School of Education

EDST5303
Learning and Problem Solving

Term 3 2021

Contents

IMPORTANT:
For student policies and procedures relating to assessment, attendance and student support, please see website, https://education.arts.unsw.edu.au/students/courses/course-outlines/

The School of Education acknowledges the Bedegal people as the traditional custodians of the lands upon which we learn and teach.

1. **LOCATION**

   Faculty of Arts, Design & Architecture
   School of Education
   EDST5303 Learning and Problem Solving (6 units of credit)
   Term 3 2021

2. **STAFF CONTACT DETAILS**

Course Coordinator:	TBC
Office Location:	Ground Floor, Morven Brown Building
Email:	TBC
Availability:	Email to arrange an appointment.

3. **COURSE DETAILS**

Course Name	EDST5303 Learning and Problem Solving
Credit Points	6 units of credit (uoc)
Workload	Includes 150 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.
Schedule	http://classutil.unsw.edu.au/EDST_T3.html#EDST5303T3

   SUMMARY OF COURSE

   The major focus of this course is to examine how cognitive structures are organised into a coherent architecture enabling humans to learn, think, reason and solve problems. The central role played by active learning in this architecture is emphasised. The course examines how expertise develops and how teaching strategies should be matched to individual needs to promote knowledge acquisition. In this course you will be introduced to cognitive load theory and learn about a number of applications of this theory to the classroom and other educational environments.

   THE MAIN WAYS IN WHICH THE COURSE HAS CHANGED SINCE LAST TIME AS A RESULT OF STUDENT FEEDBACK:

   - The course is now offered in fully online mode, therefore the schedule and materials have been redesigned accordingly

STUDENT LEARNING OUTCOMES

Outcome		Assessment/s
1	Identify and explain the structure and operation of human memory	2
2	Discuss how knowledge is constructed	1, 2, 3
3	Describe and explain how expertise develops and distinguish the differences between experts and novices	1,3
4	Explain the evolutionary basis for knowledge	1
5	Discuss the implications of human cognitive architecture for teaching and instructional design	1,3

PROGRAM LEARNING OUTCOMES

Standard		Assessment/s
1	**Advanced disciplinary knowledge and practices** Demonstrate an advanced understanding of the field of education as it relates to their specialist area of study, and the ability to synthesize and apply disciplinary principles and practices to new or complex environments.	1, 2, 3
2	**Enquiry-based learning** Demonstrate an in-depth understanding of research-based learning and the ability to plan, analyse, present implement and evaluate complex activities that contribute to advanced professional practice and/or intellectual scholarship in education.	1, 2, 3
3	**Cognitive skills and critical thinking** Demonstrate advanced critical thinking and problem solving skills	1, 2, 3
4	**Communication, adaptive and interactional skills** Communicate effectively to a range of audiences, and be capable of independent and collaborative enquiry and team-based leadership	3
5	**Global outlook** Demonstrate an understanding of international perspectives relevant to the educational field	1, 3
6	**Ethics** Demonstrate an advanced capacity to recognise and negotiate the complex and often contested values and ethical practices that underlie education	1, 3

AUSTRALIAN PROFESSIONAL STANDARDS FOR TEACHERS

Standard		Assessment/s
1.1.2	Use teaching strategies based on knowledge of students' physical, social and intellectual development and characteristics to improve student learning	1, 3
1.2.3	Expand understanding of how students learn using research and workplace knowledge	1, 2
1.5.2	Develop teaching activities that incorporate differentiated strategies to meet the specific learning needs of students across the full range of abilities	1, 3

4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

EDST5303 places a large emphasis on the role played by memory processes in effective learning and instruction. The teaching in this course is based on an active learning philosophy.

5. TEACHING STRATEGIES

EDST5303 places a large emphasis on the role played by memory processes in effective learning and instruction. The teaching in this course is based on an active learning philosophy. Student centered activities will form the basis of the course, which will draw on the prior knowledge of the students and allow engagement in relevant and challenging experiences. The seminars are designed to be supportive and friendly, and include meaningful realistic learning tasks, as well as promote independent and collaborative study, and inquiry.

Teaching strategies used during the course will include:

- Small group learning to understand the importance of teamwork in an educational context and to demonstrate the use of group structures as appropriate to address teaching and learning goals;
- Explicit teaching including lectures and a range of learning strategies to foster interest and support learning;
- Structured occasions for reflection on learning to allow students to reflect critically on issues discussed;
- Extensive opportunities for whole group and small group dialogue and discussion, allowing students the opportunity to demonstrate their capacity to communicate.

These activities will occur in a climate that is supportive and inclusive of all learners

6. COURSE CONTENT AND STRUCTURE

The course is structured to be completed online through Moodle. Time should be assigned each week to complete the learning activities - viewing lectures, videos, reading, researching, posting, and responding to discussion forums.

Module	Topics
1	Introduction to the course
2	Human Cognitive Architecture - Working Memory - Long-term memory - The role of schema construction and automation in the development of expertise - Evolutionary and information processing principles guiding learning and teaching
3	Problem solving and the role of prior knowledge and expertise
4	Cognitive Load Theory
5	Instructional strategies - Instructional approaches to managing learner cognitive load - Cognitive load implications of problem solving - Alternatives to problem solving - Tailoring learning tasks to learner cognitive characteristics
6	Technology and cognitive load theory (cognitive theory of multimedia learning)
7	Summary

7. RESOURCES

Required Readings

Textbook details: There are no set textbooks for this course, although the following will be frequently referred to:

Sweller, J., Ayres, P. & Kalyuga, S. (2011). *Cognitive load theory*. New York: Springer.

Specific articles are recommended for different lectures. Copies of the articles are provided on *Moodle*.

8. ASSESSMENT

Assessment Task	Length	Weight	Student Learning Outcomes Assessed	Program Learning Outcomes Assessed	Australian Professional Standards Assessed	Due Date
Assessment Task 1 – Major essay	2500 words	50%	2-5	1-3, 5-6	1.1.2 1.2.3 1.5.2	Week '11' Monday 22nd November by 5pm
Assessment Task 2 – Test	20 items	20%	1, 2	1-3	1.2.3	Week 5 Monday 11th October by 5pm
Assessment Task 3 – Tutorial presentation	10-minute presentation (to upload)	30%	2, 3, 5	1-6	1.1.2 1.5.2	Week 8 Monday 5th November by 5pm

Submission of assessments

Students are required to follow their lecturer's instructions when submitting their work for assessment. All assessment will be submitted online via Moodle by 5pm. Students are also required to keep all drafts, original data and other evidence of the authenticity of the work for at least one year after examination. If an assessment is mislaid the student is responsible for providing a further copy. Please see the Student Policies and Procedures for information regarding submission, extensions, special consideration, late penalties and hurdle requirements etc. https://education.arts.unsw.edu.au/students/courses/course-outlines/

Assessment Details

Assessment Task 1

Write an essay based on the material covered in the course focusing on its application to specific individual teaching areas. This essay should consist of an in-depth discussion of the theoretical and applied issues associated with a selected topic.
Possible essay topics will be discussed further in class.

Assessment Task 2

A 20-item multiple choice online test on major components and processes of human cognitive architecture.

Assessment Task 3

A presentation on a course related topic. Students make an 8-10-minute presentation on an application of the theory covered in this course using their own teaching/learning materials or teaching episodes on a topic chosen by the student. The focus should be on using specific methods and techniques discussed in this course.

The presentation should be uploaded to Moodle for other students to view.

Student Name: Student No.:

Assessment Task 1: **Major essay**

SPECIFIC CRITERIA	(-) ⟶ (+)				
Understanding of the question or issue and the key concepts involved • understanding of the topic and its relationship to relevant areas of the course • clarity and accuracy in use of key terms and concepts • suitability of the topic					
Depth of analysis and critique in response to the task • depth of analysis • depth of critique of the issue • depth of implications/recommendations for improvement of learning and instruction					
Familiarity with and relevance of professional and/or research literature used to support response • effectiveness of examples to demonstrate instructional implications • variety of implications demonstrated • range of relevant research literature to support response					
Structure and organisation of response • Level of structure and organisation of response					
Presentation of response according to appropriate academic and linguistic conventions • clarity, consistency and appropriateness of conventions for quoting, paraphrasing, attributing sources of information, and listing references • appropriateness of overall structure and coherence of response • clarity and consistency in presenting tables and figures • clarity and appropriateness of sentence structure, vocabulary use, spelling, punctuation and word length					

GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME

Lecturer: **Date:**

Recommended: **/20**   **(FL PS CR DN HD)**   **Weighting:**   **50%**

NB: The ticks in the various boxes are designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. **The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.**

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Student Name: Student No.:
Assessment Task 3: **Tutorial presentation**

SPECIFIC CRITERIA	(-)				(+)
Understanding of the question or issue and the key concepts involved in the presentation					
Variety and relevance of specific examples used					
Familiarity with and relevance of literature/sources used to prepare the presentation					
Structure and organisation of presentation					
Quality of presentation: use of media, interaction with audience					

GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME

Lecturer: **Date:**
Recommended: /20   (FL PS CR DN HD)   Weighting: 30%

NB: The ticks in the various boxes are designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. <u>The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.</u>