

OCR Teaching in the Lifelong Learning Sector – Qualification Units

Unit 39 - Level 5 Numeracy Learning and Teaching

Level 5

QCA Accreditation Number A/500/9962

Unit description

Unit aims

The aim of this unit is to develop understanding of the application of specialist knowledge in the planning, assessment, application and development of inclusive learning and teaching. Consideration also needs to be given to the strategies and resources which may be used and the collaboration with other professionals in the development of personal mathematics and numeracy knowledge and skills.

Credit value 15

Unit synopsis

This unit is about:

- The review of strategies for conceptual understanding in mathematics and numeracy
- The selection of appropriate resources, including ICT where appropriate
- Strategies to motivate learners in numeracy, and to maintain motivating learning environment
- The design and use of assessment as a tool for learning and progression
- The application of specialist knowledge to planning inclusive numeracy-related courses and lessons and the establishment of a supportive numeracy learning environment
- Reciprocal and collaborative relationships with range of professionals to support numeracy learners
- Strategies to evaluate numeracy learning and teaching
- How to engage in professional development, reflective practice and research.

Examples of teaching and learning strategies

The following teaching methods and learning strategies are appropriate to the delivery and development of the knowledge, understanding and skills covered in this unit. A variety of these should be used to provide a model of good practice to the candidate. This list is not exhaustive:

- Small group discussion
- Directed study and research
- Lecture
- Resource based learning
- Question and answer
- Micro teaching session
- Role play
- Discussion
- Lecture and exposition
- Presentations
- Workshop activities
- Tutorials

Guidance on delivery for centres

For many candidates this may be the first opportunity to explore in depth the principles and models of curriculum design and to understand the significance of equality and diversity within the curriculum.

Appropriate methods of delivery:

- Provision of individual learning plans
- Provision of guidance on the qualification and progression routes to further development
- Provision of opportunities for learning e.g. discussion, tutorials, workshop activities etc
- Provision of ongoing mentoring to the candidate, including review and feedback on learning experiences and development of competence
- Observation of peer-to-peer discussions of groups of candidates or of discussions with colleagues
- Observation of candidates working within a partnership
- Professional discussion with the assessor will test the knowledge requirements, where these are not already met through the activities described above.

Guidance on assessment for centres

There must be a minimum of 75 hours teaching practice. This practice must be undertaken within at least two of the three levels of the Skills for Life curriculum (Entry level, level 1 and level 2).

There must be a minimum of four observations totalling a minimum of four hours. All must be in a subject specific context and be undertaken by an appropriate subject specialist observer. Any single observation must be a minimum of half an hour and can be formative or summative.

The assessment can include:

- Written assignment
- Case studies
- Research projects
- Candidate assessments

- Individual learning plans
- Lesson plans
- Written review of candidates' progress

This is a level five unit and thus the candidate must demonstrate complex skills and knowledge in this particular area of numeracy. The ability to recognise and develop thinking across these criteria is to be encouraged but it does mean that written evidence whilst aiming for succinctness and clarity of thought will need to be of sufficient depth and breadth to meet the level 5 standard. There is an expectation that the written work will be presented at the appropriate level.

Suggested reading

The following list is not intended to be exhaustive, but provides suggested texts which student-teachers may find helpful. It is not compulsory for students to read all publications in the list; they are identified for reference only.

Bolton, G. (2005) *Reflective Practice, Writing and Professional Development* (2nd ed) London: Sage.

Buxton, L. (1981) *Do you Panic about Maths? Coping with Maths Anxiety* London: Heinemann.

Bynner, J. and Parsons, S. (2006) *Does Numeracy Matter More?* London: NRDC.

Chinn, S.J. (2004) *The Trouble with Maths, A Practical Guide to Helping Learners with Numeracy Difficulties* London: Routledge.

Coben, D. et al. (2003) *Adult Numeracy: Review of Research and Related Literature*. London: NRDC.

Cohen, L. and Manion, L. (2002) *Research Methods in Education* (5th ed) London: Routledge.

Ecclestone, K. (2003) *Understanding Assessment and Qualifications in Post-compulsory Education: Principles, Politics and Practice* Leicester: NIACE.

Hillier, Y. (2005) *Reflective Teaching in Further and Adult Education* (2nd ed) London: Continuum.

Lavender, P., Derrick, J. and Brooks, B. (2004) 'Testing, Testing...', Assessment in Adult Literacy, Language and Numeracy. A NIACE Policy Discussion Paper. NIACE.

Reece, I. and Walker, S. (2006) *Teaching, Training and Learning* (6th ed) Sunderland: Business Education.

Swan, M. (2006) *Collaborative Learning in Mathematics, A Challenge to our Beliefs and Practices* Leicester: NIACE.

Swan, M. and Green, M. (2002) *Learning Mathematics through Discussion and Reflection* London: LSDA.

Tummons, J. (2007) *Becoming a Professional Tutor in the Lifelong Learning Sector* Exeter: Learning Matters.

Journals

Educational Studies in Mathematics

Journal of Mathematics Teacher Education

Journal of Vocational Education and Training

Journal for Research in Mathematics Education

Websites

www.ocr.org.uk

www.qca.org.uk

www.dfes.gov.uk

www.lluk.org.uk

www.dfes.gov.uk/readwriteplus Adult Core Curricula (Literacy, ESOL and Numeracy) and related documents

www.ncetm.org.uk/ The National Centre for Excellence in Teaching of Mathematics (NCETM) – excellent resource which includes a professional development portal

<http://www.maths4life.org> Resource: 'Thinking Through Mathematics, strategies for teaching and learning; DfES 2007.

Assessment Criteria, Knowledge and Evidence Linked to Practice

1.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
1.1	Review strategies for developing conceptual understanding in mathematics and numeracy.	How to use strategies such as discussion or question and answer to develop understanding of numeracy related topics.	Written evidence which includes: <ul style="list-style-type: none"> • a review of strategies for developing conceptual understanding • an evaluation of resources available for numeracy teaching • a critical reflection of a recent teaching session where knowledge and understanding of appropriate learning and teaching strategies was demonstrated
1.2	Evaluate the use of resources in numeracy learning and teaching.	How to adapt written texts and other resources as appropriate and use ICT and other multimedia aids to create resources and to support teaching.	
1.3	Analyse the use of strategies to engage and enthuse learners in numeracy and foster positive self images.	How to build confidence in learners and value prior learning and experience.	
1.4	Analyse the types of skills, knowledge and understanding that can be assessed in numeracy.	Understanding of the types of skills and knowledge that can be assessed and use this understanding to select and design appropriate assessment tools.	

2.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
2.1	Plan numeracy related course outlines and lesson objectives to meet learner needs and curriculum requirements.	How to apply specialist knowledge and understanding to plan mathematics and numeracy related courses to meet learner needs and curriculum requirements and which reflect diversity and equality of opportunity.	A scheme or schemes of work for an identified numeracy programme which covers the required 75 hours of teaching practice. The scheme should include: <ul style="list-style-type: none"> • the time and frequency of the teaching sessions • aims, objectives and
2.2	Plan numeracy learning and teaching that reflects diversity and promotes equality of opportunity.		

			<p>teaching approaches and individual goals of the learners</p> <ul style="list-style-type: none"> • the learner activities • resources used, with a justification • evidence of reflecting diversity and promoting equality of opportunity .
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3.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
3.1	Establish and maintain an environment where mistakes in numeracy are seen as opportunities for further learning and peer support is encouraged.	How to create an environment where learners feel comfortable and valued and where mistakes are seen as opportunities for further learning.	<p>Written reflection of the 75 hours teaching based on evaluations and assessments of observed teaching and an analysis of learner feedback and which includes:</p> <ul style="list-style-type: none"> • evidence to show how a safe and effective learning environment was created • how mistakes were used to develop further learning and understanding.
3.2	Use strategies to facilitate learner interaction in order to support numeracy learning.		

4.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
4.1	Devise and use appropriate assessment tools for numeracy.	The different types of skills, knowledge and understanding that can be assessed in numeracy across the cognitive, affective and psychomotor domains.	<ul style="list-style-type: none"> • Individual learning plans with evidence of initial and diagnostic assessments
4.2	Use strategies to involve learners in		

	their own numeracy assessment.		
4.3	Negotiate numeracy related goals with learners.	How to involve learners in their own numeracy/mathematics assessment.	with a justification of methods used showing evidence of learner involvement in assessment and the setting of goals <ul style="list-style-type: none"> • Analysis of the results of the assessments used • Details of feedback • How assessments were recorded.
4.4	Use feedback from assessment to support learning and teaching in numeracy.	Use feedback on assessment information about learner understanding.	
4.5	Use appropriate systems for recording numeracy assessment information.	How to balance numeracy curriculum requirements and individual learner goals. Develop systems for recording learner progress.	

5.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
5.1	Analyse the impact and implications of personal, social, economic and political factors which may affect the learning development and progression of people with numeracy needs.	Understanding of diversity and inclusion issues.	Continued..... <ul style="list-style-type: none"> • factors which influence the assessment process e.g. disabilities, attitudes etc

6.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
6.1	Evaluate the boundaries between own specialist area and those of other specialists.	Sources of specialist information and advice.	Continued... <ul style="list-style-type: none"> • How other professionals and support services can support numeracy learners • How developments in literacy, ESOL, ICT and learning difficulties can give support to numeracy learners.
6.2	Use knowledge of current developments in Literacy, ESOL, ICT and learning difficulties and disabilities to give effective support to numeracy learners.	The boundaries between own specialist area and those of other specialists.	
6.3	Apply knowledge of specialist services to signpost learners to appropriate support within or outside the organization.	The importance of numeracy in relation to learners' current situation and opportunities for further progression in education and/or training.	
6.4	Apply knowledge of how numeracy development is supported in learners by a range of professionals to demonstrate effective collaborative practice.	Understanding and appreciation of the range of local, regional and national support services.	
6.5	Evaluate the boundaries between own specialist area and those of other specialists.		
6.6	Use knowledge of current developments in Literacy, ESOL, ICT and learning difficulties and disabilities to give effective support to numeracy learners.		

7.

	Assessment Criteria	Knowledge	Evidence Linked to Practice
7.1	Apply appropriate theories of learning to the evaluation of numeracy learning and teaching including planning and assessment.	How to evaluate and analyse numeracy activities from theoretical perspectives as well as practical ones.	Continued..... <ul style="list-style-type: none"> • How own training needs with respect to the knowledge of numeracy teaching, policy and practice have been identified • An evaluation of the activities undertaken from a theoretical and a practical perspective • How a wide range of communication strategies were employed.
7.2	Use a range of sources of data to evaluate numeracy learning and teaching, including learner reflection and feedback.	The use of reflective practice and research to inform own knowledge of numeracy and its learning and teaching.	
7.3	Use a reflective CPD cycle to select training opportunities to inform own knowledge of mathematics/numeracy, its teaching, policy and practice.	How to help numeracy learners identify the links between developing their own numeracy skills and other areas of importance to them.	
7.4	Use current professional knowledge to ensure learners develop their numeracy skills to enable progression.	How to use strategies such as discussion or question and answer to develop understanding of numeracy related topics.	
7.5	Demonstrate use of a wide range of oral, written and non-verbal strategies to improve numeracy learning.		