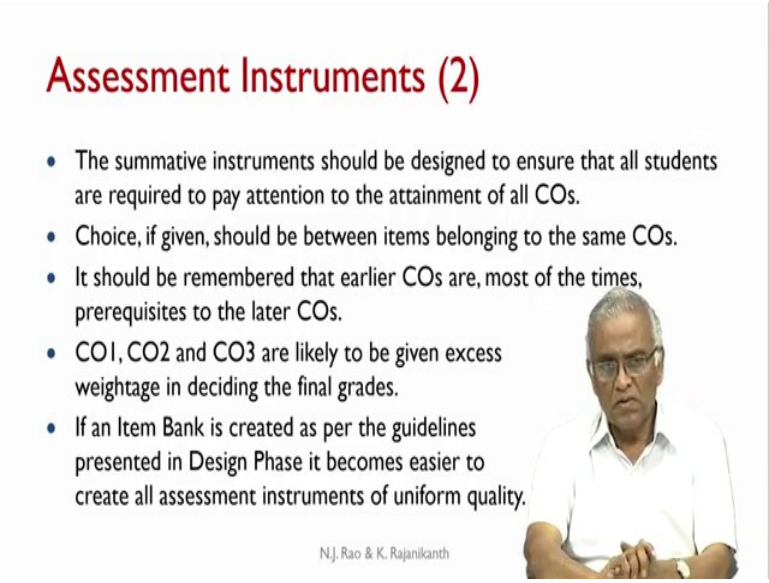

With regard to the summative assessment instruments, you have to pay attention to the attainment of all COs. You need to design in such a way the students cannot leave certain COs out of the choice. For example, many people are not interested in what to get A plus all the time. They say, 'if I do reasonably well that is adequate for me and in that process how do I optimize my effort?' By looking at the pattern of the assessment instrument they may start leaving certain portions from consideration. Then the very purpose of the course itself is lost.

People want some choice, if choice is given it should be between items belonging to the same COs it cannot be between two different COs, in which case one CO can be completely ignored. If you look at the COs of a course, at least most of the times, the CO1 is a prerequisite to CO2, CO2 is a prerequisite to CO3 and so on. That means, the

earlier COs are prerequisites to the later COs. If you look at (test 1 and test 2, test 3 and SEE etc) all the questions that are asked there is a possibility that CO1, CO2 and CO3 are likely to be given excess weightage in deciding the final grades.

Somehow it keeps happening implicitly or unintentionally the and system itself seem to persuade the students not to even bother about certain COs. Though several attempts are made in trying to ensure that students learn everything about all COs, but somehow it generally results in students leaving certain portions completely.

If an item bank is created as per the guidelines that we have given in design phase, it becomes easier to create all assessment instruments of uniform quality. We agree that creating such an item bank takes time. These days lot of information is available on the internet where plenty of questions are available for every subject. Collect all of them, curate and slightly modify and possibly you can have a question bank for your course with about a few days of intensive effort which could be your starting point.

After curating the questions that are available and making them in alignment with your course outcomes, you have to just tag them appropriately, and that will be starting point for your item bank.

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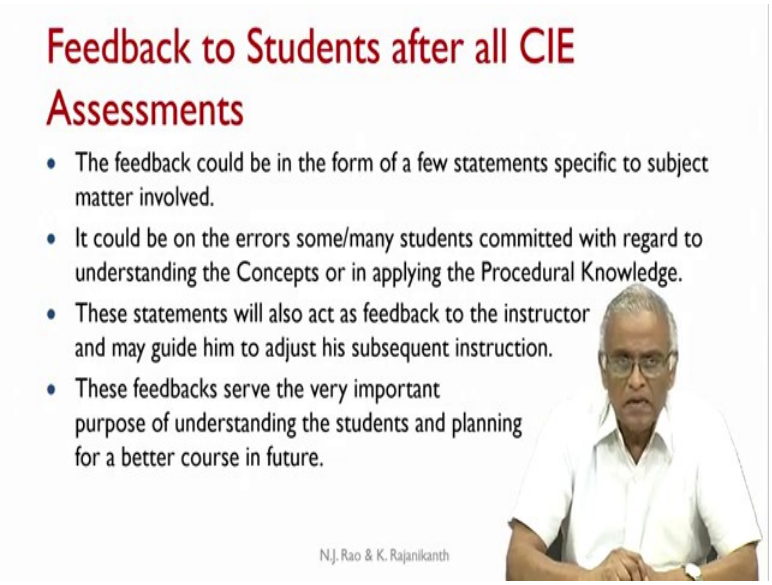

After looking at the performance in assignments, class tests, and so on, you cannot just say these are the marks that you got and that is the end of it. You would like to help the

students in improving their performance or point out where they have not adequately understood or where they have not adequately practiced, what is it they should do? So, one needs to give feedback to students after all CIE assessments.

By looking at entire class performance you can work out the feedback to be given to all the students (not one by one, not like in tutoring.) This feedback could be in the form of a few statements specific to subject matter involved, it could be on the errors and some or many students committed in understanding the concepts or in applying the procedural knowledge.

When you write all these they also act as a feedback to the instructor. If you find many students are committing a particular mistake; that means, there is something that instructor needs to correct and have to adjust his subsequent instruction. All these feedbacks will facilitate the teacher to plan the next offering of the course much better.

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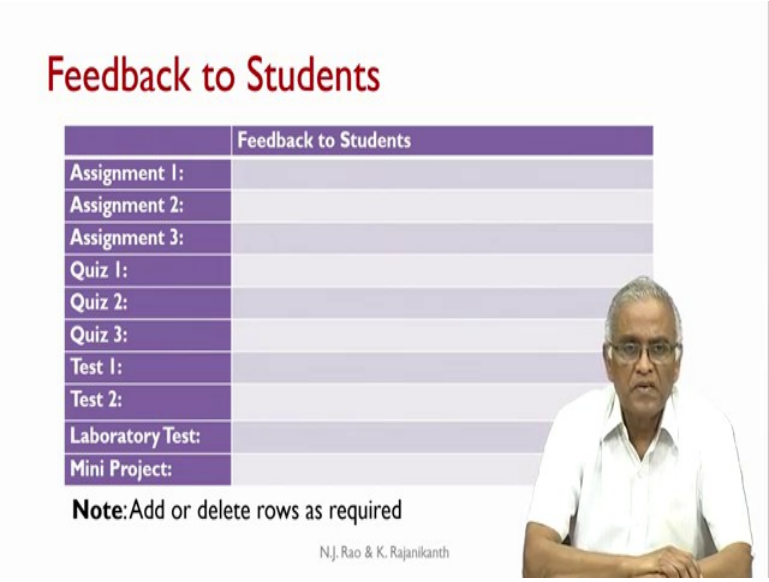

You can create a table as shown, and you can add or delete rows as required. You can write several statements depending on the responses of the students. Everything is structured if you capture it in the form of a table.

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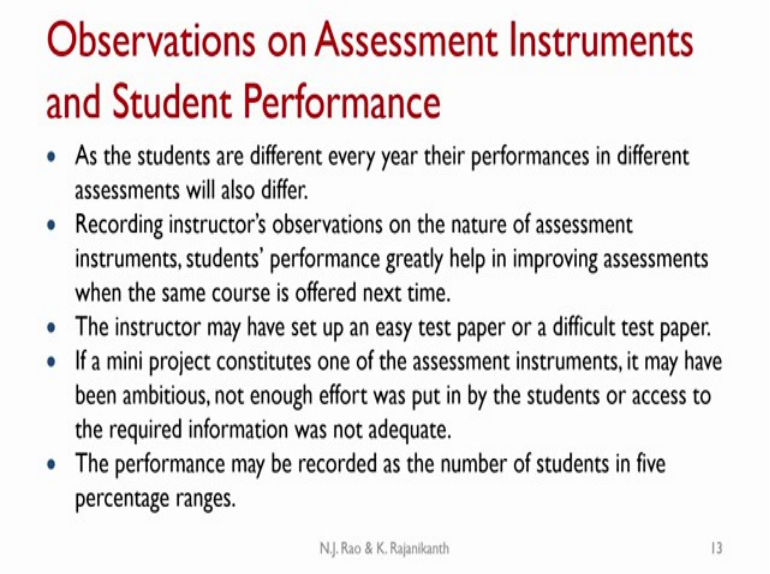

We will also look at observations on assessment instruments and student performance. Students are different every year and their performance in different assessments will also differ. By recording instructor's observations on the nature of assessment instruments or students' performance greatly help in improving the assessment when the same course is offered next time.

One may be giving a very easy test paper or difficult test paper. So, if it is a difficult test paper obviously many students will not be able to perform well; if it is a easy test paper everybody will score high marks. So, this kind of thing also acts as a feedback and helps in adjusting the difficulty level of your test paper. A mini project which these days are becoming a practice in every semester or at least one every year.

For example, if a mini project constitutes one of the assessment instruments, it may have been ambitious, (if it generally happens) not enough effort was put in by the students or access to the required information was not adequate. There are whole lot of issues once you consider a mini project. You need to fine tune the resources, the scope of the project for a group of students, and find ways and means to make it challenging. It takes quite a bit of effort to fine tune the mini project. By recording the observations on the performance with respect to mini projects one will be able to continuously fine tune the mini project.

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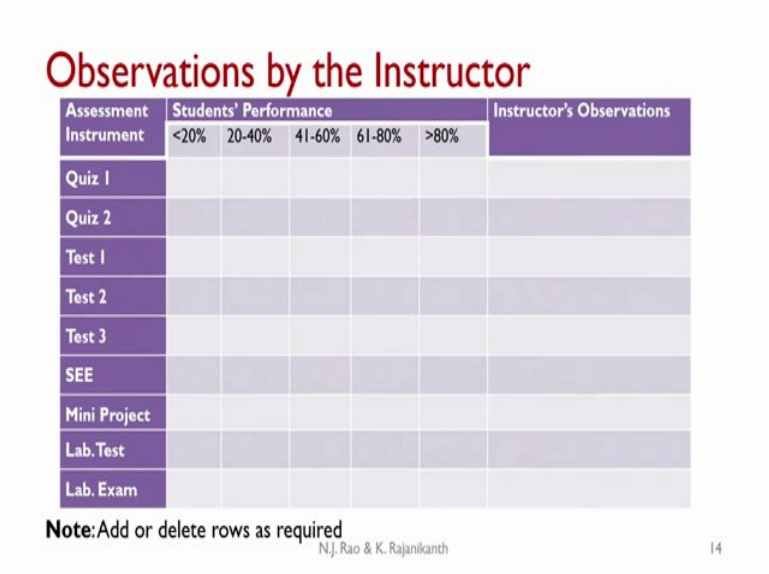

The performance of the students can be captured like this. You can divide each student's performance it into these categories. This is only an indicative one. If one wants he/she can also rearrange the percentages. By getting this profile or the student performance, one can write instructor's observations in the last column, which will give a great feedback to the instructor and also to the department in fact.

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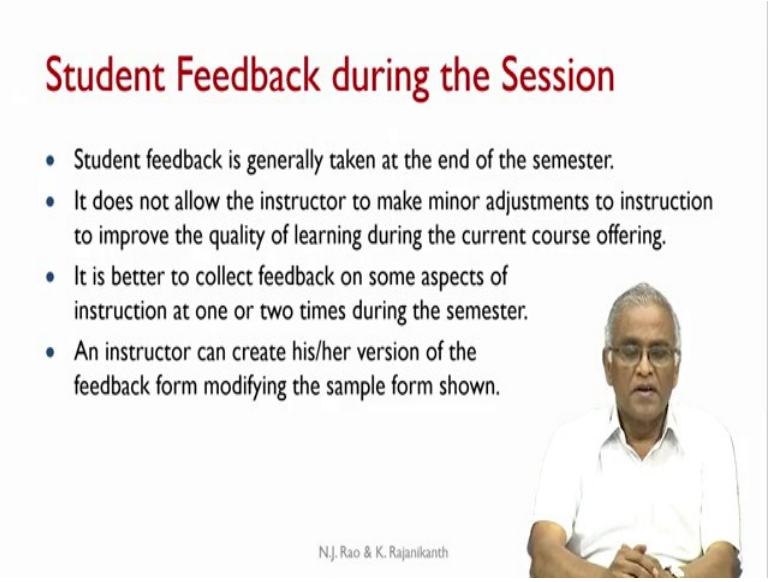

There is yet another feedback for consideration. Often what happens is when I am teaching a course to a specific batch they may find that you are going either to slow or

too fast depending on their background. If it is too slow the students will lose interest, if it is too fast if they are not able catch up, they also will mentally dropout. But if you wait for the end of the semester feedback then there is nothing much the teacher can do.

So, it is a good idea to have at least once or twice the feedback in the middle of the semester. So, if you take the feedback in the middle of the semester it will allow the instructor to make minor adjustments to instruction to improve the quality of learning. Instructor can create a simple feedback form.

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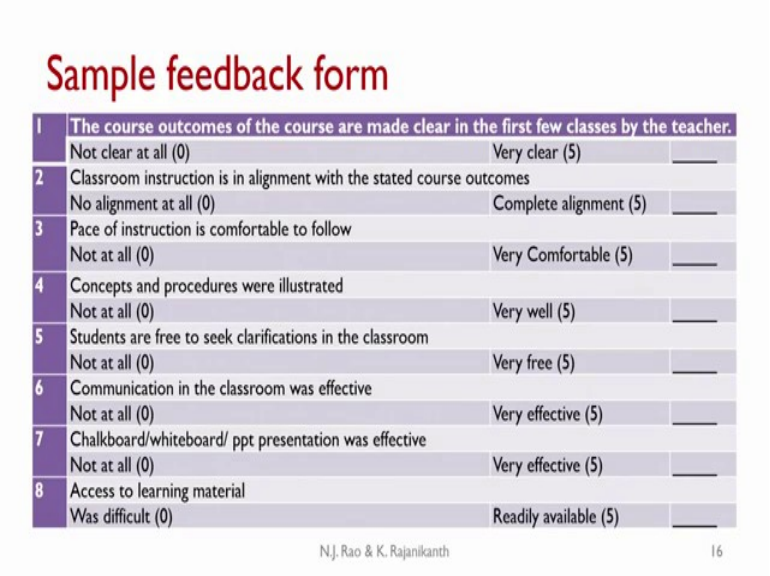

We will show one sample here. The course outcomes of the course are made clear in the first few classes by the teacher. For example, you can rank that it not clear at all 0, very clear is 5. So, you can put a number between 0 and 5 in the last column. Classroom instruction is in alignment with the stated course outcomes - not in alignment at all 0 complete alignment is 5. Sometimes the teachers for some reason or the other drift away from the main topic and spend some time a bit tangentially.

Pace of the instruction is comfortable to follow. Every individual speaks at one speed with which the students may or may not be comfortable with. The teacher needs to adjust himself for that. Concepts and procedures were illustrated - not at all or very well. Students are free to seek clarifications in the classroom - not at all or very free. Communication in the classroom was effective and chalkboard or whiteboard or ppt presentation was effective. Access to learning material was difficult; that means, material

is not readily available. Yhe textbook prescribed maybe good, but it is not in the library or is readily available.

These days the availability of learning material is not a big issue. You do not have to use 8 items and you do not have to write the items exactly as given here. So, one can design one's own form with small number of questions so that it acts as a good feedback to the teacher, and he/she can make minor adjustments accordingly. You can do it once in a semester or twice in a semester or generally immediately after the first test and after the second test. You can choose what is the appropriate time to take this survey.

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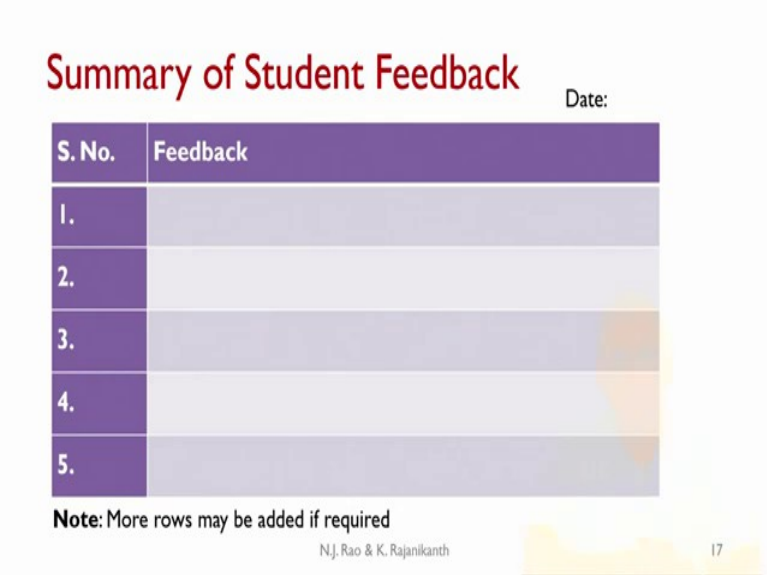

Based on the student's response you write summary of the student feedback as a set of statements. Let us say if there are 60 students and they have given your feedback based on which you write notes to yourself as a set of statements (if you want you can add more rows to this.)

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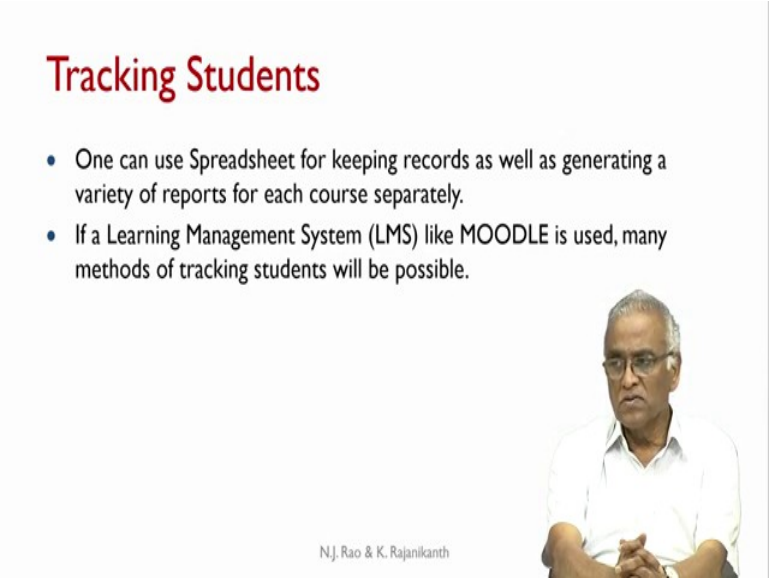

Another major activity is to keep track of students' performance. Today it is very convenient to create a spreadsheet and keep entering whatever information, wherever comments are made, or wherever you are having the numbers for activities.

You can easily compute from a spreadsheet, you can classify students, find out which student is performing in what area well and so on. If a learning management system like MOODLE is used, many methods of tracking of students will be possible. You can say it is a bit of advertisement on using a learning management system. The more you can use the more you can improve your interaction with the students.

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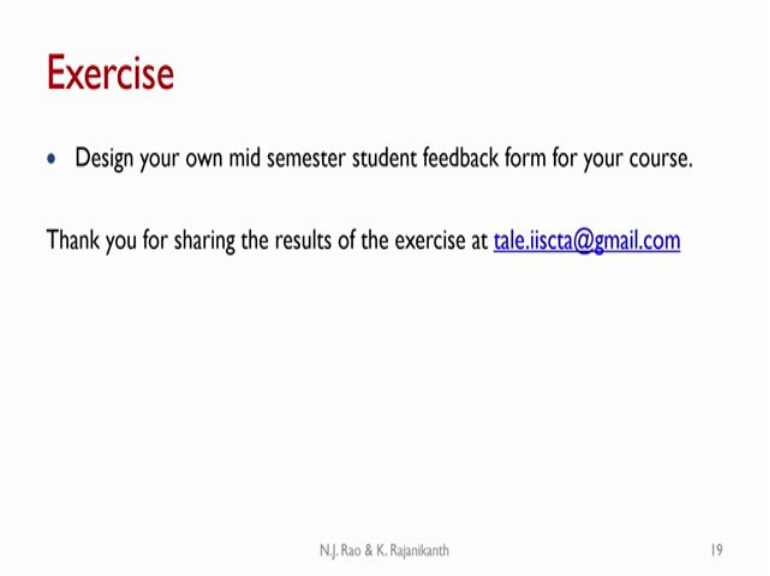

Exercise: design your own mid-semester student feedback form for your course. Please do not make it more than 8 items, because everybody loses interest if it is a large form or too many questions to be answered.

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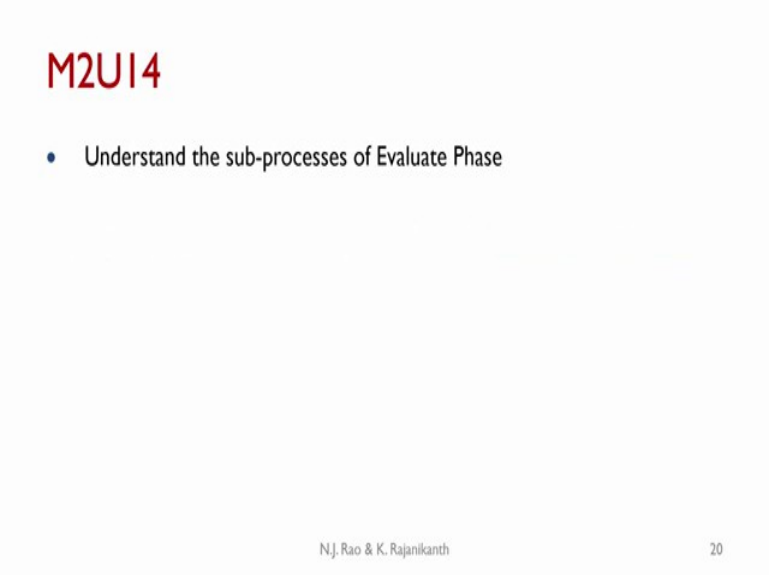

That is the end of implement phase, and in next unit we will look at the processes of evaluate phase.

Thank you very much for your attention.