Sample virtual program:

## Considerations for programming virtual classrooms

Syllabus reference – BIO11.8 - describes single cells as the basis for all life by analysing and explaining cells’ ultrastructure and biochemical processes

[© NSW Education Standards Authority (NESA)](https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/stage-6-learning-areas/stage-6-science/biology-2017/content/2102) for and on behalf of the Crown in right of the State of New South Wales, 2012.

Guiding questions for establishing learning expectations and communication processes

|  |  |
| --- | --- |
| Guiding question: | Teacher to place their question here. |
| What are your students going to learn? (Objectives) | Itemise what you want your students to be able to do or know when completed. |
| How are they going to learn it? (Resources and Strategies) | What is required in order to meet each of the objectives defined? Will delivery be using one platform or be blended? |
| Target date for completion | When do you expect each task to be completed? |
| How are you going to know that they learned it? (Success criteria) | What is the specific task that students are to complete to demonstrate their learning? |
| Collecting evidence of student learning (Verification) | What evidence of student learning will you collect and how will you evaluate it? |
| Feedback (Evaluation) | How well was the task completed? Provide an assessment decision. |
| Communication | How will student learning be oriented?  How will share and display information for your students to access?  How can you promote student-teacher interactions?  How can opportunities for inter-learner interactions be incorporated into activities?  How will the teacher monitor and support progress in student learning? |

## Biology Module 1

### Cell Function: Biochemical processes in cells – photosynthesis and cellular respiration

|  |  |
| --- | --- |
| Guiding question: | How do cells coordinate activities within their internal environment and the external environment? |
| What are your students going to learn? (Objectives) | Investigate the biochemical processes of photosynthesis, cell respiration and the removal of cellular products and wastes in eukaryotic cells |
| How are they going to learn it? (Resources and Strategies) | **Photosynthesis**  Watch and participate in online interactives and answer questions that follow.  [YouTube – photosynthesis steps and pathways](https://www.youtube.com/watch?v=iXY6J3nMjR4) (video duration 3:19)  Possible questions for teacher to give students   1. What is the summary equation for photosynthesis? 2. Describe the processes that take place in the Phase 1: Light-dependent and Phase 2. Light-independent phases. 3. Draw a flow chart to summarise all steps in photosynthesis shown in the video.   **Photosynthesis and cellular respiration**  [YouTube –Amoebasisters photosynthesis](https://www.youtube.com/watch?v=uixA8ZXx0KU&feature=youtu.be&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz) (video duration 7:45)  [YouTube – Amoebasisters respiration](https://www.youtube.com/watch?v=4Eo7JtRA7lg&feature=youtu.be&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz)(video duration 7:49)   1. Complete the questions in the [Amoebasisters worksheet](https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_comparing_photosynthesis_and_cellular_respiration_by_amoeba_sisters.pdf) from the [amoebasisters website](https://www.amoebasisters.com/). Teachers may need to download and print this worksheet for students. 2. Construct a table that summarises the differences between photosynthesis and respiration.   Include the following site of reaction, time of day, type of cell etc. |
| Target date for completion | 2 – 3 lessons |
| How are you going to know that they learned it? (Success criteria) | Online discussion and submission of worksheets |
| Collecting evidence of student learning (Verification) | Teacher to provide student instructions on how to submit either by e-mail, Google Classroom or Microsoft Teams. Teacher to provide feedback. |
| Feedback (Evaluation) | Teachers can provide feedback via the submission pathway (e-mail, Google Classroom or Microsoft Teams) |
| Communication | Students and teachers can interact either synchronously (Adobe Connect, Zoom or Microsoft Teams) or asynchronously (email) to provide ongoing feedback and support to students for their learning. |

## Lesson sequence

### Lesson one

#### Photosynthesis

1. Watch the video: [YouTube – photosynthesis steps and pathways](https://www.youtube.com/watch?v=iXY6J3nMjR4) (video duration 3:19)
2. Answer the following questions:
   1. What is the summary equation for photosynthesis?
   2. Describe the processes that take place in the Phase 1: Light-dependent and Phase 2. Light-independent phases
   3. Draw a flow chart to summarise all steps in photosynthesis shown in the video.

### Lesson two

#### Photosynthesis and cellular respiration

1. Watch the following videos
   1. [YouTube –Amoebasisters photosynthesis](https://www.youtube.com/watch?v=uixA8ZXx0KU&feature=youtu.be&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz)(video duration 7:45)
   2. [YouTube – Amoebasisters respiration](https://www.youtube.com/watch?v=4Eo7JtRA7lg&feature=youtu.be&list=PLwL0Myd7Dk1F0iQPGrjehze3eDpco1eVz) (video duration 7:49)
2. Complete the [Amoebasisters worksheet](https://www.amoebasisters.com/uploads/2/1/9/0/21902384/video_recap_comparing_photosynthesis_and_cellular_respiration_by_amoeba_sisters.pdf)
3. Construct a table that summarises the differences between photosynthesis and respiration. Some comparisons could include: site of reaction, time of day, type of cell.