LUMS | Learning Institute

Large Classes at LUMS: A Teaching Guide

Practical Strategies for Navigating Challenges and Fostering Student Engagement in Large Classrooms

Preface

In the ever-evolving landscape of modern education, instructors at LUMS often face the distinct challenge of teaching large classes. Acknowledging this, we present "Large Classes: A Teaching Guide — Practical Strategies for Navigating Challenges and Fostering Student Engagement in Large Classrooms".

This guide aims to provide a valuable resource for instructors navigating large classes. It bridges the gap between theory and practice by offering evidence-based strategies to deal with the plethora of problems that tend to arise in teaching large classes.

Crafted collaboratively by Rehana Kazi and Zain Ul Abidin Khan Alizai from the LUMS Learning Institute's TEL (Technology-enhanced Learning) team, this handbook is rooted in extensive research. It goes beyond theory by incorporating interviews, research and various insights from some of the top faculty trainers in the world. These insights from conversations with experienced educators and other teaching resources infuse real-world wisdom and innovative methodologies into the guide.

In closing, the "Large Classes at LUMS: A Teaching Guide" is a testament to collaboration and dedication in education. It enables instructors to create impactful learning environments within the challenges of large classes. We hope this guide will serve as an empowering tool, equipping instructors with the tools they need to create vibrant and impactful learning environments within the challenges and opportunities of large classes.

Team TEL (Technology Enhanced Learning)

LUMS Learning Institute

Disclaimer

You may use this "Guide" as a set of ideas and suggestions to use as you think best in approaching your particular large class and the specific goals for that learning experience. We understand that each discipline and each class present unique teaching and learning opportunities— and difficulties. These are general suggestions, but we hope they will be helpful as ideas to adapt to your particular context and needs. Feel free to provide feedback, which can be used to produce future versions.

If you would like to book a consultation or need support regarding your instructional design, please book a consultation with the LLI team by dropping an email at: lli@lums.edu.pk.

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Introduction

Recent demands on higher education institutions for quality undergraduate education have intensified. Yet, teaching large classes presents significant challenges. How can one personalize interactions in classes with 100 students? How do we foster student engagement when anonymity is a risk? Delivering meaningful feedback without drowning in grading is also a concern. These issues are critical in pedagogical discussions.

Wulff et al. (1987) found that students separated the quality of instruction from class size. Student comments identified four characteristics of successful professors:

- **Instructor's competency:** knowledge and experience with the subject
- **Instructor's concern:** interest in assisting students and improving the learning process
- **Instructor's energy level:** enthusiasm about the subject
- **Instructor's speaking ability:** interesting, well-paced presentation of course-material (Ammon et al., 2005).

Effective teaching varies depending on the situation, and what works for one instructor may not work for another. However, the overall approach of active learning offers significant benefits for students. Tips from various disciplines suggest trying different methods, but they may not always match your personality. It's okay to step out of your comfort zone and try new roles in the classroom. Start with a test review or familiar material when using a new technique. Be patient; students may need time to adjust.

Even if your efforts initially fall short, most students will appreciate your commitment to being a good instructor. Ultimately, choose methods that fit your teaching style, course objectives, and students' needs. Active learning can be applied to any class size, including large ones. Instead of just lecturing, adapt small-class techniques for bigger groups. Remember, you can find effective ways to engage your students no matter the class size.

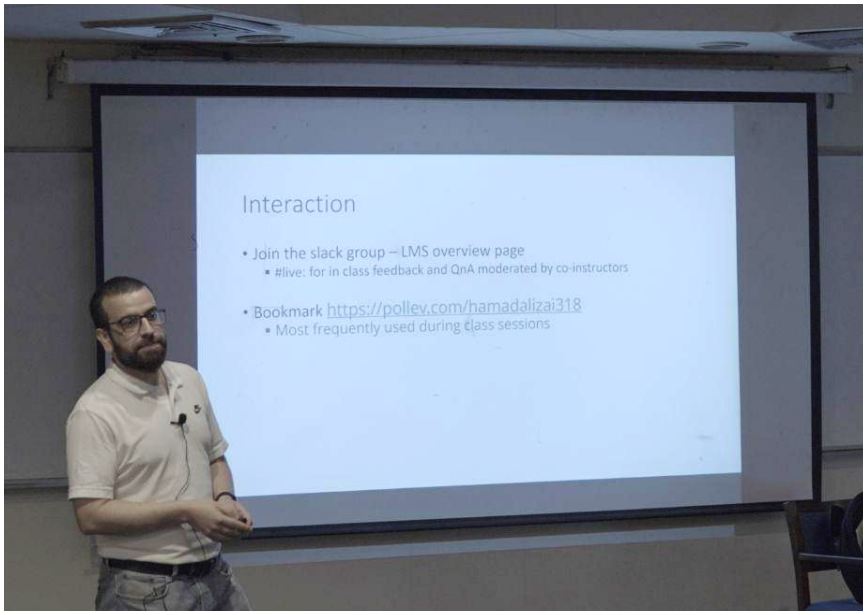
Large Classes, as seen at LUMS

At LUMS, the rooms supporting large classrooms include SSE Basement 9B-2 and 3rd-floor Auditorium, SDSB Basement B2, B3, Trading Lab, and the NIB Auditorium. Notably, there has been a remarkable surge in student enrollment at LUMS in recent years. During the 2022 Fall Semester, the largest class at LUMS had approximately 175 enrolled students. While ample auditorium spaces are scattered throughout the campus to accommodate these students, the challenge of effective instructional skills persists.

A thorough investigation has been conducted to compile a comprehensive guide for LUMS Faculty, incorporating extensive interviews with students, TAs, and instructors, along with classroom observations to contextualise findings and provide real-life examples. Best practices and student appreciation for certain teaching strategies have been documented. This section delves into some of the techniques LUMS instructors employ to enhance learning and foster engagement in their large classrooms.

1. Dr Ihsan Ayyub Qazi (*pictured above)* seen moving around in his classroom in SDSB basement while teaching Data Structures. Entering the students' space and reducing the distance between the student and instructor in a large classroom can be a powerful tool to connect with them better. When students feel closer to their instructor, they are more likely to be more engaged.

2. Ms Fariha Zahid (*pictured above)* teaches Principles of Management in the SDSB Trading Lab and often uses music to create a relaxing atmosphere for her students. She uses this technique to relieve student anxiety and create a positive and light atmosphere for the students. It is used as a break from academic conversations.



3. Dr Hamad Alizai (*pictured here*) maximises the use of technology while engaging and assessing students. Interactive polls (Pollev) are used and his TAs run a live online communication channel (Slack) to quickly respond to questions multiple times during the class.

4. Dr Suleman Shahid while teaching Human-Computer Interaction (HCI) divides his students into smaller groups and assigns one TA to take the responsibility of these smaller groups. The TAs meet Dr. Suleman frequently to discuss student queries, TA workload and expectations from TAs. This allows for smart delegation where most of the student concerns and guidance are done by empowered TAs.

A semester-long group project based on the course theory is divided into smaller submissions which are spaced out through the term and each submission receives tailored feedback from Dr Suleman himself. This not only divides a heavy component of the assessment criteria into smaller submissions but also allows students to self-correct and improve their final product.

Other instructors at LUMS, especially at SBASSE are observed conducting recitations for large enrolment courses. These are either conducted by their head TA or the instructors themselves. Another widely popular technique is holding contestations for exams and quizzes. Contestations are a process by which students receive a grading rubric and can check their graded work against that rubric to clarify why and how they were graded. If they still have questions, they can participate in contestations where TAs explain the grading to them and if applicable, their marks can be increased.

Issues With Large Classrooms

Teaching large classes is different from teaching any other class. The dynamics of the classroom and the quality of teaching are prone to be affected heavily by the strength of a classroom. Multiple issues tend to emerge in a large classroom, some of which are:

1. **Alienation and lack of engagement**

   1. Most large-class courses are intended for first and second-year students for whom learning in a large class is a new experience. They must adapt to receiving less individual attention than they did before. Consequently, some students may feel anonymous during lectures, hindering their learning motivation.

   2. When many of their peers are listening; students in large classes may feel too intimidated to ask questions or too overwhelmed by the material to approach instructors or others for help.

2. **Feedback and Grading load**

   Owing to the sheer volume of assignments, essays, and tests—grading each student's work entirely and thoughtfully can take time, sometimes causing delays in returning assignments. As a result, students may not receive timely feedback, compromising their knowledge of the course material and overall learning experience.

   This increased burden may interfere with the instructor's ability to focus on other essential teaching areas, such as lesson planning and classroom management, alongside maintaining a balance between consistency in grading and addressing each student's unique needs and strengths.

3. **Logistics**

   Monitoring attendance in a large-class setting using conventional mechanisms can be tedious, which often leads to attention disruption for students or lesser individualised focus on part of the instructor. Additionally, scheduling makeup classes, tutorials in

a way that the schedules of everyone is aligned can be a logistical nightmare, which often leads to some students losing out on crucial learning (Ammon et al., 2005).

At the same time, large classes also present additional and significant spatial and experiential challenges. In a large classroom, board visibility and instructor's audibility can often be compromised, which leads to decreasing retention of knowledge, attention and attendance. Similarly, maintaining audibility is a critical aspect.

4. **Prevalent bad and daunting reputation owing to commonly-used ineffective and challenging techniques**

   Teaching large classes holds a bad reputation owing to the sense of either unrewarded (especially at a research-oriented institution), ineffective or, at the very least, quite challenging. Once, an assignment to teach large classes, a prestigious opportunity, was reserved for senior faculty who showcased their discipline and attracted new students. However, nowadays, teaching large classes may be considered the least prestigious and the most daunting teaching assignment. And for many faculty, regardless of experience, teaching a large class seems difficult to do well.

5. **Prone to behavioural misconduct management**

   Setting and maintaining disciplinary conduct standards within a large classroom is a difficult task to deal for a teacher, especially since any misconduct is heavily prone to snowballing if appropriate prevention and management measures aren't taken. Access to anonymity is far easier, which, when coupled with disengagement, leads to a tendency to cause disruptions. Any incidents also no longer remain too discreet, which causes management difficulties.

Techniques To Use In Large Classes

We have already discussed the general overview of problems that exist within the purview of teaching in large classrooms. In this section, we list specific problematic areas in this realm of teaching. This section will detail strategies, tips, techniques and pedagogical values that must be evaluated and imbibed by instructors in order to counter these issues effectively.

According to Teaching Professor, the realms of difficulties encountered by the instructors of large classes include (Meixun Sinky Zheng, 2018):

1. Personalising the environment — make a large class feel small
2. Working with Teaching Assistants
3. Mitigating classroom disruptions
4. Adapting one's lecture
5. Assessments
6. Feedback from students

1. Personalising the environment - make a large class feel small

The graphic depicted below presents an overview of techniques that can be employed to reduce the anonymity of students in the classroom. Such personalisations of the classroom enable students to equitably engage on par with their peers and feel more confident in their expression. This intervention thus improves active engagement within the classroom.

Here's a detailed explanation of each of these techniques:

- **Learn Student Names:** Create a seating chart to enable rapid taking of attendance and identification of students. Return exams personally to associate names with faces and encourage struggling students. Before class, learn the names of people sitting along the aisles and call on them during the class ("Teaching Large Classes", n.d.).

  When giving a test, ask the students to hang a sheet of paper with their names in large letters in front of them, and you can wander around the room learning names. When handing back the tests, go

to the labs or discussion sections with the papers and hand each back individually with an appointment book to invite students with scores of D or less to make an appointment, and any others who look disappointed or concerned.

- **Be a Person to Students:** Create a more personal environment by letting students "know" you in appropriate ways. Tell them about your interests and hobbies. Explain how you first encountered a concept or used course-related materials in problem-solving. These moments of subtle personalisation rapidly benefit the classroom environment, and increase the tendency of amiability for the students, who might otherwise prefer to remain anonymous and out of sight (Meixun Sinky Zheng, 2018).

- **Be Accessible to Students:** Try to find ways to be accessible to students personally. Arrive early and chat with students who are already there. Greet students as they come in and allow them to ask questions they might not ask during class (Ammon et al., 2005). Stay a few minutes after class to answer individual questions. Give students your email address and encourage them to send questions or comments this way.

  In order to encourage clear and concise communication, you may limit student emails to 140 characters (not including salutation and the signature) — the length of a Tweet — while informing students that issues requiring more explanation can be addressed in office hours (which can be scheduled in 10-minute blocks using the online tool Scheduly). You may also pass out invitations to 10 students to join you for coffee after class to get acquainted. Announce that you'll meet any students free for coffee after class (trust that you won't be swamped).

- **Enter the Student's Space:** Consider lecturing or leading discussion from different points of the classroom to give students the feeling of being in the midst of the action rather than simply being an observer. Standing behind a podium emphasises the distance between you and the class. Moving into the aisles and around the room makes the class seem smaller and encourages student involvement.

- **Relate Lectures and Discussions to Student Experiences:** Some instructors integrate into the lecture information they have gathered about students from information cards or questionnaires. Knowing the backgrounds of your students can also be used in asking questions from a member of the band, from a person who lives on campus, etc. Show that you are open to non-traditional students by incorporating their life experiences into the class. Ask individuals or groups of students to provide examples or materials applicable to the class or have students complete a questionnaire, survey, or other instrument before class. You can then incorporate the tabulation and analysis of results into the lecture. Student interest can be heightened and comprehension of the class material enhanced when examples and materials relate to the experiences and background of your particular audience. The more relatable and personalised the design of instructional material is, the more engagement can be ensured.

- **Provide Avenues for Feedback:** Ask students at intervals to write down the "muddiest" part of your lecture, and then use some of the next class or handouts to clarify the material. A class-specific online class group (managed on Slack, WhatsApp, Piazza or Facebook) can foster an out-of-class discussion.
  Creating online class community channels will facilitate swifter communication between you and the students. While any questions and queries from the students can be addressed here, which may also benefit other students— you can also use these channels to prompt the class to participate through polls and questions and foster an out-of-class discussion.

- *Content Clarification Questions* such as:
    - "What part of the lecture was unclear or confusing for you?"
    - "Are there any terms or ideas you'd like me to explain further in our next class?"

- *Discussion Prompt Questions* such as:
    - “Share a few real-world examples related to the concepts we covered in class?”
    - “Do you have any alternative perspectives or ideas regarding our discussed topic?”

- *Participation Poll Questions*:
    - “Would you like more in-depth coverage of a specific topic from today's class in our next session? (Yes/No)”
    - “Which aspect of the course do you find most challenging:
      A) Reading assignments
      B) In-class lectures
      C) Homework assignments
      D) Exams?”

You must prompt with intentful and value-providing questions while also responding to yourself to keep the digital community engaged. These communities can also gather feedback on the course mechanisms, pre-assessments, peer-to-peer instruction, etc

2. Working with Teaching Assistants

Teaching a large class of undergraduates with teaching assistants (TAs) requires extra managerial and organisational skills. The TAs will continually look to you for guidance in conducting and teaching the course. When utilised effectively, the TAs can become a helpful resource that can significantly assist the instructor in ensuring all learning objectives are met. The following are some suggestions that may help you in TA management of a large classroom ("Working with Teaching Assistants", n.d.).

- When possible, **choose TAs with specific qualities** — who have expertise in the subject matter, want to teach, are good communicators, and are team players
- Plan through the **course structure** early and discuss their role with them, e.g., attend lectures, have responsibility for a portion of course grades, and grade homework problems
    - TAs might find it beneficial to have access to solution keys and grading rubrics for checking and engaging in discussions about teaching practices and progress
    - Assigning grading tasks to TAs is also prone to certain risks, which is why it is recommended to design and detail a comprehensive grading rubric in association with your TA first.
    - TAs in courses such as Principles of Management and Linear Algebra have suggested that they found these interactions particularly valuable
- Have a **preliminary meeting with the TAs** as soon as they are chosen. Have a syllabus ready that the TAs can review to ensure that they can follow and understand it ("Working with Teaching Assistants", n.d.)
- Provide and require **training sessions for the TAs** with an instructional component before the semester begins
- **Select a head TA** as a coordinator and liaison ("Working with Teaching Assistants", n.d.). This role can facilitate streamlined communication and ensure effective collaboration, aligning with the experiences shared by TAs who manage courses like Pak Studies
- **Meet with TAs regularly** to review content, teaching methods, grading issues, and special problems. Most faculty members require such a meeting weekly

    - Leverage TA perspectives from their experiences of the said course, particularly for foundational courses like Modern Physics, Mechanics and others, to identify opportunities for enhancing course dynamics and addressing student needs
- **Monitor each TA's progress** throughout every semester they teach by visiting their classrooms,, and/or having them collect mid-semester student feedback about their teaching (of tutorials/recitations)
    - Debrief with TAs after each of these teaching development experiences. Make your expectations explicit and tell the TAs how they will be evaluated
- **Support and assist your TAs** in dealing with special problems they will encounter, e.g., academic integrity, classroom discipline, course management issues, harassment, and pressures of being both teacher and student.
    - In sharing their insights, TAs from the Linear Algebra course emphasise that an acknowledgement of concerns such as those about cheating, through discussions with TAs, can help implement more student-centric and effective assessment frameworks.
- **Use TAs as a resource to help understand the students' spatial experience—** record their spatial observations to optimise the physical classroom setup, addressing seating arrangements, visibility, and technological issues to create a conducive learning environment (UNC-SPS).
    - Such adjustments can help enhance visibility and seating arrangements for a more effective large classroom experience, as TAs managing courses like Principles of Management noted.
- **Avoid discussing other faculty members or TAs** with your TAs.
- **Do not misuse TAs** by requiring more time or duties outside of their responsibilities than their appointments dictate. Try to be objective and fair to all of your TAs ("Working with Teaching Assistants", n.d.).
- **Encourage TAs** to enrol in one of LLI's TA development programs to enhance their teaching abilities and assist them in getting a teaching position in the future. Alongside, assist new TAs in managing their responsibilities, ensure fair compensation for their work, and provide opportunities for professional development. In our conversations, TAs managing courses like BIO101 and Pak Studies have particularly appreciated these support initiatives.

3. Mitigating classroom disruptions

This section provides appropriate options for making decisions about flexibility at the start of the new academic year to articulate policies that promote student success and flexibility in a large class and while maintaining accountability. In particular, it focuses on transparency, making up missed work, handling requests for extensions, and attendance.

Transparency

- It is important to be explicit with students about your policies and practices. Setting up a clear framework for students is a key principle of equitable teaching and can reduce ad hoc requests and help students understand your expectations.
    - **Explicitly identify your core course learning objectives** so you can make deliberate decisions about what elements in the course you are willing to revise, adapt, or make optional in response to individual and/or collective student needs.
    - **Design course policies that provide pathways** if students need to be absent, turn in work late, leave class early, etc. (see below for options). Explain how these are designed to support student learning; avoid framing such policies as punitive.
    - **Reiterate your policies at key times** (e.g., at the start of the term, around the add-drop deadline, before assignments are due, and midway through the term), because students continually navigate policies in multiple courses.

Making up missed work

- There are several approaches you can take to enable students who were absent to make up the class work they missed. These will vary depending on the modality of your class, the technological tools you use, and your comfort with lecture capture.

- **Recording classes:** If you regularly use lecture capture, students who need to miss class can view the recording and complete any related assignments. There are many potential benefits to all students in having recordings available, particularly allowing students to catch up to any material they might have missed in the class owing to any unfortunate circumstance. Nonetheless, despite its widespread availability, lecture capture is neither a university requirement nor well suited to all types of courses (e.g., discussion-based classes, courses addressing difficult subject matter, and labs).

- **Asynchronous Options:** Whether or not you are recording, you can employ asynchronous methods for students to participate. For example, you could share slides and ask students to submit a one-minute paper response ("*What are three things you learned from reading the slides*" and "*One question you have*?"), complete a brief quiz about readings, or participate in online discussion boards if you use them.

- **Study/Buddy Groups:** You could encourage students to set up study groups, or you could create a "buddy system," assigning students to small groups of 3-4 peers who would be contacts for one another when they miss class.

- **Hyflex or hybrid instruction:** There is also the option for instructors to run their courses in a way that allows for both in-person and synchronous participation throughout. Such faculty must carefully leverage technology and student participation to create a well-designed learning experience It is much more difficult and less effective to create a hyflex environment in an ad hoc fashion, for example, in response to student absences over the semester. There is no university requirement to offer hybrid instruction. If you have not planned to run your class this way, it makes more sense to figure out ways students can participate or make up work using one of the other methods listed above. If you are interested in designing a hyflex course for a future semester, you may contact LLI for further consultation.

Handling requests for extensions

- While extensions can help students facing a range of difficult circumstances, they also carry downsides for students and instructors. For students, they can snowball and affect their capacity to complete later assignments. For instructors, a high volume of extensions can lead to constant grading and, potentially, the need to create multiple versions of exams. With this in mind, it is worth exploring options for students that allow for flexibility but set clear boundaries. These include providing opportunities for students to:

    - **Turn in a limited number of assignments a few days late**, "no-questions-asked." For example, one instructor offered students two "Flex Passes" they could use for a one-week extension for any assignment other than the midterm or final.
    - **Drop one or two of the lowest grades** on quizzes or other assignments. For example, N-1 or N-2 policy is often included in quizzes by instructors.
    - **Retake an exam or revise an assignment,** thereby reducing the pressure to "get it right". Take the time before their retakes to give them ample feedback which they can use to improve.
    - **Request an extension** by submitting work completed to date and a plan for completing the assignment.

Attendance

- **Motivating attendance:** Think through the following questions so that you can communicate to students the importance of in-person attendance: What will they gain from being in the room with you and their peers, and how does that help them achieve course goals? How do you plan to promote student engagement during class? It can be constructive to integrate activities (e.g., in-class surveys, turn-to-your-partner activities, ad-hoc group work) early in the term so that the incentives of in-person attendance are clear from the outset.

- **Adopting – or expanding – absence policies:** A familiar practice is to build into your class a certain number of unexcused absences (i.e., not due to illness or religious holidays) that students can accrue without consequences, along with explicit guidelines about how students can

make up the work they've missed (see above for ideas) (Ammon et al., 2005). Having such a policy can reduce requests for exceptions that can be time-consuming and difficult to adjudicate.

Decreasing anonymity in the classroom, encouraging active learning, and regularly enabling feedback communications are distinguished techniques that can also allow the instructor to prevent any behavioural misconduct in the class. By employing these techniques, research contends that student satisfaction is catered to and grievances addressed, creating an amicable environment within a large classroom. However, instructors may still encounter some students or classes presenting behavioural disruptions within the classroom (Ammon et al., 2005). The suggestions below address behaviours that faculty report as most irritating and troublesome.

Talking and Inattention

- If students are chatting, make direct eye contact so that they know you see them, physically move to that part of the room, and/or direct a question to the area in which chatting students are sitting.
- Call the offending student(s) up after class, addressing the problem within earshot of others but not publicly embarrassing them.
- Make it clear that rude behaviour irritates students as much as it does you.

Arriving Late and Leaving Early

- Establish an understanding with students: you expect them to come to class on time; you will start and finish as scheduled.
- Station your TAs in the back of the classroom and have them ask late or early-departing students if they are okay, why they are leaving, etc.
- Institute a starting ritual: dim the lights, play music, read a notable quotation—whatever suits your teaching style

- Circumvent the temptation to pack up early. Use the last five minutes of class to put a question on the overhead that gets at the heart of your lecture and/or will appear on the next exam.

Challenges to Authority

At some point in large classes, many teachers will face a student who is resentful, hostile, or challenging. The following are a few suggestions for gaining the cooperation of an oppositional student.

- As a rule of thumb, avoid arguments with students during class. If a student continues to press, table the discussion and continue it in a more neutral setting, preferably in the presence of others.

- Respond honestly to challenges, explaining, not defending, your instructional objectives and how assignments contribute to them.

- If the behaviour reoccurs, document it. Write a letter to the student. Describe the behaviour and how it disrupts you and other students, restate your expectations for behaviour, and outline specific changes you would like to see. Copy the letter to your department chair, the student's academic advisor, or the dean of student affairs.

- On the rare occasion that a student is alarmingly hostile or threatening, contact the dean of the student's office and/or campus security.

4. Adapting one's lecture

We often think that learning occurs in proportion to class size, i.e., the smaller the class, the more students learn. However, research contends that what usually counts is not the class size but rather the quality of the teaching and student engagement with learning.

Active learning, thereby, means that students are actively engaged in processing the information being presented holistically and not simply just passively receiving it. It is the cornerstone of good quality teaching. Research shows that techniques that promote active learning lead to better student performance.

While a lecture may benefit students by providing them with a knowledge base, lecturing alone cannot ensure that students become active learners. Many of us have been taught through lectures and view them as safer, easier, and more reliable than other methods of instruction. Using lectures in combination with other kinds of instruction, such as discussion and cooperative learning, can increase the teaching's effectiveness (UNC-SPS).

Generally speaking, the qualities of an effective lecturer are

a. A good knowledge base
b. Enthusiasm for the discipline (not necessarily a "performer")
c. Techniques for engaging students in active learning

Considering these personal effectiveness qualities, multiple steps lead up to lecture delivery, during which an instructor can review their existing strategies to improve. Some general techniques that can be used to promote active learning in the classroom are:

1. **Make your classes interactive**. Try using mediums such as i>clickers, Pollev, Google Forms, etc. For a technique that requires less technological intervention, you may ask your students multiple-choice questions and have them raise their hands to indicate their answer (Ammon et al., 2005). Taking notes is another way for students to demonstrate interaction in the class. Other techniques that help keep students involved include taking an informal vote on an issue or presenting a multiple-choice question

on the topic and asking students to choose the correct answer (for further detail on interactive lecture delivery, check out the section on Delivering the Lecture)

2. **Use 'low-risk techniques'** such as clarification pause, daily journal, fishbowl, muddiest point, one-minute paper, note-taking pairs, creating quiz/test questions, response to a demonstration or other teacher-centred activity, round robin, summary of another student's answer, Think-Pair-Share and others. (For more low-risk & other techniques and details on how to deploy them, see Formative Assignments)

3. **Use moderate to advanced techniques** such as active review sessions, affinity grouping, case study, concept mapping, and cooperative groups in class (further techniques discussed later)

4. **Use short, "low-stakes" writing exercises** to help develop your students' writing skills. Even if the entire class turns in a one-page typed paper, they can be graded quickly as "satisfactory" or "unsatisfactory." You can reduce the grading load by having half the class write one week and the other half the week after (See further details in the section on Assessments)

5. **Have the students work in pairs or small groups**. The class size may preclude you from using some group techniques, but students can have discussions with their neighbours in classes of any size. Cooperative learning techniques, such as "buzz groups", "participatory lecture" (See: Glossary) and other techniques are described in the section on Ungraded Assessments.

Preparing the Course Content and Lectures

Canvassing learning outcomes:

- Most large lecture courses are introductory courses meant to provide an overview of a discipline that can help first and second-year students select a major field as they delve deeper into it later (Ammon et al., 2005). Knowing what your department expects the course to accomplish can help you build a curriculum aligned with the required learning outcomes in a large classroom setting.
- You might ask colleagues for course descriptions and old syllabi; departmental advisers can provide an undergraduate program overview (Ammon et al., 2005).

Understanding learners' backgrounds and needs:

- Knowing the background and existing knowledge of the students of the course is an essential factor in developing large class lectures. Making the lectures relevant and exciting to students can aid their learning of the material if catering to their learning needs.
- You may give students broad questionnaires as pre-assessments asking about their background in the subject as a diagnostic tool at the beginning of the semester. The information from the questionnaires can also be used to tailor your presentation of course material (Ammon et al., 2005).

Constructively aligning the lecture and other materials:

- Instead of repeating information presented in the textbook. lectures should illustrate the textbook's concepts using real-world examples; prepare or follow up on class discussions and lab sections or provide up-to-date information or thoughts on a theory, or present conflicting interpretations of a subject.
- They can also provoke students to think beyond simply "getting the facts" and engage in higher-order critical thinking skills (Ammon et al., 2005).

- They provide a forum for you to share your knowledge and training with your students by modelling a solution to a problem, illustrating a point with your research, or demonstrating aloud how to analyse a text or situation. After offering such demonstrations a few times, students can practise it independently or in groups.

Organising the Lecture

- Teaching a large lecture class has been compared to performing for an audience. Smaller class settings provide more room to improvise and adapt a lesson plan during a class (Ammon et al., 2005).
    - In a large class, however, having a clear vision of where you need to be, when to cue technology, and how long each segment should take is essential for keeping the class moving and the "audience" engaged in the lesson.

- When incorporating technology—*overhead projectors*, *slides*, *films*, and *computer displays* in your lectures, be mindful of whether these additions can enhance instruction if well-integrated with the class plan (Ammon et al., 2005).

- Even if you have tested the equipment before class, things sometimes go wrong: a light bulb burns out, the power fails, or a film breaks.
    - When using technology, always have a plan B. Will you dismiss students and reschedule the film for another day, or will you summarise it or deliver it in the next week's lecture? (Ammon et al., 2005).

Presenting Information

Initiating a lecture and being mindful of energy shifts:

- The way a lecture begins can capture students' attention and emphasise the day's main point.
    - Try posing a problem or using a piece of poetry; a quotation, a current event, opinions, statistics, or anecdotes can also engage students (Ammon et al., 2005).
    - A popular practice — Peter Frederick sometimes poses a problem at the beginning of a lecture, which he then answers gradually throughout the lecture. The answer to the problem becomes clear by the end of class, as does the process used to solve it (Ammon et al., 2005).

- Studies of student attention span indicate that most students "tune out" of a lecture after 20 minutes, even if they are taking notes.
    - To combat this problem, an "**energy shift**" is recommended every 15 to 20 minutes. They might include a *demonstration*, *opening the class floor up for discussion*, *asking a rhetorical question and pausing for an answer*, or *asking students to review the day's main points* (Ammon et al., 2005).

Catering to different learner preferences:

- People have different preferences for processing new information. Some students prefer to learn by listening, others like visual representations, and others learn by doing it kinesthetically. It is important to devise ways of presenting information that can appeal to learners with other preferences.
    - Possibilities include *demonstrations*, *role plays*, *discussions*, *simulations*, *problem-solving*, *real-world applications*, or *multimedia*. By incorporating a variety of presentations into your lectures, you can increase the chance that a different activity will clarify a point or a concept for students who may not be as strong in one particular style.

Effective use of technological resources:

Diagrams, graphs, outlines, slides, and films can contribute much to the lecture, but it is important to consider whether the technology you use is visible and audible to all students. For visibility, before class begins, place an overhead projector and check if it is visible from all parts of the room. If it is hard to discern part of a diagram or model, you may consider putting it on a handout instead of having students copy it for themselves.

Utilizing Interactive Tools for Enhanced Engagement

In large classes, leveraging interactive digital tools can significantly enhance student engagement and facilitate seamless communication. Here are a **few** tools that can be integrated into your teaching methodology, each serving unique purposes:

Slack:

- Use Case: Ideal for creating a collaborative environment, Slack allows for the formation of channels for different topics or groups, enabling focused discussions and file sharing.
- How to Use: Create a workspace for your class, invite students, and utilize channels for organized communication. Direct messages can be used for private conversations.

Poll Everywhere (Pollev):

- Use Case: This tool enables real-time polling and surveys, allowing instant student feedback and participation during lectures.
- How to Use: Create polls and share them with your class. Students can respond through various devices, and results are displayed live.

Mentimeter:

- Use Case: Mentimeter is excellent for creating interactive presentations with quizzes, polls, and Q&A sessions, fostering an interactive learning experience.
- How to Use: Integrate interactive elements into your presentations and share them with students. Collect responses in real-time and discuss the results.

Google Forms:

- Use Case: Google Forms is versatile for creating surveys, quizzes, and forms, making it easy to collect information, feedback, or assessments from students.

- How to Use: Design forms or quizzes and share the link with students. Responses are collected in a spreadsheet for easy analysis and review.

Implementation Tips:

- Accessibility: Ensure that the chosen tool is accessible to all students and consider providing alternatives if needed.
- Instructions: Clearly communicate the purpose of each tool and provide concise instructions on how students should use them.
- Privacy: Be mindful of student privacy and data security when using external tools and adhere to institutional policies regarding technology use.

By incorporating these tools thoughtfully, instructors can create a more dynamic and interactive learning environment, even in large class settings.

Delivering the Lecture

- While delivering a lecture, providing a "map" of the lecture can help keep students focused (Ammon et al., 2005).
    - Using the blackboard or an overhead projector to highlight a lecture's main points can help students take effective notes.
    - Announcing the focus and objectives of the day's class at the beginning of the hour can help them determine which parts of the lecture are the most important.
    - Facilitate note-taking by listing new terms, names, and references on the syllabus, the board or handouts.

Encouraging and engaging with student contributions:

- Many instructors would like students to participate more in the lecture but must find ways to overcome the reticence large classes can instil.
    - Positive responses to questions, e.g., "*I'm glad you asked that*", show students you are open to questions and will not "shoot them down" in front of the class (Ammon et al., 2005).
    - Encourage students by integrating their remarks into the lecture, e.g., "*And that gets back to Ali's point*" or "*That's a great question— it leads us to the next topic.*"

Total familiarity with the lecture plan:

- Knowing the material and lecture plan for your class well allows you to focus on your audience's reaction. Such familiarity enhances your delivery of the lecture since you can focus on your audience and not on your notes.

Appropriately pacing a lecture:

- A common complaint is that lectures “move too quickly.” Most students are reluctant to volunteer in large-class settings because the pace is too fast. Therefore, allowing students to give you feedback on the lecture's pace is up to you (For further instruction on feedback, see In-Class Feedback.)
    - Observe what the students are doing— if they're scribbling madly rather than looking at you, you might slow things down.
    - Periodically, throughout the lecture, you might ask students which points they would like repeated or explained again.
    - Questions can also be a way of pausing the lecture and allowing students to “catch up” in their notes and follow the lecture.

5. Assessments

Encourage writing practice for undergraduates in large classes despite grading challenges. Incorporate brief writing activities into lectures, suitable for reluctant participants. Formative assessments are effective, ensuring engagement and learning quality in the classroom (Ammon et al., 2005). (For further detail on formative assessments and examples, see Appendix D)

Graded Assignments

Term Papers: Grading lengthy individual papers can be a burden many faculty teaching large classes would rather avoid. An alternative is to use a series of shorter writing response activities, including reaction papers, journals, or reflections, rather than a single long essay.

Essay Exams: While exams are recommended to combine short-answer and essay questions, grading these responses can be time-consuming. One way to control the length of responses is to give students limited space for their answers. Students are forced to get to the point when restricted to a specific space. In an online setting, this might be in the form of character/word limits, and while writing on paper, it may mean a limited length of pages ("*respond in 500 words/make sure your answers don't exceed one page*"), etc.

For non-writing focused and STEM courses in particular, you may incorporate a handful of the following activities:

Concept Maps and Mind Mapping: Assigned both as a pre-assessment and a post-assessment strategy, with the option of giving it in groups or otherwise— concept maps and mind mapping can be a useful strategy to help students make sense of theoretically dense concepts. Provide a broad topic or theme. or unit from the course for which students should create a concept map. Ensure that the topic is sufficiently broad for meaningful connections and relationships. Explain that students should identify key concepts or ideas related to the topic, connect them with lines or arrows, and include brief descriptions or labels to show how these concepts are interrelated, which can later be presented to the entire class, followed by a Q&A. These can be created using paper and markers or digital

mind-mapping tools like MindMeister and Miro. You may grade them on various metrics, such as conceptual clarity, relevance, creativity, preparedness for questions, etc.

Case study discussions: To review particular research for the entire class, you may select relevant case studies or research papers. Start by choosing relevant papers/case studies related to the course content and learning objectives. Ensure the scenarios are complex enough to challenge students and promote critical thinking. Provide students with any necessary background information, including the context of the paper, relevant data, link with the course content and any additional resources required for analysis. Preferably done in groups, clearly communicate the instructions and expectations for the analysis. Include guidelines on the format of the analysis, such as length, structure, and the components to be covered. You may cover them as in-class presentations or as take-home assignments.

Peer Instruction: A prevalent technique used in STEM courses (but often used otherwise). Before class, the instructor identifies key concepts or challenging topics that students may find difficult to grasp. Then, MCQs or concept-based questions are derived from the relevant topics accordingly. You may pull out exercise/practice questions for this as well from any test-bank repository you may have curated.

The instructor presents a concept or topic to the students during the class session through a brief explanation or lecture segment. After this initial explanation, the instructor poses a question related to the concept. Students are given a short amount of time (typically 1-2 minutes) to think independently and select their answers to the question. Following the individual response phase, students are asked to discuss their answers with their peers in small groups. This allows students to explain their reasoning, debate different viewpoints, and collaborate in understanding the concept.

Students are asked to try to convince their peers of the correctness of their chosen answer or to reconsider their initial choice based on the group discussion. After the peer discussion, students are asked to individually re-answer the same multiple-choice question. The instructor then facilitates a class-wide discussion, where the correct answer is revealed, and the reasoning behind it is explained.

Ungraded/Formative Assignments

Ungraded writing assignments give students writing practice and offer instructors valuable feedback without the burden of heavy grading. Ungraded assignments ask students to share their understanding of the course material. (The instructor should be prepared to answer students' questions about this process). Instructors can use ungraded writing exercises to begin class by tying their topic to material covered in the previous class or to lead into the current day's topic. These exercises can also be used at the end of class to assess what students understand from the lecture and if the lecture was effective.

As for grading, the assignments can be marked for either credit or full, partial or no credit. (See the list of references for activities not described below.) (Ammon et al., 2005).

Ranking Activities: Nancy Shapiro of UMCP uses ranking activities on the first day of class. Students are asked to list three to five goals they hope to achieve by taking the course. After listing these goals, they then rank them in order of importance. They rank the list again according to the difficulty of achieving each goal. Then, working in small groups, students are asked to arrive as a consensus of goals and ranking. These goals can be revisited at mid-term and end-of-semester evaluations in a similar follow-up activity.

Chain Notes: Students are given index cards at the beginning of class. During the class, students pass around a large envelope on which a question is written. Each student spends a few minutes writing a response to the question when the envelope reaches him or her. The instructor can then respond to what the students have written and will also have gathered feedback on the class.

One-Minute Paper or Daily Report: In the one-minute paper, students write responses to the questions, "*What point(s) are most clear to you*?" and "*What point(s) are still unclear to you*?". In a daily report, students are asked to complete the following sentences: "*The point of today's lecture is…*" and "*A question I have is…*". These reports can be graded or ungraded and provide a clear sense of which areas present students with the greatest difficulties. (See a sample one-minute paper template in Appendix B)

Three-Minute Thesis: After discussing an issue, have students write down their reactions and reasons to support one side or another. Circulate the responses and ask students to support and elaborate on their comments.

Five-Minute Entry: In a five-minute entry, students are asked to respond in writing to reading or a topic assigned for the day. Papers are marked satisfactory or unsatisfactory, and mechanics (grammar, spelling, etc.) do not count. Satisfactory entries demonstrate "beyond a reasonable doubt" that their authors have read and thought about the assigned reading. Dennis Holt gives this example: "We have been discussing Frederick the Great and Otto Bismarck. State one major contribution each leader made to the rise of modern Germany. In terms of their significance for German history, how do these contributions differ?" Similar questions can be modified and posed accordingly for STEM courses.

Reading Journals: Journals students keep chronicling their thoughts about the assigned readings and offer a way for an instructor to focus on student reflections about what they are studying. Journal assignments can ask students to summarise the main points of the reading and react to them. They might also be asked to pose questions for further study or to link the reading to the lecture material. A certain number of journals may be required over the semester or for one unit in the course. A variation on this assignment asks students to draw a line down the centre of the page. On the right side, they write notes or summaries of the reading. On the left, they write down their reactions, questions, and disagreements. You may wish to collect them to get a sense of their understanding and provide feedback.

Group Projects: In a group project, each person contributes one part of the assignment. Another option is to have all parts worked on collaboratively.

Question and Answer Cards: Make index cards for every student in the class; half with questions about class content; half with the right answers. Shuffle the cards and have students find their appropriate partner by comparing questions and answers on their own cards.

Pre-topic student learning checks: For theoretically dense courses (such as STEM and otherwise), it is beneficial to present pre-topic student learning checks which serve as a pre-assessment for the instructor, which they can use to modify the intensity of their lecture. Some particular techniques that can be used in this regard are:

- *Focused Listing* – List several ideas related to the main topic. Helpful for starting new topics.
- *Background Knowledge Probe* – Use questionnaire (multi-choice or short answer) when introducing a new topic.
- *Truth Statements* – Either to introduce a topic or check comprehension, ask individuals to list out "*It is true that...*" statements on the topic being discussed. The ensuing discussion might illustrate how ambiguous knowledge is sometimes.

Classroom assessment involves students and faculty in the evaluation of teaching and learning for the purpose of ongoing improvement. Assessments may elicit student responses to questions related to the course content or focus on the instructor's effectiveness.

6. In-Class Feedback

Collecting student feedback during a course can be a valuable practice for instructors seeking to enhance their teaching effectiveness, especially within a large classroom. In a large class setting, a teacher must be updated with responsive feedback from every student to cater to different learning needs (Ammon et al., 2005). In this section, we explore the use case of a couple of strategies instructors employ in large-classroom settings.

Teacher-designed mini-evaluation forms, containing three to five questions, provide student feedback on aspects of teaching the instructor considers important. The evaluation form should be carefully worded to collect constructive feedback; students should complete it anonymously. A sample One-Minute paper for feedback could include questions like:

- What was the most useful/meaningful thing you learned during this session?
- What question(s) do you still have on your mind as we conclude this session?
- Is there anything you would like to see covered or discussed in more detail in future sessions?

You could also, at any point around the middle of a semester, distribute an anonymous Mid-Point Student Feedback Form to collect student perceptions of the effectiveness of the class. (See Mid-Point form, Appendix C.) Use the results to guide any changes or improvements you can make to respond to students' expressed needs.

Several other writing activities can provide feedback. They are described in the sections on Ungraded Assessments. Other suggestions include:

- Collecting several students' notebooks to get a sampling of how they understand the lectures. Having a question-answer box in which students can deposit questions (described in more detail in the Personalising the Large Class)

- Having students write complete one-minute papers (see One-Minute Paper) asking students to generate a test item based on the day's lecture

- Asking at the end of class, "*What points would you like me to repeat or clarify*" or "*Would you like additional information or explanations of anything we've discussed today?*" instead of "*Are there any questions?*"

If deemed appropriate, you may also form a Student Management Team (see: Glossary) in the classroom (Ammon et al., 2005).

Key Principles of Effective Teaching in Large Classes

The following is a summary of the Seven Principles for Good Practice in Undergraduate Education, supported by various organisations (Chickering & Gamson, 1991). It provides insights into effective teaching and student engagement in higher education. These principles guide positive learning environments, emphasising key aspects. Implementing them helps assess teaching quality.

1. **Good Practice Encourages Student-Faculty Contact**: Frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their values and plans.

2. **Good Practice Encourages Cooperation**: Among students, learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's ideas and responding to others' reactions improves thinking and deepens understanding.

3. **Good Practice Encourages Active Learning**: Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorising prepackaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves.

4. **Good Practice Gives Prompt Feedback**: Knowing what you know and don't know focuses on learning. Students need appropriate feedback on performance to benefit from courses. In getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during college and the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

5. **Good Practice Emphasises Time on Task**: Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals. Students need help in learning effective time management. Allocating realistic amounts of time means effective student learning and faculty teaching. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis for high performance for all.

6. **Good Practice Communicates High Expectations**: Expect more from students, and you will get it. High expectations are important for everyone—for the poorly prepared, for those unwilling to exert themselves, and for the bright and well-motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts.

7. **Good Practice Respects Diverse Talents and Ways of Learning**: There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and to learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily (Chickering & Gamson, 1991).

Frequently Asked Questions (FAQs)

(This section has been extracted and adapted from UMichigan's "Guide on Student Engagement in Large Classes"; you may access it at: https://crlt.umich.edu/frequently-asked-questions-engaging-students-large-courses)

Q: How do I identify the best technology for my course? What questions should I be asking?

A: Always start with your learning objectives or goals for your course. Consider which technologies or tools best support or enhance those objectives or goals. What does the tool make possible for your large course that you perhaps wouldn't be able to accomplish without it? Other questions to consider include accessibility, cost (to yourself and students), ease of use for you and your students (e.g., Is there a learning curve to use this tool? Are students being asked to navigate too many different technologies?), and whether there is university support for the tool if you need help.

Q: What is the role of participation or attendance with technology in a large class?

A: The answer boils down to your teaching philosophy as an instructor (i.e., Do you feel strongly that students should be required to attend class, or do you perhaps believe that this should be left up to the students to decide?). This philosophy should guide how you structure your class and what you communicate to students about your course policies in class and your syllabus. If you will have a portion of the grade be based on participation, consider how this will be measured (i.e., How will students demonstrate their participation? Is this vocal or written? Is there some product they are accountable for?).

Q: How do we minimise chatter in large lectures? How do we keep students engaged and not misusing technology? How do we transition between "devices out" and "devices put away"? How do we get more students interacting on topics in small groups?

A: Consider what technology policy, discussion guidelines, or classroom etiquette you plan to include in your syllabus and how you will communicate that to students. Some compiled resources about technology policies or digital etiquette can be found here. How will you set these

expectations at the beginning of the term and be consistent? What role might your TAs play in helping circulate and/or monitor the room, especially during group work or peer instruction in class? What accountability are you building into your activities to encourage students to participate and stay on task? How might you frame or introduce an activity to motivate students or help them understand the purpose and value of what they're being asked to do?

Q: How do we get students' attention back after peer interaction or clicker questions?

A: To regain attention to transition between activities, consider using:

- a **consistent phrase** (e.g., "Attention, please"), sound (e.g., bell or chime), or **visual** (e.g., turning lights on and off) to bring the noise level down and shift students' attention back to the instructor.
- a **countdown timer** on the screen so it's obvious to students what the timing is for a particular activity and so they can moderate themselves accordingly.
- an **assigned timekeeper** if students are working in small groups, to help keep their group on task.

Whichever strategy you use, it is important to establish expectations at the beginning of the term for that strategy to be most effective.

Q: What kind of online discussion tools can I use to get the conversation in the class to continue outside of the class as well? And how do I get students to use those tools?

A: While there are a lot of tools that can be possibly used to enable and moderate online discussions, UMichigan has compiled a portal for tips for using online discussion tools, which can be found here. It has examples of tools, along with their instructional use cases. For more information specifically about the popularly used, i.e., Piazza, and examples of how instructors have used it, you may access this Piazza page.

Further Reading:

For further guidance about specific elements of teaching large classes, you may refer to the online and print resources detailed below:

Innovative Course Redesign and Teaching Practices:

1. https://www.thencat.org/PlanRes/Innov_CrRedPractices.htm This web page describes six innovative practices that were employed in college course redesign projects, including example redesign projects.

Teaching and Pedagogy Books and Resources:

2. McKeachie, Wilbert J., and Svinicki M. McKeachie'S. Teaching Tips. "Strategies, Research, and Theory for College and University Teachers." (2006).
3. Nyquist, Jody D. Preparing the Professoriate of Tomorrow to Teach. Selected Readings in TA Training. Kendall/Hunt publishing Company, 2460 Kerper Boulevard, PO Box 539, Dubuque, IA 52004-0539, 1991.
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Class Size and Student Performance Studies:

5. Johnson, Iryna Y. "Class size and student performance at a public research university: A cross-classified model." Research in Higher Education 51 (2010): 701-723.
6. Jarvis, Tyler J. "Class size and teacher effects on student achievement and dropout rates in university-level calculus." Preprint. Retrieved from http://www. math. byu. edu/~ jarvis/classsize/class-size. html (2000).

Effective Lecture Techniques:

7. Frederick, Peter J. “The Lively Lecture: 8 Variations.” College Teaching 34, no. 2 (1986): 43–50. http://www.jstor.org/stable/27558159.

Classroom Assessment Techniques:

8. Cross, K. Patricia, and Thomas A. Angelo. "Classroom Assessment Techniques. A Handbook for Faculty." (1988).

External Resource:

9. **Contact LLI for a consultation for your large class**

Glossary

affinity grouping — also known as “safe spaces” and “healing spaces”, these are usually school-sponsored groups that deliberately separate and divide students and staff into groups based on their skin color, ethnicity, or sexual orientation. Usually used for sensitive discussions involving community

buzz groups — these are small groups of 3-4 students formed to discuss a topic briefly in the classroom, in order to help them develop collaborative and group problem-solving skills while providing them with opportunities to integrate material and formulate applications, generalisations or principles. These groups may be assigned the same or different topic(s) to discuss. Students can get responses to their ideas from others and learn from their peers since when students speak in "private", they are much more likely to speak afterwards "in public" with the whole group.

concept mapping — constructed map that incorporates teaching strategies as well as time and task allocations for various parts of the course. Used to visually explain the conceptual relationships used for your objectives in any course.

energy shifts — change in lecture pace or activities, recommended every 15 to 20 minutes; might include a demonstration, opening the class floor up for discussion, asking a rhetorical question and/or pausing for an answer, or asking students to review the day's main points.

fishbowl — strategy for organizing medium- to large-group discussions. Students are separated into an inner and outer circle. In the inner circle, or fishbowl, students have a discussion; students in the outer circle listen to the discussion and take notes.

flex passes — “flexibility passes”; a free-pass allocated for students to use to transact flexibility in deadlines

participatory lecture — an orderly brainstorming technique commonly deployed in large classrooms, in which students are asked to generate ideas and share their knowledge on a topic; developed by Peter Frederick.

round robin — brainstorming strategy where students are situated around a table in an academic discussion. Like other brainstorming sessions, students generate ideas on a specific topic or question

student management team (SMT) — a group of students who volunteer to meet regularly with the instructor outside of class time to discuss issues related to the class. In a sense, an SMT is the class's representative to the instructor. The team can raise issues or concerns of students about any problems related to the course and work with the instructor to find solutions or compromises to problems that may come up; obtained feedback from the SMT can be used to improve the course.

Think-Pair-Share — cooperative learning activity that can work in varied size classrooms and in any subject. Instructors pose a question, students first THINK to themselves prior to being instructed to discuss their response with a person sitting near them (PAIR). Later, they have a discussion with the entire classroom (SHARE).

Appendix A: Bibliography

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Appendix B: Anonymous Mid-Point Student Feedback Form

Please complete the form below honestly and include details as appropriate. The purpose of your feedback is to help determine how the course is going at this point and what areas might be improved to meet student needs better. You may wish to comment on homework, teaching style, fairness, the textbook and other materials, intellectual stimulation, etc. Please comment on any or all aspects of the course that are important to you.

- What's going right?
- What should change?
- What would help you get more out of this course?
- What have you learned in this course that you have found particularly interesting or exciting?
- To this point in the semester, what has been taught that is still confusing or unclear and you feel needs more coverage in class?
- How would you rate the teaching and learning climate in this class? Is the atmosphere positive for all students, regardless of race, gender, disability or individual differences? Please comment briefly.

Appendix C: Formative Assessments

Throughout the learning process, teachers use formative assessment to assess their students' progress. As a result, teachers and students can adjust their teaching and learning strategies accordingly. Writing assignments, quizzes, oral discussions, projects, and others are all forms of formative assessment.

In this article, we will explore the concept of formative assessment and provide some examples of how it can be implemented in the classroom.

What is formative assessment?

In formative assessment, teachers gather information about their students' learning progress and adjust their teaching strategies accordingly. While summative assessment evaluates a student's performance at the end of a learning period, formative assessment occurs as the student learns. Feedback helps students develop their skills and improve their understanding.

Formative assessment can take many forms, including quizzes, homework assignments, in-class discussions, group work, and more. The key to effective formative assessment is providing feedback that is both timely and specific to the student's learning needs.

Appendix E: Preventing Honour Code Violations

Cheating is a widespread problem at universities, and the anticipated anonymity of large classes can exacerbate the problem. Sandy Rosenthal says that she structures her classes such that her greatest authority is reserved for the protection of the honour code. She consciously avoids challenging students on issues that she sees as less important (such as laptop use in class) so that her clear warnings about cheating on exams carry real weight. In addition, she notes that it can be useful to use multiple versions of exams, print exams on different coloured paper, and assign seats so that cheating can be tracked.[1]

Andy Van Schaack also uses in-class strategies to avoid cheating on tests, such as different versions of exams on different coloured paper and instructing students to sit far from each other and away from friends. He also asks students to put their electronic devices (including cell phones) in their bags and to leave them at the front of the room. He also uses out-of-class tools to prevent plagiarism on other types of assignments. His syllabus devotes an entire page to the honour code, and a "Syllabus FAQ" assignment ensures that students read these policies. In addition, students in his classes complete an online plagiarism tutorial from the University of Indiana at Bloomington. Finally, all writing assignments are checked for plagiarism by using SafeAssignment. This Blackboard-associated tool checks submitted assignments against documents available on the internet, in the ProQuest ABI/Inform database, in Vanderbilt's SafeAssignment archives, and a global reference database generated from assignments shared from other Blackboard clients.[7]

[**Note:** Tools and resources such as Turnitin available at LUMS may also be used for plagiarism and AI detection purposes.]

1 Vanderbilt University Center for Teaching. "Teaching Large Classes." January 2013. accessed July 2023. https://cft.vanderbilt.edu/2013/01/teaching-large-classes/