EDTE433

Science in the Secondary School I

S1 Day 2019

Department of Educational Studies

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
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Owain Matthews
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Credit points
3

Prerequisites
TEP388

Corequisites
TEP401

Co-badged status

Unit description
This unit builds on TEP388 and introduces students to modern approaches for the teaching and learning of Science in secondary schools. Curricula, resources and instructional strategies appropriate to teaching Science are examined, with particular attention to Years 7-10 and Senior Science. It is linked to the school experience gained in TEP401.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum

UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses

UO3 Implement teaching strategies for using ICT that engage students in their learning

UO4 Demonstrate knowledge and understanding of research into how students learn

science concepts

UO5 Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities

UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities

UO7 Explore educational ideas through action research

UO8 Develop communication skills

General Assessment Information

Assessment presenting and submission guidelines

- Assignments 1 and 2 should be about 1500-2000 words in length, word-processed and designed in such a way as to benefit your own understanding of the science teaching process. It should be well written and reflect your own opinions and demonstrate critical thinking ability.
- Reference your work using the current APA style. Consult the APA style guide located on the Library website.
- Make sure you keep a copy of your assignment in case it gets lost.

Please follow these guidelines when you submit each assignment:

- Allow a left and right-hand margin of at least 2cm in all assignments.
- Please type all assignments using 12-point font and 1.5 spacing.
- All assessments must be submitted through Turnitin in .doc or .pdf format
- It is the responsibility of the student to ensure that all assessments are successfully submitted through Turnitin.
- Faculty assignment cover sheets are NOT required.

Draft submissions & turnitin originality reports

- Students may use Turnitin's Originality Report as a learning tool to improve their academic writing if this option is made available in the unit.
- Students are strongly encouraged to upload a draft copy of each assessment to Turnitin at least one week prior to the due date to obtain an Originality Report.
- The Originality Report provides students with a similarity index that may indicate if plagiarism has occurred. Students will be able to make amendments to their drafts prior to their final submission on the due date.
- Generally, one Originality Report is generated every 24 hours up to the due date.

Please note:

- Students should regularly save a copy of all assignments before submission,
- Students are responsible for checking that their submission has been successful and has been submitted by the due date and time.

Assignment extensions and late penalties

- In general, there should be no need for extensions except through illness or misadventure that would be categorised as serious and unavoidable disruption according to the University definition of same, see: https://students.mq.edu.au/study/my-study-program/special-consideration
- Applications for extensions must be made via AskMQ according to the Special Consideration policy. Extensions can only be granted if they meet the Special Considerations policy and are submitted via https://ask.mq.edu.au/. This will ensure consistency in the consideration of such requests is maintained.
- Late submissions without extension will receive a penalty of 5% reduction of the total possible mark for each day late (including weekends and public holidays). You are reminded that submitting even just 1 day late could be the difference between passing and failing a unit. Late penalties are applied by unit convenors or their delegates after tasks are assessed.
- No assessable work will be accepted after the return/release of marked work on the same topic. If a student is still permitted to submit on the basis of unavoidable disruption, an alternative topic may be set.
- Students should keep an electronic file of all assessments. Claims regarding "lost" assessments cannot be made if the file cannot be produced. It is also advisable to keep an electronic file of all drafts and the final submission on a USB untouched/unopened after submission. This can be used to demonstrate easily that the assessment has not been amended after the submission date.

Requesting a re-assessment of an assignment

If you have **evidence** that your task has been incorrectly assessed against the grade descriptors you can request a remark. To request a remark you need to contact the unit convenor within **7 days** of the date of return of the assignment and provide **a detailed assessment of your script against the task criteria.** Evidence from your assignment must be provided to support your judgments.

Note: Failed assessments cannot be remarked as they are all double-marked as a part of the moderation process.

Please note: The outcome of a remark may be a **higher/lower or unchanged grade**. Grades are *standards referenced* and effort is NOT a criterion.

University policy on grading

Criteria for awarding grades for assessment tasks

Assignments will be awarded grades ranging from HD to F according to guidelines set out in the University's Grading Policy. The following descriptive criteria are included for your information.

Descriptive Criteria for awarding grades in the unit

In order to meet the unit outcomes and successfully pass this unit, students must make a genuine attempt at all assessment tasks. Where any submitted assessment task is considered to be unsatisfactory in this regard, the highest possible final grade that can be awarded for the unit will be 45.

Students will be awarded grades ranging from HD to F according to guidelines set out in the policy: https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment-in-effect-from-session-2-2016

The following generic grade descriptors provide university-wide standards for awarding final grades.

Grade	Descriptor
HD (High Distinction)	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There are substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the discipline.
D (Distinction)	Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
Cr (Credit)	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the discipline.
P (Pass).	Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes
F (Fail)	Does not provide evidence of attainment of learning outcomes. There are missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.

Note: *If you fail a unit with a professional experience component the fail grade will be on your transcript irrespective of the timing of the placement.*

Withdrawing from this UG Unit

If you are considering withdrawing from this unit, please seek academic advice via https://ask.m

q.edu.au before doing so as this unit may be a co-requisite or prerequisite for units in the following sessions and may impact on your progression through the degree

Results

Results shown in iLearn, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
Reflective Practice	40%	No	Week 6, 5 April, 5pm
Investigating Learner's Views	50%	No	Week 13, 7 June, 5 pm
On-going assessment	10%	No	all weeks

Reflective Practice

Due: **Week 6, 5 April, 5pm**
Weighting: **40%**

The aim of the assignment is to give you the opportunity to develop your expertise in inquiry-based, student-centred science teaching by using this approach in one lesson of your choice and engaging in reflection on this lesson.

On successful completion you will be able to:

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning
- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO5 Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities
- UO8 Develop communication skills

Investigating Learner's Views

Due: **Week 13, 7 June, 5 pm**
Weighting: **50%**

The aim of this assignment is to provide you with the opportunity to develop research skills for diagnosing and solving problems in the classroom (See GC3 in the Graduate Capabilities section).

On successful completion you will be able to:

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning
- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO5 Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities
- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research
- UO8 Develop communication skills

On-going assessment

Due: **all weeks**
Weighting: **10%**

Consistently contributes to group activities and discussion including online environments; consistently responds very thoughtfully to other students' comments.

On successful completion you will be able to:

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
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- UO8 Develop communication skills

Delivery and Resources

The classes for EDTE433 are workshops. There is one x 3hr workshop per week. You will need to access a copy of the Years 7-10 Science Syllabus and download the weekly learning activities from the EDTE433 iLearn page.

The areas of study in EDTE433 include the history and philosophy of science, inquiry-based teaching and learning approaches, the use of scientific language, writing/reading in science, classroom management, ICT for learning about science, group work and discussion, assessment, along with children's ideas about science and how these might differ from those presently held by members of the scientific community. Work will continue on lesson planning and implementation according to the prerequisite units. In each workshop session, detailed strategies for the teaching and learning of each of the prescribed focus areas, contexts and domains of the current NSW Stage 4/5 science syllabus will be presented and discussed in terms of their effectiveness. This will then be linked together with the Stage 6 science syllabus documents and discussion of the National Curriculum for science as appropriate.

Many of the workshop strategies are hands-on so that students are able to gain practical knowledge of activities that can be used in science classrooms at the junior secondary level. The workshops are organised to model a school classroom, where effective learning and teaching takes place including the use of laptops. Each workshop provides a choice of activities usually negotiated by the students in small groups. The lecturer's role is to provide guidance where necessary and highlight important issues in the overall theme of the workshop along with current, relevant science education research. Students are expected to participate in all workshops as individuals, in small groups and as a whole class.

This unit has a full web presence through *iLearn*. Students will need regular access to a computer and the Internet to complete this unit.

Weekly access to iLearn is compulsory for all students. Important assessment information will be posted here, as will other relevant unit notices and materials, including a reading template and guide to lecture note taking to assist your studies.

Various activities and materials for discussion and critical reflection are included and external students especially are encouraged to use this web component. Electronic links and suggested references will be included in the Resources section. Please check the iLearn unit regularly.

Access and technical assistance

Information for students about access to the online component of this unit is available at ilearn.mq.edu.au/login/MQ/. You will need to enter your student username and password.

Please do **NOT** contact the Unit Convenor regarding *iLearn* technical help. No extensions will be given for any technical issues. Allow enough time for your submissions. Assistance is available from IT Helpdesk ph: 1800 67 4357, or log a request at help.mq.edu.au. OneHelp is the online IT support service for both students and staff.

This unit requires students to use several ICT and software skills:

- **Internet access**: The i*Learn* site contains materials for this unit; it is also required for the online submission of all Assessment Tasks, and for the use of Turnitin submission for ALL tasks.
- **Word processing, visual representations, and document formatting**: You are required to use an appropriate form of software to present your assignments.
- **Uploading** of assessment tasks to **iLearn.**

Unit Schedule

Unit Schedule

The Unit Schedule is available on the unit's iLearn page.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the

University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Department Procedures

In addition, the following policies and procedures of the Department of Educational Studies are applicable in this unit.

Attendance for undergraduate units

All Internal tutorials begin in Week 1 of Session.

Activities completed during weekly tutorials (internal) or on campus days (external) are essential for building the core knowledge and/or skills required to demonstrate the learning outcomes of this unit [and to meet the AITSL Graduate Teacher Standards and/or ACECQA requirements]. Attendance at all tutorials or on campus days is expected and the roll will be taken.

Students are required to attend the tutorial in which they are enrolled. Any changes to tutorial enrolments must be completed officially through e-student. Please do not contact the unit convenor requesting a change.

Unit Expectations

- Students are expected to read weekly readings before completing tasks and attending tutorials
- Students are expected to listen/attend weekly lectures before completing tasks and attending tutorials

Note: It is not the responsibility of unit staff to contact students who have failed to submit assignments. If you have any missing items of assessment, it is your responsibility to make contact with the unit convenor.

Electronic Communication

It is the student's responsibility to check all electronic communication on a regular weekly basis. Communication may occur via:

- Official *MQ Student Email* Address
- The *Dialogue* function on iLearn
- Other iLearn communication functions

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research

Assessment tasks

- Reflective Practice
- Investigating Learner's Views
- On-going assessment

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning
- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO5 Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities
- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research
- UO8 Develop communication skills

Assessment tasks

- Reflective Practice
- Investigating Learner's Views
- On-going assessment

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning
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Assessment tasks

- Reflective Practice
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- On-going assessment

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- UO1 Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum
- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning
- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO5 Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities

- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research

Assessment tasks

- Reflective Practice
- Investigating Learner's Views
- On-going assessment

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research

Assessment tasks

- Investigating Learner's Views
- On-going assessment

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- UO2 Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses
- UO3 Implement teaching strategies for using ICT that engage students in their learning

- UO4 Demonstrate knowledge and understanding of research into how students learn science concepts
- UO6 Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities
- UO7 Explore educational ideas through action research
- UO8 Develop communication skills

Assessment tasks

- Reflective Practice
- Investigating Learner's Views
- On-going assessment

Changes since First Published

Date	Description
12/02/2019	Unit outcome numbers were edited.