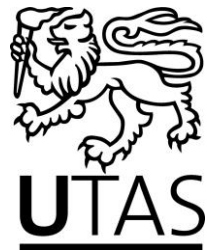


**Faculty of Education**

# Assessment Task Cover Sheet



Unit Co-ord./Lecturer	Donna Satterthwait	<b>OFFICE USE ONLY</b> Assessment received:
Tutor:(if applicable)		
Student ID	078395	
Student Name	Emma Salisbury	
Unit Code	EMT630	
Unit Name	Secondary Science Education Pedagogy	
Assessment Task Title/Number	Assessment Task 1: Senior Syllabus Learning Outcome Teaching Plan	
Word Count	1769 (Excluding references & Lesson Plan Headers)	
I declare that all material in this assessment task is my own work except where there is clear acknowledgement or reference to the work of others <b>and</b> I have complied and agreed to the University statement on Plagiarism and Academic Integrity on the University website at <a href="http://www.utas.edu.au/plagiarism">www.utas.edu.au/plagiarism</a> *		
Signed	E.Salisbury	Date 06/04/2017

\*By submitting this assessment task and cover sheet electronically, in whatever form, you are deemed to have made the declaration set out above.

Assessor's feedback:

**Assessor: Donna Satterthwait**

This three lesson sequence is designed around Homeostasis and feedback cycles, and where they occur within the human body (Assaraf, Dodick & Tripto, 2013). Homeostasis is defined as the maintenance of an internal steady state by means of self-regulation. Walter B. Cannon described Homeostasis as the ceaseless balancing and rebalancing of physiological processes that maintain stability and restore equilibrium when they have been disturbed (Hickman, 2006).

This lesson sequence has been created for the senior secondary Biology Syllabus, BIO315116, focusing on Scientific Understanding (Unit 4), incorporating Criteria 7 – Organisms, more specifically maintaining equilibrium through processes of Homeostasis and positive and negative feedback cycles (Tasmanian Qualification Authority, 2016). The learning outcome of this sequence of lessons is to develop an understanding of the processes of Homeostasis and Negative Feedback loops within the human body.

This lesson sequence takes place within a larger unit on systems of the human body and was designed using backwards design and constructive alignment. Backward design is the process whereby the desired learning outcome is designed first rather than last (Wiggins & McTighe, 2011). In traditional lesson planning the classroom activities are planned first and then the assessment to see what the students have learnt. The development of this lesson sequence began with focusing on the desired understanding that I wanted to develop in the students, and then what evidence can be assessed to see whether or not the students have achieved the desired goal. Backwards design provides a more focused approach to teaching where all activities and assessment opportunities are aligned with the key learning outcome and is more likely to develop a deeper understanding within the students (Wiggins & McTighe, 2011).

This lesson sequence was also developed using the process of constructive alignment. Constructive alignment is the process where activities assessments and teaching styles are directly aligned to the desired learning outcomes, often referred to as outcome based teaching (Biggs, 1996). Constructive alignment focuses on the students developing meaning and building on prior knowledge and the teacher developing activities and assessment deliberately aligned to the desired learning outcome (Biggs, 1996). Within the lesson sequence a number of different teaching strategies are employed to enhance learning and develop a deep understanding by the students. At the beginning of

the lesson sequence students are asked to define Homeostasis and feedback regulation, first individually and then in groups, drawing on their prior knowledge of human systems.

From this point, we further add to their understanding using different teaching strategies such as group discussion, multimedia resources, practical activities and experiments as well as an investigation assessment. As we proceed through this sequence of lessons, the different teaching strategies continue to build on already obtained knowledge and develop a deep understanding within the students which can then be assessed during their presentation to the class. This is also a way of making sure the whole class is involved in developing the desired understanding. Using a range of activities and media, inclusion is promoted to ensure all students are able to participate (Killen, 2013).

Scaffolding is a concept originally developed by Vgotsky, where by the level of instruction is tailored to suit the needs of the learner in achieving the desired learning outcome. As the learner progresses in their understanding the scaffolding is withdrawn and eventually removed.

Within this sequence the teaching is scaffolding the students learning by encouraging questioning and critical thought through whole class discussions and asking the students to reflect on their understanding through a class presentation (Thaiposri & Wannapiroon 2015). Students are also encouraged to scaffold their own learning through contribution to group work and then to provide detailed feedback on other students presentation, encouraging students to engage with the subject matter and help their classmates develop a deeper understanding (Killen, 2013).

In order to scaffold the students learning, this lesson sequence uses Formative assessment, or assessment for learning. As this lesson sequence is part of a wider unit of work, it is important to use formative assessment to be able to determine student understanding and improve teaching strategies as we move through the wider unit of work (Kivunja, 2015).

The assessment for this sequence of learning is to create, in pairs, a poster and present to the class. While the presentation is assessed by the teacher it is also an opportunity for the whole class to be involved through a process of peer reviewing and questioning. Allowing the students to peer assess the presentations and posters focuses the students on their own understanding and improve learning as we move through the unit of work (Venables & Summit, 2003). This type of formative assessment

encourages discussion between teachers and the students which is more likely to facilitate learning (Topping, 1998).

Whether the students have achieved the learning outcome will be determined both from the poster and presentation of each group and also from the level of detailed feedback provided and deep questioning of their fellow students. While this is formative assessment, evidence on whether the students have achieved the desired learning outcome will be assessed on a number of factors. The procedure for judgement of each student's understanding will include evaluation of the quality of the presentation and poster, the level of understanding displayed in the presentation and then the quality of detailed feedback provided, questions and answers, to other students.

### Lesson Plan

Grade: College Years 11 -12	Subject: Biology Unit: Human Systems	Duration: <b>50 minutes</b>
<b>Lesson: Lesson 1, Introduction to Homeostasis and Feedback loops</b>		
<b>Learning Objective/s (Subject content):</b>		
<ul style="list-style-type: none"> <li>• Introduce Homeostasis and Feedback Loops</li> <li>• Appreciate Regulation systems within the human body</li> <li>• Assess student understanding, through worksheets and drawing to be able to continue next lesson</li> </ul>		
<b>Teaching Aids/Resources:</b> A3 paper, coloured pens, projector and Khan Academy Video		

Teacher activities	Student activities
<p>Start with a introductory activity</p> <ul style="list-style-type: none"> <li>• ‘What do you think Homeostasis and Regulation mean? This will assess the classes prior knowledge.</li> <li>• Watch Kahn Academy Video</li> <li>• <a href="https://www.khanacademy.org/partner-content/mit-k12/mit-k12-biology/v/homeostasis">https://www.khanacademy.org/partner-content/mit-k12/mit-k12-biology/v/homeostasis</a></li> <li>• Have another look at you definition, and add to it any more information you learnt from the video. Teacher will then move around the class, prompting discussion where necessary.</li> <li>• Hand out work sheet. The worksheet and particularly the student drawn representational diagram is a great way of gauging understanding and identifying any misconceptions</li> <li>• As a class discussion, pose the question ‘What can we think of in the human body, which regulates by this negative feedback loop?’</li> </ul>	<p>Students to discuss in table groups their own thoughts and come to a table group definition</p> <p>Students watch and take notes</p> <p>Students to enhance their groups definition and incorporate Feedback loops</p> <p>In groups, students to complete work sheet on Homeostasis and Feedback loops. Then to draw on an A3 piece of paper, a representation of a feedback loop.</p> <p>Students to engage in the discussion and the think about other systems that need to</p>

<ul style="list-style-type: none"><li>• Conclude the lesson, next lesson we will continue looking at Homeostasis and Negative Feedback loops and we will be conducting an experiment to demonstrate the effects on the human body.</li></ul>	maintain a steady state.
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**Lesson Plan**

Grade: College Years 11 -12	Subject: Biology Unit: Human Systems	Duration: <b>100 minutes</b> <b>Double Lesson</b>
<b>Lesson: Lesson 2: Homeostasis and Negative Feedback in Action!</b>		
<b>Learning Objective/s (Subject content):</b>		
<ul style="list-style-type: none"> <li>• Further deepen understanding of Homeostasis and Feedback loops</li> <li>• Conduct an experiment to show negative feedback within the students own body</li> <li>• Begin assessment task, to be presented next lesson.</li> </ul>		
<b>Teaching Aids/Resources:</b> Stop-watches, buckets of icy water and poster making materials, pens coloured card.		

<b>Teacher activities</b>	<b>Student activities</b>
<ul style="list-style-type: none"> <li>• Begin the class by recapping previous lesson ‘What did we do last lesson?’</li> <li>• ‘Can anyone read out their groups definition?’</li> <li>• Begin a class discussion, making a list on the white board, of all examples of Feedback loops groups came up with last lesson</li> <li>• “One that we have come up with is the effect of Temperature”, “How does external temperature affect the body”</li> <li>• “What about the other way?”</li> <li>• Divide students into pairs, and get the students to record each others resting heart rate and standard temperature, and then to set up at their table the buckets of water.</li> <li>• Teacher to walk around the class and make sure measurements are being taken accurately and posing questions to scaffold learning, “What do you expect to see happening?”</li> </ul>	<p>Students to get out their work from last week and engage in discussion, providing a definition of Homeostasis and the systems that they had thought needed to maintain a steady state and therefore used negative feedback loops.</p> <p>Raise hands to answer questions, “When we get too hot, our body wants to return to our steady state and we will sweat to remove excess heat.”</p> <p>“When we get too cold, our body still wants to return to the steady state, so our muscles will shiver to create extra heat and our hairs stand up to trap warm air.”</p> <p>Record this information to be able to compare afterwards.</p> <p>Students to take it in turn and to place their arm for as long as possible in icy water. As soon as the students remove their arms from the water their partner is to take their temperature and heart rate.</p>

<ul style="list-style-type: none"><li>• Bring the class back together for a discussion of results.</li><li>• “What did you expect to happen? And what did you see happen?”</li><li>• We know the effects of Temperature, but why did we measure heart rate at the same time?</li><li>• This discussion leads into the assessment for this lesson sequence. In their pairs, students are to create a poster, showing in detail, a system within the body that uses Negative Feedback loops.</li></ul> <p>Teacher to walk around the pairs and promote critical thinking and questioning, to what to include in presentation asking the questions:</p> <p>‘what shall we include in our presentation, what will help our class mates understanding and what will show to the class and teacher my own understanding?’</p>	<p>Students to switch and repeat the experiment.</p> <p>Five minutes later, repeat measurements of heart rate and temperature to show a return to equilibrium.</p> <p>Students to share results with the rest of the class to promote collaboration and develop ideas.</p> <p>Student encouraged to think about the interconnected nature of the human body systems and that the heart rate slowed to preserve oxygen levels.</p> <p>Students to choose a system, for example hormones, blood pressure, temperature etc. to make a poster about and present to the class next lesson.</p> <p>Students to develop their presentation, by asking themselves these questions and reflecting on their own understanding.</p>
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**Lesson Plan**

Grade: College Years 11 -12	Subject: Biology Unit: Human Systems	Duration: <b>50 minutes</b>
<b>Lesson: Lesson 3, Presentation of Assessment and Detailed Feedback from Peers</b>		
<b>Learning Objective/s (Subject content):</b>		
<ul style="list-style-type: none"> <li>• Present Posters on Homeostasis (Five Minutes per pair)</li> <li>• Assess knowledge developed over the lesson sequence</li> <li>• Engage students to provide detailed peer assessment for collaborative learning</li> </ul>		
<b>Teaching Aids/Resources:</b> Feedback Sheets for Peer assessment		

<b>Teacher activities</b>	<b>Student activities</b>
<ul style="list-style-type: none"> <li>• Begin by explaining the assessment of presentation.</li> <li>• Each pair is given maximum of five minutes to present their poster for assessment.</li> <li>• Hand out feedback sheets , with sample questions such as “Was the presentation clear about the processes of Negative Feedback within the chosen system?”</li> <li>• Teacher to watch and assess presentations to assess knowledge and level of understanding of each of the pairs.</li> <li>• After each presentation teacher to ask for peer feedback from the class on the presentation.</li> <li>• This feedback given is also used for formative assessment on how engaged students were with the presentation; and the questioning by the class and answers by the presenting pairs will also be used to assess whether the students have achieved the overall learning outcome of ‘Understanding the process of Homeostasis and Negative Feedback loops within the human body.’</li> </ul>	<p>Students to reform their pairs</p> <p>Students to present their poster to the class, ensuring that all key information is explained to the other students within the class.</p> <p>Other students to take notes on presentations to provide detailed feedback at the end of each presentation.</p> <p>Students to ask questions of the presenting pairs to further develop their own understanding of different systems involving Homeostasis and Feedback loops.</p> <p>Feedback sheets to be handed back into the teacher , to be used as formative assessment and to assess the level of engagement with the class and understanding of the key topic and learning outcome.</p>

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