Course title:	Planning for and Reflecting on ANSTO "Meet an expert" videoconferences	
Date/s:	Once or twice a term	
Time:	After school (3.30pm)	
Duration:	2 hours	
Target group for the course:		Teachers of Stages 6 science courses
Indicative cost of course to participant:		$0

Short explanation of how the course relates to the standard descriptors at the Proficient Teacher level

Attending the course will provide teachers with improved subject knowledge and enhanced confidence in teaching challenging nuclear science content as well as an increased ability to link the science syllabuses to current research examples. Teachers will also develop their ICT knowledge and skills, as they will link their students with an ANSTO scientist via videoconference or online streaming.

2.1.2 Apply knowledge of the content and teaching strategies of the teaching area to develop engaging teaching activities

Teachers will use examples of ANSTO's role in research and applied science to illustrate concepts in the Senior Physics, Chemistry, Biology and Earth and Environmental Science syllabuses. Teachers will select and use ANSTO-developed teacher resources, and will facilitate a connection between their students and ANSTO scientists via videoconference.

2.2.2 Organise content into coherent, well-sequenced learning and teaching programs

3.2.2 Plan and implement well-structured learning and teaching programs or lesson sequences that engage students and promote learning

Teachers develop and deliver a well-structured sequence of lessons that integrate the videoconference with ANSTO scientists into their teaching program. Teachers select and use ANSTO-developed teacher resources to plan and deliver a part or whole lesson to prepare their students for the videoconference. Teachers then plan and deliver a part or whole lesson following the videoconference to consolidate concepts and contextualise experiences with theory.

2.6.2 Use effective teaching strategies to integrate ICT into learning and teaching programs to make selected content relevant and meaningful

3.4.2 Select and/or create and use a range of resources, including ICT, to engage students in their learning

Teachers integrate ICT into their teaching programs by selecting and using ANSTO-developed multimedia resources for the preparatory lesson, and then using videoconferencing to connect their students with ANSTO scientists to provide a real-life context for their topic.

3.3.2 Select and use relevant teaching strategies to develop knowledge, skills, problem solving and critical and creative thinking

Teachers plan and deliver a whole or part lesson before the videoconference. During this lesson they:

- facilitate activities with their students to give them sufficient background information about the topic and knowledge of what syllabus content they need to cover

- prepare their students to talk with the ANSTO scientist via videoconference independently

- organise their students to prepare questions for the videoconference

- encourage their students to take responsibility for interacting and asking questions of the scientist

- organise for one student to be in charge of directing questions from their class to the scientist, and one student to be in charge of the camera and technology

- encourage their students to consider how they would deal with challenges they might face when talking to a scientist via videoconference, potentially with other schools in attendance (e.g. muting microphones)

Research basis of the course. This should include reliable research, evidence of best practice and the expertise that exists within the teaching profession.

Research about the use of videoconferencing to link scientists with schools suggests that it can often become a very didactic form of interaction (Falloon 2012). To make videoconferencing a more student-centred learning experience, teachers can collaborate with videoconference providers to encourage students to lead the session from the beginning with prepared questions, and a designated student in charge of directing questions, and another student in charge of the camera and technology.

Falloon, G. (2012). Using videoconferencing in a school-scientist partnership: Students' perceptions and scientists' challenges. Research in Learning Technology. 20:

Rationale for the course
There are several reasons for this course: - Both students and teachers need to become comfortable with collaborating as digital citizens - Videoconferencing is a crucial tool that allows teachers to facilitate collaboration between their students and the rest of the world - There are a plethora of videoconferencing programs offered to schools, but few programs are free, student-led, highly-syllabus relevant, and put students in contact with experts in the field - Some teachers require training in how to use different videoconferencing technologies and how to make it an effective teaching tool with their students

Summary of the course
This course gives teachers experience in integrating a videoconference connection with a scientist into their teaching program. 1. Videoconference planning and preparatory lesson (1 hour): • Organise a videoconference with ANSTO, including communicating with ANSTO Education staff about the requirements of their students and their in-class progress • Select and use ANSTO-developed teacher resources to plan and facilitate syllabus-relevant preparatory activities (either a part or whole lesson) before their videoconference • Organise their students to run the videoconference relatively independently (all students with prepared questions, a student to direct questions and mute the microphone, and another student to operate the camera) 2. Videoconference with ANSTO scientist (non-accredited time): • Teachers collaborate with ANSTO Education staff to facilitate a videoconference with an ANSTO scientist • Teachers critique their students' engagement and level of understanding during the excursion and provide feedback to ANSTO Education staff 3. Planning for post work at school (1 hour): Teachers select and use ANSTO-developed teacher resources to plan and facilitate a whole or part lesson back at school to contextualise their discussion with the scientist with syllabus content.

Further teacher learning opportunities
Not applicable

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Course/program sessions	Focus and content of the sessions	Standard descriptors at the Proficient Teachers level addressed by the session	Explanation of how the standard descriptors will specifically be addressed within the session
Videoconference planning and preparatory lesson (1 hour)	Teachers organise a videoconference with ANSTO, including communicating with ANSTO Education staff about the requirements of their students and their in-class progress Teachers select and use ANSTO-developed teacher resources to plan and facilitate syllabus-relevant preparatory activities (either a part or whole lesson) before their videoconference Teachers organise their students to run the videoconference relatively independently (all students with prepared questions, a student to direct questions and mute the microphone, and another student to operate the camera)	**2.1.2 Apply knowledge of the content and teaching strategies of the teaching area to develop engaging teaching activities** **3.4.2 Select and/or create and use a range of resources, including ICT, to engage students in their learning**	Teachers will use examples of ANSTO's role in research and applied science to illustrate concepts in Senior Science Syllabuses: e.g. Senior Physics 9.6.3 Radioactivity can be used as a diagnostic tool e.g. Senior Chemistry 9.2.5 Nuclear chemistry provides a range of materials e.g. Senior Biology 9.3.4 Use of radioisotopes in tracing the path of elements through living plants and animals e.g. Senior Earth and Environmental Science 8.5.1 Determine the age of rocks and crystals based on data from radiometric (isotopic) methods Teachers organise content into three learning sessions for their class to ensure continuity in student learning. Teachers plan and deliver this lesson sequence to their class: 1. Pre-videoconference preparatory activities in class

Course/program sessions	Focus and content of the sessions	Standard descriptors at the Proficient Teachers level addressed by the session	Explanation of how the standard descriptors will specifically be addressed within the session
			2. Videoconference with ANSTO scientist
			3. Post-videoconference activities in class
			Teachers select and use a range of ANSTO-developed resources to develop teaching and learning activities for their students about the research topic in preparation for the videoconference, such as:
			- short videos featuring the scientist and their research
			- mind map to identify the issues addressed by the research, the approach taken, and the results/outcomes of the research
			- write a summary paragraph about the research
			- comprehension tasks using background information about the research topic
		2.2.2 Organise content into coherent, well-sequenced learning and teaching programs **3.2.2 Plan and implement well-structured learning and teaching programs or lesson**	Teachers develop and plan for the delivery of a well-structured sequence of lessons that integrate the videoconference with ANSTO scientists into their teaching program. Teachers select and use ANSTO-developed teacher resources to plan and deliver a part or whole lesson to prepare their students for the videoconference.

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Course/program sessions	Focus and content of the sessions	Standard descriptors at the Proficient Teachers level addressed by the session	Explanation of how the standard descriptors will specifically be addressed within the session
		sequences that engage students and promote learning	Teachers set their students a formal or informal assessment task, in which they need to gather first-hand information from the scientist to: - write a newspaper article about the research with quotes from the scientist - create a poster/brochure about a science topic - record and edit a 5 minute interview with the scientist - write a scientist profile - answer an HSC-style question using the scientist's research as an example
		3.3.2 Select and use relevant teaching strategies to develop knowledge, skills, problem solving and critical and creative thinking	Teachers will prepare their students for student-led learning during the videoconference, using strategies such as: - instructing each student to prepare questions for the videoconference - encouraging their students to take responsibility for interacting and asking questions of the scientist

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			- putting two students in charge of formally introducing their class to other videoconference participants and explaining to the scientist what task they need to do after their videoconference - giving students responsibility of operating the videoconference technology (e.g. organise for one student to mute and unmute the microphone, one student to direct the camera) - brainstorming challenges they might face during the videoconference and potential solutions to these problems
Videoconference with ANSTO scientist (non-accredited time)	Teachers collaborate with ANSTO Education staff to facilitate a videoconference with an ANSTO scientist and potentially other schools. Teachers will have prepared their students to take responsibility Teachers critique their students' engagement and level of understanding during the excursion and provide feedback to ANSTO Education staff.	**2.6.2 Use effective teaching strategies to integrate ICT into learning and teaching programs to make selected content relevant and meaningful** **2.2.2 Organise content into coherent, well-sequenced learning and teaching programs** **3.2.2 Plan and implement well-structured learning and**	Teachers make content meaningful for their students by connecting their students via videoconferencing with an ANSTO scientist, highlighting the research and everyday applications of the science they learn in class. Not included for endorsement but recognised in as part of the sequence for completing this course: Teachers deliver a well-structured sequence of lessons that integrate the videoconference with ANSTO scientists into their teaching program.

Course/program sessions	Focus and content of the sessions	Standard descriptors at the Proficient Teachers level addressed by the session	Explanation of how the standard descriptors will specifically be addressed within the session
		teaching programs or lesson sequences that engage students and promote learning	
		3.3.2 Select and use relevant teaching strategies to develop knowledge, skills, problem solving and critical and creative thinking	Teachers facilitate student-led learning during the videoconference, giving students the responsibility to: - operate the videoconference equipment, camera and microphone (2 students) - introduce their class and field questions from class members during the session (2 students) - troubleshoot problems and challenges as they might arise (e.g. no questions from their class, scientist gives an answer they can't understand)
Plan post work and provide student feedback (1 hour)	Teachers select and use ANSTO-developed teacher resources to plan and facilitate a whole or part lesson after the videoconference to contextualise their discussion with the scientist with syllabus content.	**2.6.2 Use effective teaching strategies to integrate ICT into learning and teaching programs to make selected content relevant and meaningful** **2.2.2 Organise content into**	Teachers prepare and plan for how to make learning meaningful by engaging with information collected by students during the videoconference to provide feedback to them about how they are addressing specific syllabus content areas and assisting them in reflecting on their learning. Teachers integrate content that students gather during the videoconference into a formal or informal

Course/program sessions	Focus and content of the sessions	Standard descriptors at the Proficient Teachers level addressed by the session	Explanation of how the standard descriptors will specifically be addressed within the session
		coherent, well-sequenced learning and teaching programs 3.2.2 Plan and implement well-structured learning and teaching programs or lesson sequences that engage students and promote learning	assessment task for their students.

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