



Tools and Methods for Online Classes

A. What are some important online tools to teach a class remotely?

To teach remotely, a teacher requires a way to:

- a. communicate with learners live and
- b. a way to share with them resources, assess them, assign them individual or collaborative work and provide them feedback on their work.

The former requires a video conferencing app which should allow the teacher to connect with the entire class through both audio and video. **Hangouts Meet** and **Zoom** are tried and tested applications which meet the needs of a class teacher. Whereas the later requires a classwork management platform. Classroom application by Google is best equipped to serve this purpose and it is freely available.

1. Hangouts Meet

A video conferencing application available exclusively to the users of G Suite. It allows a teacher with a G Suite account to schedule a meeting using Google Calendar and invite learners to connect online via their phone, tablet, laptop or desktop. Invitation can be sent to anyone with a regular gmail.com account; however, the meeting can be initiated only through a G Suite account. Hangouts Meet can be accessed by clicking on the array of nine dots that appear on the top-right corner of their email window.

Aside from video conferencing, Meet allows the host to share their live screen with the participants. This feature comes in handy when the teacher wants to show learners a live presentation, a virtual whiteboard, a video, etc. This is especially useful for math lessons.

The G Suite Basic and G Suite for Education allow the host to invite 100 participants to a live video conference. Those with *G Suite Enterprise for Education* can invite a greater number of participants and can also record the proceedings of the meeting.

2. Zoom

Zoom is another online video conferencing application similar to Hangouts Meet but not affiliated with Google. Like Meet, Zoom also features screen sharing option along with an in-built white board which the teachers can share with learners which is great for teaching remotely.

The free version of the application allows a continuous streaming of only 40 min after which the host will need to restart the meeting.

One important advantage Zoom has over Meet is that it allows the host to record the meeting even with free version. This facility is available in Meet only for *G Suite Enterprise* plan.

For those who do not have a G Suite account, Zoom is a good alternative of Meet. The Zoom app can be downloaded from the following webpage: <https://zoom.us/download>

3. Google Classroom

Google Classroom is a classroom management app that relieves the teacher from much of the administrative tasks and can be accessed through most G Suite and gmail.com accounts. This app features a host of useful applications which can help teachers streamline online classroom work, track learners' progress and better engage them in online learning activities. Following are some of the features of Classroom that teachers may find useful:

- a. **Online assignment and assessment:** The only way to measure the effective of a lesson is to measure students' learning outcome at the end of the class. For this reason, provision for online assignment and assessment in Classroom is perhaps the most useful feature of the Classroom app as it allows the teacher to measure and track learners' progress and modify their teaching strategy as need be. This feature enables the teacher to design worksheets and assessments specific to learners' needs. The platform also differentiated assessment and support as it allows the teacher to design learner-specific worksheets. The type of questions the teacher can create include short answer, paragraph, multiple choice, checkboxes, dropdown, multiple choice grid, etc. The app also comes with a built-in auto-grader. Moreover, it allows the teacher provide learners feedback on a learner's response to individual questions.
- b. **Sharing and managing resources:** The platform allows the teacher to share resources in variety of file formats with learners. Most useful feature is perhaps the ability to schedule release of materials and assessment at specific times in future.
- c. **Incorporating YouTube videos:** Classroom allows the teacher to incorporate YouTube video into assignment and quiz and design questions around it. The video can be played as the learner is working on the assignment or the quiz.
- d. **Managing grades:** Much of the grade management is automatic but the teacher has full control over changing grades as need be.
- e. **Managing people in class:** The app gives the teacher complete authority to remove anyone from the class. This is an important provision as it allows the teacher to remove suspicious accounts that may compromise the online safety and privacy of learners.
- f. **Online collaborative learning:** Classroom is compatible with other Google products including Google Docs, Google Sheet, Google Slides, etc. that can be used to design a number of assignments that require learners to work collaboratively.

Classroom is one of the best free online classwork management system that enables teachers streamline classroom activities and implement a variety of teaching strategies consistent with modern developments in pedagogic methods. Snapshots of exemplar worksheets and quiz are attached with the document.

B. What should be the duration of a typical live online class?

We have found from multiple trials and experience that **1 hour 30 min** works best for online classes. This time is optimal if the teacher wishes to incorporate formative assessment methods, in-class worksheets and live feedback in their online practice. Live assessments and in-class worksheets are necessary to actively engage learners in the teaching-learning process.

C. How many lessons a day?

Three lessons each 1 hour 30 min long with a 15min to 30min long break between consecutive lessons. Exemplar time tables for the primary and secondary grades are attached with the document.

D. What are other useful tools to make online teaching-learning process effective?

Jamboard: Jamboard is another free app from Google that comes built-in with all G Suite and gmail.com. Jamboard can be used to put ideas/pictures/diagrams together collaboratively to discover deeper connections. It can also be used as a virtual whiteboard to teach learners remotely. It can be accessed by clicking on the nine-dots-array on the top-right hand corner of a google account.

Ed Puzzle: edpuzzle is a powerful online app that allows teachers to build lessons around videos from you tube by inserting questions at important times during the video. This software is available on: <https://edpuzzle.com/>

Testmoz: Testmoz is a powerful online assessment tool that can be used to generate a variety of questions. The software allows the teacher to download and save learners' responses and scores in a spreadsheet. The software can be found at: <https://testmoz.com/>

Kahoot: A popular online assessment tool that effectively engages learners' attention. It can be played remotely. The app can be found at: <https://kahoot.it/>

ADDENDUM

A. Exemplar Time Table for Primary and Secondary Grades

GRADE 1A (CAIE)

BLOCK NO.	START TIME	END TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	08:30 AM	10:00 AM	Hindi	Science	Art	GP	English
2	10:15 AM	11:45 AM	Math	Marathi	Math	Science	Hindi
3	12:00 PM	01:30 PM	ICT	English	English	English	Math

GRADE 9 (CAIE)

BLOCK NO.	START TIME	END TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	08:30 AM	10:00 AM	Math	Hin/Fren	GP/AD/ICT	Math	English
2	10:15 AM	11:45 AM	Bio/Eco	GP/AD/ICT	Bio/Eco	AD	Bus/Chem
3	12:00 PM	01:30 PM	Bus/Chem	Acct/Phy	Acct/Phy	English	Hin/Fren

B. Snippets of Graded Worksheets from Google Classroom

Grade 9 Chemistry (0620) 2020-21

Stream **Classwork** People Grades

[+ Create](#) [Google Calendar](#) [Class Drive folder](#)

All topics

- Internal Assessment
- Late Submission
- The Nature of Matter
- Elements and Comp...
- Chemical Reactions
- Acids, Bases and Sa...
- Quantitative Chemis...
- How Far? How Fast?


Internal Assessment

IA 1 Due Mar 21, 12:30 AM

Posted Mar 21 (Edited 12:30 PM)

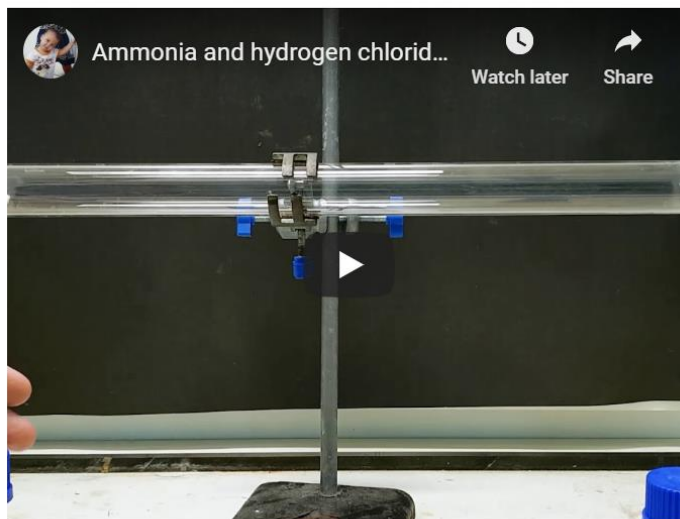
This is an open book quiz. You may use your notes, textbook and internet during the quiz. However, you may NOT consult with anyone during the quiz.

0	0	13
Turned in	Assigned	Graded

 IA 1
Google Forms

[View assignment](#)

Video clip 1: Ammonia and hydrogen chloride diffusion experiment.



✓ Video clip 1 demonstrates the reaction of ammonia and hydrogen chloride gas inside a long glass tube. The reaction results in the formation of ammonium chloride which is observed as the fluid-like substance in the tube. Ammonium chloride appears closer to the source of hydrogen chloride rather than the source of ammonia. Which of the following statements is true? * 1 / 1

- ammonia gas diffuses at a higher rate when compared with the diffusion of hydrogen chloride gas ✓
- hydrogen chloride gas diffuses at a higher rate when compared with the diffusion of ammonia gas
- the glass tube is tilted
- none of the above

Add individual feedback

Video clip 2: A Smoke Cell demonstrating Brownian Motion in Air.



✓ Video clip 2 demonstrates Brownian motion in a smoke cell. Explain why smoke particles exhibit random jittery motion? *

2 / 2

It is because there is some disturbance due to which the particles in the air are set into motion. The particles then collide with the smoke particles, transferring some of their kinetic energy into the smoke particles due to which they exhibit random motion as well.

Individual feedback



Very well articulated!

Atoms and molecules of air are always moving. [1]

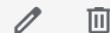
Atoms and molecules of air collide with smoke particles randomly, thereby causing smoke particle to move randomly. [1]

✗ Sulfur has four stable isotopes: sulfur-32 (95.02%), sulfur-33 (0.75%), sulfur-34 (4.21%), and sulfur-36 (0.02%). Calculate the average relative atomic mass of a sulfur atom. *

1 / 2

Relative atomic mass of sulfur (S)
= $(95.02 \times 35) + (0.75 \times 33) + (4.21 \times 34) + (0.02 \times 36)$
= $3325.7 + 24.75 + 143.14 + 0.72$
= 3494.31
Mass of 100 atoms
= $3494.31/100$
= Ar (S) = 34.9431
= Ar (S) = 34.9

Individual feedback



Good job with showing your calculation clearly!

In the first step, it should be (32×95.02) . You have mistakenly taken it as (35×95.02) . The correct final answer is 32.09. You get 1 point because the steps in your calculation are correct.

C. More Snippets from Google Classroom

(Learners' names are cropped out intentionally to protect their privacy)

2020-21

Stream

Classwork

People

Grades

Mar 21 IA 1 out of 20	Mar 21 Worksheet : Relative... out of 4	Mar 21 Worksheet : Kinetic... out of 6	Mar 20 Worksheet : Kinetic... out of 6	Mar 18 Worksheet : Relative... out of 4	
13.46			3.22	3	
14 Done late	Not assigned	Not assigned	5	3	
11 Done late	Not assigned	Not assigned	3	4 Not turned in	
6 Done late	Not assigned	—/6	Missing	1	
11 Done late	Not assigned	Not assigned	1	4	
16 Done late	Not assigned	Not assigned	4	3	
18 Not turned in	Missing	Missing	Missing	Missing	
20 Done late	Not assigned	Not assigned	4	4	

Late Submission



Worksheet: Relative Atomic Mass - Late Sub...

Due Mar 21, 11:15 AM



Worksheet: Kinetic Theory and Diffusion - L...

Due Mar 21, 11:15 AM

The Nature of Matter



Worksheet: Kinetic Theory of Matter and Di...

Due Mar 20, 11:59 PM



Video: Diffusion of Gases

Posted Mar 19



Video: Demonstration of Brownian Motion

Edited Mar 19



Worksheet: Relative Atomic Mass

Due Mar 18, 11:59 PM



Lesson slides on relative atomic mass  4

Posted Mar 17