AQP for Foundational
Learning Competence

FOUNDATIONAL LEARNING COMPETENCE
PART QUALIFICATION

CONTENTS

INTRODUCTORY NOTES

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PURPOSE AND RATIONALE OF THE PART QUALIFICATION

Purpose

Foundational Learning refers to the competence needed in the two key areas of Communication and Mathematical Literacy in order to deal successfully with occupational learning at NQF Levels 2-4. Its key purpose is to remove barriers to learning and progress in occupational pathways and skills development.

The part qualification component 'Foundational Communication' describes the language skills, processes, knowledge and practices needed in the language of instruction for occupational training, and in the language of formal usage in the workplace. The purpose of this component is to enable individuals to deal confidently and successfully with the language of learning and teaching (LOLT) of formal occupational training, in relation to oral skills, print-based learning and the language of external assessments such as trade tests. People who achieve the part qualification will be able to speak, listen, read and write meaningfully and effectively in the language of instruction, so that they can progress further in their chosen occupational pathways and workplace contexts.
The part qualification component 'Foundational Mathematical Literacy' is the minimum, generic mathematical literacy that will provide learners with the necessary foundation to cope with the mathematical demands of occupational training and to engage meaningfully in real-life situations involving mathematics. Foundational Mathematical Literacy will also serve as the foundation for further development of an individual in mathematical literacy contexts and mathematical concepts that may be specific to an occupation or trade.

Individuals who have met all the requirements of Foundational Mathematical Literacy are able to make sense of and solve problems in real contexts by responding to information about mathematical ideas that is presented in a variety of ways. Individuals will solve problems by defining their goals, analysing and making sense of problem situations, planning how to solve problems, executing their plans, interpreting and evaluating the results, and justifying the method and solution. Individuals will respond by means of identifying or locating, ordering, sorting, comparing, counting, estimating, computing, measuring, modeling, interpreting and communicating. The mathematical ideas will revolve around number and quantity, space and shape, patterns and relationships, data and chance and measurements.

Rationale

The *Foundational Learning Competence Part Qualification* comprises two components, mathematical literacy and communication, as these two areas have been identified as platform skills for occupational progress and skills development. The *Foundational Learning Competence Part Qualification* defines itself in the context of the occupational qualifications framework. It was developed to address the following needs:

- Many South Africans are denied qualifications in occupations and trades at NQF levels 2, 3 and 4 because they are unable to achieve the compulsory fundamental requirements at all four levels in the FET band for mathematical literacy and language. Foundational Learning

provides an alternative qualification model to enable progress in occupational qualifications pathways.

- Many South Africans are unable to cope with the learning demands of qualifications at NQF levels 2, 3 and 4 due to historical educational backlogs which resulted in a gap in their understanding of and ability to apply mathematical literacy and language. Foundational Learning supports learners in the skills development context.
- Additional language or mathematical literacy requirements specific to sector and occupational domains are addressed in the design process of occupational qualifications in the FET band, building on the competence levels of the Foundational Learning Competence Part Qualification.

The *Foundational Learning Competence Part Qualification* is linked to an assessment model that is designed to streamline the process of identifying those who need upskilling in the two foundational areas, while at the same time serving as an RPL process for those who already have the minimum competence in place. It therefore enables access and removes barriers to occupational progression.

This part qualification must be read together with the Curriculum Framework for each learning area. These are registered with the QCTO, and provide detailed specifications of knowledge, content, applied skills, range statements and assessment requirements. Programme development must be done in relation to these frameworks; compliance with the Curriculum Frameworks is an indicator in the provider accreditation process for this part qualification.

Learning assumed to be in place and recognition of prior learning

The *Foundational Learning Competence Part Qualification* assumes that learners entering a foundational learning programme have minimum competence levels in the relevant learning area at ABET Level 3 or its equivalent. This is not a formal certification requirement, as there are no certification requirements for entry to the National External Assessment. However, it should be noted that individuals who do not have firmly established mathematical literacy skills or literacy skills in the language of the National External Assessment are unlikely to be successful.

Recognition of prior learning

This part qualification may be obtained through the recognition of relevant prior learning and/or experience. For the purpose of recognising prior learning, learners will be required to undertake a formal assessment according to the designated Assessment Quality Partner's assessment mechanisms. The notion of Recognition of Prior Learning is primary to the purpose and rationale of the *Foundational Learning Competence Part Qualification*. The qualification model allows for candidates to present themselves for the National External Assessment without first going through a foundational learning programme, thus creating a model for RPL that has been lacking in the areas of language and mathematical literacy. However, candidates following this route should take cognisance of the Learning Assumed to be in Place stipulated above.

Part qualification rules

Learners must achieve 20 credits for the Foundational Communication component and 20 credits for the Foundational Mathematical Literacy component.

EXIT LEVEL OUTCOMES AND ASSOCIATED ASSESSMENT CRITERIA

FOUNDATIONAL LEARNING COMPETENCE COMMUNICATION

Exit Level Outcomes

Use oral- and text-based skills in occupational training and workplace contexts in the Language of Learning and Teaching (LOLT), covering the following elements:

- Reading
- Writing
- Speaking and Listening
- Visual Literacy
- Language Structure and Use
- Study Skills

Workplace terminology is integrated into the above six elements.

1. **Reading:** Read and understand a range of text types, extract and use information, and make critical judgments.
2. **Writing:** Write a variety of texts to record and information and ideas.
3. **Speaking and Listening:** Interact orally with others with a reasonable degree of confidence for a number of purposes.
4. **Visual Literacy:** Read and produce visual texts.
5. **Language Structure and Use:** Use knowledge of grammar in order to understand and communicate effectively through reading, writing, speaking and listening.
6. **Study Skills:** Use the LOLT effectively for occupational learning and training.

Workplace Terminology: This is not listed as an Exit level outcome. However, understanding of general workplace terminology supports effective functioning in the workplace. This skill is therefore integrated into the six elements of the communication component, and can be addressed in context-specific (language or sector) ways as illustrated in the Curriculum Framework.

These Exit Level Outcomes must be read in conjunction with the relevant Communication Curriculum Framework as registered with the QCTO, as this gives detailed range and assessment specifications for each element. The range of skills and knowledge and associated assessment criteria for each Exit level outcome are specified below.

NOTE ON RANGE:

Range statements refer to the scope and level of content (e.g., types and lengths of texts) and the different contexts (e.g. formal or informal listening and speaking situations) in which learning outcomes are demonstrated. However, language skills at this level are expected to be applied across a wide and varied range of topics, through various forms of communication, and across workplace, training and life skills contexts. The complexity levels of printed, visual and oral material also vary, depending on how and why these are used. It would not be feasible to list all possible ranges in this document.

This part qualification document therefore gives a broad range statement for each Exit level outcome, followed by a summarised list of the knowledge and practical skills range for the outcome. These must be read in conjunction with the registered Curriculum Framework for a particular language. The framework gives illustrative examples of scope and contexts for each element. Levels are illustrated through the use of Task Exemplars.

For the purposes of the **external formal written assessment**, guidelines on range are given in the section Integrated Assessment.

Element 1: Reading

Exit level outcome: Read and understand a range of text types, extract and use information, and make critical judgments.

Range: Recognise a specified range of text types, understand that these may have different purposes and audiences, and be familiar with the main features and conventions of these texts. Process occupational training and workplace texts successfully. Recognise general workplace terminology.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Use a range of reading strategies
- Identify main and supporting ideas
- Identify conventions and formats of different text types
- Identify the organisation and structure of a text
- Interpret and respond critically to a text

Associated assessment criteria

1.1 Reading strategies used match the text types and task purposes.
1.2 Information is accessed from a range of different text types.
1.3 Responses to given texts show understanding of literal and implied information.
1.4 Responses to texts take context into account.

Element 2: Writing

Exit level outcome: Write a variety of texts to record and information and ideas.

Range: Use language, form and content which suit the purpose and audience of the task. Produce texts required in occupational training and in the workplace. Use general workplace terminology.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Use a range of writing strategies
- Produce appropriate text type for purpose and audience
- Select and convey relevant content
- Use grammatical and other language conventions so that the main message is clear

Associated assessment criteria

2.1 Texts appropriate to requirements are produced.
2.2 Texts are sufficiently clear in terms of spelling, punctuation and language structures so that it can be understood, even if usage is not entirely correct or consistent.

Element 3: Speaking and Listening

Exit level outcome: Interact orally with others with a reasonable degree of confidence for a number of purposes.

Range: Listen and speak in both formal and informal contexts. Listen and question with understanding so that knowledge and concepts conveyed in the context of occupational training and workplace instruction can be applied. As an occupational learner, use the LOLT and the language of the workplace with confidence in order ask questions for clarification, and to explore the concepts and content of learning.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Use strategies to understand spoken language
- Formulate questions
- Identify the purpose and audience of acts of communication in order to interact
- Know and use grammatical and structuring conventions for oral communication

Associated assessment criteria

3.1 Oral communication is successful and achieves its intended purpose.
3.2 Questions are clearly expressed and elicit the required information.
3.3 Meaning is sufficiently clear, although complete fluency and accuracy is not expected.

Element 4: Visual Literacy

Exit level outcome: Read and produce visual texts.

Range: Apply understanding of the different ways in which information can be conveyed and organised through graphic representations and strategies (pictures, symbols, tables, graphs, diagrams, patterns, formatting conventions and so on). Present and mediate procedural and technical information in occupational training and the workplace in numerous ways.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Understand when and why visual representations should be used
- Extract meaning and information from a range of visual texts
- Analyse main features and conventions of visual texts, and explain their functions
- Present information in visual ways

Associated assessment criteria

4.1 Relevant content from visual text is interpreted and explained.
4.2 Purpose and effectiveness of specific visual texts are accurately described.
4.3 Appropriate visual texts are produced in response to instructions.

Element 5: Language Structure and Use

Exit level outcome: Use knowledge of grammar in order to understand and communicate effectively through reading, writing, speaking and listening.

Range: Explore and apply the rules, conventions and structures of the language in order to understand how the language works, how meaning is built up, and how errors can be identified and corrected.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Identify the function and purpose of grammatical structures and conventions in relation to meaning
- Apply grammatical knowledge to understand spoken and written texts
- Apply grammatical knowledge to produce meaningful communication

Associated assessment criteria

5.1 Grammatical structures and conventions of the LOLT are used effectively in the context of specific communication tasks and outputs.
5.2 Texts produced show correct application of a range of language structures.
5.3 Responses to received texts show understanding of correct and incorrect usage of a range of language structures.

Element 6: Study Skills

Exit level outcome: Use the LOLT effectively for occupational learning and training.

Range: Use various learning strategies, plan and manage learning activities and resources, and use terminology linked to occupational training and workplace activities, tasks and assessments. Transfer information between written and oral sources. Draw on other languages in the training and workplace environment if this assists with understanding.

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Understand and use common study and training terminology in the LOLT
- Understand and use different learning strategies
- Manage own learning
- Manage own training and work resources

Associated assessment criteria

Study skills are not assessed in isolation. They are manifested through performance in occupational training and related external assessments, as well as *Foundational Learning Competence Part Qualification* programme outcomes and the National External Assessment.

FOUNDATIONAL LEARNING COMPETENCE MATHEMATICAL LITERACY

Exit Level Outcomes

1. Use numbers in a variety of forms to describe and make sense of situations, and to solve problems in a range of familiar and unfamiliar contexts.
2. Manage personal finances using financial documents and related formulae.
3. Collect, display and interpret data in various ways and solve related problems.
4. Make measurements using appropriate measuring tools and techniques and solve problems in various measurement contexts.
5. Describe and represent objects and the environment in terms of spatial properties and relationships.
6. Describe, show, interpret and solve problems involving mathematical patterns, relationships and functions.

These Exit Level Outcomes must be read in conjunction with the relevant Foundational Learning Competence Mathematical Literacy Curriculum Framework as registered with the QCTO, as this gives detailed scope and contexts for each element. The range of skills and knowledge and associated assessment criteria for each Exit level outcome are specified below.

Element 1: Number

Exit level outcome: Use numbers in a variety of forms to describe and make sense of situations, and to solve problems in a range of familiar and unfamiliar contexts.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Use numbers to describe and make sense of real-life situations
- Read, interpret and use different numbering conventions in different contexts and identify the ways in which different conventions work
- Interpret and use numbers written in exponential form including squares and cubes of natural numbers and the square and cube roots of perfect squares and cubes
- Do calculations in various situations using a variety of techniques
- Solve problems involving ratio and proportion
- Solve problems involving fractions, decimals and percentages

Associated assessment criteria

1.1 Problem-solving strategies are based on a correct interpretation of the context.
1.2 Calculations are performed accurately and according to the conventions governing the order of operations.
1.3 Methods are presented in a clear, logical and structured manner, using mathematical symbols and notation consistent with mathematical conventions.
1.4 Methods used are efficient, logical, internally consistent and justified by the context.
1.5 The degree of accuracy of solutions is justified by the context.
1.6 Solutions are evaluated and validated in terms of the context, and numbers are rounded appropriately to the problem situation.

Element 2: Finance

Exit level outcome: Manage personal finances using financial documents and related formulae.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Read and interpret financial information presented in a range of documents in personal and familiar contexts
- Identify, classify and record sources of income and expenditure
- Plan and monitor personal finances
- Evaluate options when purchasing products and services
- Determine the impact of interest, depreciation, inflation, deflation and taxation on personal finances

Associated assessment criteria

2.1 Interpretations of personal financial documents are consistent with recorded facts.
2.2 Financial information is recorded and organised clearly, accurately and according to general finance-recording techniques and principles.
2.3 Personal budgets reflect the financial situation in sufficient detail for planning and monitoring personal finances.
2.4 Costs of products and services are evaluated using a variety of issues. These include affordability, personal needs and accuracy of advertising claims.
2.5 Personal finances are monitored in terms of various influences, including income, expenditure, investments, loans, taxation and inflation.

Element 3: Data and Chance

Exit level outcome: Collect, display and interpret data in various ways and solve related problems.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Collect data from various sources and in various ways
- Classify, organise and summarise data
- Display data using tables, graphs and charts
- Analyse and interpret data to draw conclusions and make predictions
- Determine and interpret simple chance in everyday contexts

Associated assessment criteria

3.1 Data collection techniques are appropriate to the context, type of data and purpose.
3.2 Data is classified, organised and summarised appropriately so that it promotes meaningful analysis.
3.3 Data is displayed using techniques appropriate to the type of information and context.
3.4 Data displays are consistent with collected data, promote ease of interpretation and minimise bias.
3.5 Interpretations and predictions are verified by the data and observed trends. They take into account possible sources of error and data manipulation.
3.6 Simple probabilities are determined accurately and statements of chance are correctly interpreted in context.

Element 4: Measurement

Exit level outcome: Make measurements using appropriate measuring tools and techniques and solve problems in various measurement contexts.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Estimate and measure quantities using measuring instruments in various contexts, paying attention to significant figures and margins of error
- Calculate quantities in measurement contexts paying attention to significant figures and margins of error
- Solve measurement problems in various practical and non-practical contexts

Associated assessment criteria

4.1 Measuring instruments used meet the accuracy requirements of the context.
4.2 Readings are accurately recorded within appropriate margins of error and using appropriate units.
4.3 Calculations are performed accurately, keeping units consistent.
4.4 Conversions between units are accurate and appropriate to the context.
4.5 Solutions to problems are validated according to the context, including contextually appropriate rounding and use of units.

Element 5: Shape and Space

Exit level outcome: Describe and represent objects and the environment in terms of spatial properties and relationships.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Identify and work with geometric figures and solids, including cultural forms and products
- Analyse the properties of geometric figures and solids
- Draw geometric shapes and construct models of solids
- Use the Theorem of Pythagoras to solve problems involving missing lengths in geometric figures and solids
- Draw different views of simple, regular objects
- Read, interpret and use plans and road maps to show and make sense of real locations, distances and relative positions

Associated assessment criteria

5.1 Two- and three-dimensional shapes are accurately described and compared in terms of their main properties.
5.2 The language of shape and space is used in context.
5.3 Drawings and representations of shapes and solids are consistent with the actual shapes and solids.
5.4 The dimensions and proportions of drawings are consistent with the actual object and given scale.
5.5 Drawings of objects from different viewpoints are consistent with the actual viewpoints of the objects.
5.6 Maps are used effectively to give and make sense of real locations, distances and relative positions.

Element 6: Patterns and Relationships

Exit level outcome: Describe, show, interpret and solve problems involving mathematical patterns, relationships and functions.

Range:

This Exit level outcome will apply across the following range of knowledge and practical skills:

- Investigate, complete, extend and generate simple number and geometric patterns
- Work with and interpret a range of representations of relationships including words, equations, tables of values and graphs
- Represent relationships to solve problems and communicate or illustrate results

Associated assessment criteria

6.1 Patterns are identified and described based on the relationships between the elements of the pattern.
6.2 Patterns are expressed in general terms where possible.
6.3 Patterns are completed and/or extended in keeping with the general patterns.
6.4 Relationships between independent and dependent variables are represented clearly and effectively through tables and graphs to facilitate analysis and problem solving.
6.5 Solutions to problems involving patterns and relationships are validated in context.

CRITICAL CROSS-FIELD OUTCOMES

This part qualification addresses the following critical cross-field outcomes:

(a) Identifying and solving problems in which responses indicate that responsible decisions using critical and creative thinking have been made:

- Foundational Communication supports the formulation of problems and the exploration of solutions through effective communication.
- Foundational Mathematical Literacy relates primarily to solving problems in real-life contexts using mathematical knowledge and skills.

(b) Working effectively with others as a member of a team, group, organisation or community:

- Foundational Communication is essential in promoting successful interaction between members of groups and communities.
- Foundational Mathematical Literacy involves a high degree of working with others to find, discuss and debate solutions to mathematical problems.

(c) Organising and managing oneself and one's activities responsibly and effectively:

- Foundational Communication explicitly emphasises using language to organise and manage oneself in lifelong learning and the workplace.
- Foundational Mathematical Literacy requires learners to maintain a consistently high degree of self-organisation and management in order to cope with the wide range of concepts and contexts addressed.

(d) Collecting, analysing, organising and critically evaluating information:

- Foundational Communication improves language skills as required for this critical outcome, and involves the processing and presentation of information in different formats.
- Foundational Mathematical Literacy involves the collection, analysis, organisation and presentation of data using tables, graphs and charts.

(e) Communicating effectively using visual, mathematical and/or language skills in the modes of oral/written persuasion:

- Foundational Communication requires learners to communicate effectively through written, visual and verbal modes.
- Foundational Mathematical Literacy requires learners to communicate verbally, in writing and symbolically about methods used and reasons for various solutions.

(f) Using science and technology effectively and critically, showing responsibility towards the environment and health of others:

- Foundational Communication makes it possible for people to access and use scientific and technological information and applications.
- Foundational Mathematical Literacy involves the use of simple technology related to measurement, calculations, record keeping and graphs.

(g) Demonstrating and understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation:

- Foundational Communication enables learners to explore language as a structuring mechanism for understanding the world. Language enables discovery and articulation of linkages and relationships in a range of contexts.
- Foundational Mathematical Literacy requires learners to contextualise solutions within a broader environment, identifying linkages, similarities and differences between the various contexts.

Foundational Communication and Foundational Mathematical Literacy will also contribute to the full personal development of each learner and the social and economic development of the society at large, by making individuals aware of the importance of:

1. Reflecting on and exploring a variety of strategies to learn more effectively.
2. Participating as responsible citizens in the life of local, national and global communities.
3. Being culturally and aesthetically sensitive across a range of social contexts.
4. Exploring education and career opportunities; and developing entrepreneurial opportunities.

INTEGRATED ASSESSMENT

External assessment

Success in the Foundational National External Assessment for both components is prescribed by the QCTO for the award of the *Foundational Learning Competence Part Qualification.*

The Foundational National External Assessment is a national assessment offered in the two learning areas of Foundational Communication and Foundational Mathematical Literacy. Its purpose is to provide a quick and efficient assessment instruments to benchmark the broad competence level of an individual in the two Foundational Learning areas, in support of successful occupational training.

This national assessment has the following features:

- It is a machine scored, item-based multiple choice format assessment.
- It is available at regular intervals, with quick delivery of results.
- It is administered by an external Assessment Quality Partner appointed by the QCTO.
- Successful candidates are awarded a statement of results by the QCTO for each learning area, and the *Foundational Learning Competence Part Qualification* once both components have been achieved. Success in the Foundational Learning assessment in both learning areas is compulsory for final award of any occupational qualifications at NQF Levels 3 – 4. Candidates can enter the assessments before or during their occupational training. If successful in a learning area, they do not need to undertake a Foundational Learning programme in that area. If unsuccessful, they undertake the relevant learning programme and then re-take the relevant Foundational Learning assessment.

Notes on Range for External Assessment of Foundational Communication

The assessment focuses on two key areas:

- The application of reading and interpretive skills, in terms of accessing, processing and using information presented in different ways.
- The recognition of writing and grammatical strategies and conventions.

The sampled outcomes, derived from the Foundational Learning Competence Communication Curriculum Framework, include assessment of the learner's ability to:

- Identify main points
- Recognise supporting ideas and detail
- Make inferences
- Track connections between ideas
- Understand structure and organisation of texts
- Understand information presented in a variety of visual forms

- Recognise different purposes and text types
- Understand language conventions and forms
- Demonstrate knowledge of writing conventions
- Demonstrate knowledge of grammar and syntax

The assessment instrument is made up of a number of question items for each section, covering different outcomes for each one of the following content areas.

Section	Content
A	Extended reading text, maximum 600 words
B	Short texts, paragraphs or single sentences
C	Visual literacy tasks (e.g. flow charts, graphs, diagrams, advertisements, tables lists)

Providers should advise learners who are below ABET Level 3 competence in the language of the assessment that they are unlikely to be able to deal with the literacy demands of the test.

Notes on Range for External Assessment of Foundational Mathematical Literacy

The range of knowledge and practical skills are specified above for each Exit level outcome, together with the associated assessment criteria which define the standard of performance required by learners. However, assessors must consult the Foundational Learning Competence Mathematical Literacy Curriculum Framework for the description of scope and contexts that learners should be assessed against.

Internal assessment
Minimum programme-based requirements are specified in each of the Foundational Learning subject area curriculum frameworks registered by the QCTO.

Note: RPL candidates successful in the National External Assessment for the *Foundational Learning Competence Part Qualification* who don't undertake a learning programme are condoned for programme-based internal assessment requirements.

INTERNATIONAL COMPARABILITY

Foundational Communication

The FLC as part qualification has to be compared to international standards and qualifications that are firstly comparable in level. Thus standards and qualifications equivalent to NQF 1 and NQF 2 have been explored. Secondly, it has to be compared to standards and qualifications that relate to language of learning and teaching and workplace literacy in the case of the Foundational Communications. The added complexity of whether the LOLT and workplace language of literacy is home language or additional language also has to be considered. Thirdly, it has to be compared with Communications standards and qualifications that are designed to be used for the purpose of enhancing training and effective functioning in trades and occupations. Whilst many examples of comparable Communications standards can be found, when looking for ones designed specifically to be linked with trade and occupation training one finds they are often found as options in a group of standards, with users being able to select them if this fits their need. By example **Australia** has variations of courses for General Education for Adults (equivalent to SA NQF level 1), where the following standards can be selected to make up the 'core' language component of qualifications that are indeed more generic than occupationally directed. Starting with the initial certificate for General Education and Training for Adults:

- VBQU107: Engage with short simple texts for learning purposes.
- VBQU108: Engage with short simple texts for employment purposes.
- VBQU111: Create short simple texts for learning purposes.
- VBQU112: Create short simple texts for employment purposes.

The progression from the above through Certificates I, II and III sees the same options available, i.e. reading and writing texts for learning purposes and employment purposes, but with the complexity of texts increasing.

These are:

- VBQU120: Engage with simple texts for learning purposes.
- VBQU121: Engage with simple texts for employment purposes.
- VBQU124: Create simple texts for learning purposes.
- VBQU125: Create simple texts for employment purposes.
- VBQU233: Engage with texts of limited complexity for learning purposes.
- VBQU234: Engage with texts of limited complexity for employment purposes.
- VBQU237: Create texts of limited complexity for learning purposes.
- TDTE497B: Prepare workplace documents.
- VBQU245: Engage with texts of some complexity for learning purposes.
- VBQU246: Engage with texts of some complexity for employment purposes.
- VBQU249: Create texts of some complexity for learning purposes.
- VBQU250: Create texts of some complexity for employment purposes.
- VBQU257: Engage with a range of complex texts for learning purposes.
- VBQU258: Engage with a range of complex texts for employment purposes.
- VBQU262: Create a range of complex texts for learning purposes.
- PSPGOV323A: Compose workplace documents.

Given that the FLC Communications has been constructed by developing outcomes that cross over the clear boundaries of NQF levels 1 and 2, one would find different outcomes comparable to outcomes that spread across the Australian standards listed above. It is worth noting in support of Communication standards for people training in trades and occupations that the research titled Australian Apprenticeship for the 21st Century has as a recommendation that the state education system needs to 'provide additional support for apprentices and trainees ... having poor language, literacy and numeracy skills' (Australian Apprenticeship Reform Report, 2011). This supports the objective of the FLC.

In the **United Kingdom** the Qualification Council Authority (QCA) works with the sector skills councils to ensure that entry level vocational qualifications provide a useful introduction to relevant working practices. Entry level certificates include curriculum subjects such as English and mathematics and at a basic level adult literacy and numeracy. The Certificates are made up of units and learners can achieve these separately, until the full certificate is achieved. What is of relevance to the FLC is that in the UK the purpose for achieving these certificates is more vocationally focused at present than Australia and South Africa. Thus the link between English and mathematics curriculum subjects and vocational programmes is stronger.

In **Finland** the Initial VET (vocational certificate) is equivalent to upper secondary and links strongly with their Adult Education system. There is a noticeable emphasis on vocational training and preparing people for the workplace. 40% of the adult education budget is spent on vocational training and apprenticeships. Notably the vocational qualification includes 'general studies supplementing vocational competence (mother tongue, second national language, a foreign language, mathematics ...' (www.minedu.fin, the Finish Ministry of Education and Culture's website).

(Australia, the UK and Finland offer best practice models of adult learning programmes which are relevant to the adult learner and have been designed to meet specific needs. In addition, these countries also have a high rate of immigrants and also need to offer basic adult education to enable such learners to upgrade and further their learning).

When looking at International Comparability in this case it is not only finding comparability in terms of standards and qualifications that is important, but also comparability and support for the notion of an FLC as part qualification of occupation and trade qualifications. The value of the FLC in this regard is supported by:

- The Secretary's Commission on Achieving Necessary Skills (SCANS) Report, which, although commissioned in 1990 in the USA, looked at how prepared students were to enter and cope in the workforce in the 21st Century. The ability to communicate effectively and gather information were identified as high priority workplace needs. The report emphasised English and Mathematics as two of the five core competencies needed for successful operation in the workplace. The research found the basic skills of reading, writing, arithmetic and mathematics, speaking, and listening, and thinking skills as being two of the three foundational competences required, supporting the purpose and rationale of the FLC.
- International Adult Literacy Survey (IALS)
  The use of large scale admissions tests such as SATS or GMAT, IELTS or TOEFL has been widespread internationally '… because it is believed that they will yield information about applicants' abilities to cope with the typical reading, writing and thinking demands they will likely face in Higher Education or that they will indicate the extent to which applicants will be able to cope with the language demands placed upon them in a particular medium-of-instruction.' (Cliff 2007:1 – 2).

International comparability and best practice examples of the use of an assessment system based on Multiple Choice Questions (MCQs) can also be found. Besides the well known American SATS system, further support for this has been captured in research conducted locally with a specific view on the Communications component of the FLC (King, M.A., MerSeta Research Report FC Assessment Model, 2010).

Foundational Mathematical Literacy

SCANS[1]

Foundational Mathematical Literacy was informed in part by the table[2] produced by SCANS of the 'empirical mathematics' that individuals can be expected to perform in each of the different roles. The table is organised according to the problem domains: planning; systems and processes; interpersonal; information; and technology. The table is further organised according to the needs of a worker, consumer, citizen and personal needs.

[1] Secretary of Labour's Commission on Achieving Necessary Skills (SCANS) in the US

[2] Empirical mathematical problems listed according to the five SCANS competencies
Packer, in Madison and Steen, 2003, p.39-41

USA – Steen: Reaching for Quantitative Literacy[3]

Foundational Mathematical Literacy was further informed by Steen's findings on the need for quantitative literacy, in which he outlines that the dilemma we face today is to reconcile society's demands for quantitative literacy (or numeracy) with mathematicians' desires for enhanced mathematics education. Although numeracy and mathematics are clearly related, they are also quite different. The contrast is especially striking when one compares mathematics found in school to mathematics found in the world of work (Forman & Steen, 1999):

- Mathematics in the workplace makes sophisticated use of elementary mathematics (not elementary use of sophisticated mathematics).
- Numbers in the workplace are embedded in context, used with appropriate units of measurement, and supported by computer graphics.
- Work-related mathematics is rich in data, interspersed with conjecture, dependent on technology, and tied to useful applications.
- Work contexts often require multi-step solutions to open-ended problems, require a high degree of accuracy, and proper regard for required tolerances.
- Numbers are used not just to represent quantities, but also to calculate tolerances and limit errors.
- Algebra is used not so much to solve equations as to represent complex relationships in symbolic form.
- Geometry is used not so much to prove results as for modelling and measuring, primarily in three dimensions.

Steen provides examples of some professions and careers that have not heretofore been viewed as heavy users of mathematical tools but which are becoming increasingly dependent on quantitative literacy:

- Lawyers rely on careful logic to build their cases and on subtle arguments about probability to establish or refute 'reasonable doubt.'
- Doctors need both understanding of statistical evidence and the ability to explain risks with sufficient clarity to develop 'informed consent.'
- Farmers now use earth mapping data from satellites and information from ground probes to construct computer models to optimise timing of crops and use of fertiliser and herbicides.
- Journalists need a sophisticated understanding of quantitative issues (especially of risks, rates, samples, surveys, and statistical evidence) in order to develop an informed and skeptical understanding of the news that they report.
- Architects use geometry and computer graphics for design, statistics and probability to model usage, and calculus to understand engineering principles.
- Machinists use computer numerically controlled (CNC) tools to shape precision parts for everything from sewing machines to aircraft.

Steen shows that these examples of quantitatively demanding jobs can be found in every sector of the economy, from chefs to secretaries, from office managers to telephone repair personnel. Increasingly, a person's quantitative skills make the difference between being hired or not, and between success or failure on the job. In today's job market, demand for numeracy far exceeds supply.

[3] Summary of plenary address delivered at the sixth AMESA (The Association for Mathematics Education of South Africa) Congress in Bloemfontein 3 till 7 July 2000.

In addition to their use at work, quantitative habits of mind are equally helpful in daily life, especially in managing household budgets. These days, such work requires far more than elementary school arithmetic:

- Comparing credit card offers with different interest rates for different periods of time.
- Understanding the investment benefits of diversification and income averaging.
- Calculating income tax and understanding tax implications of financial decisions.
- Estimating long-term costs of making lower monthly credit card payments.
- Interpreting medical statistics and formulating relevant questions about different options for treatment in relation to known risks and the specifics of one's own condition.

Steen shows that mathematics is embedded at work, almost unnoticed, virtually everywhere one looks:

- Looking for patterns in data to identify trends in costs, sales, and demand.
- Determining the break-even point for manufacturing and sale of a new product.
- Reviewing the budget of a small non-profit corporation and understanding relevant trends.
- Producing a schedule or tree diagram for a complicated project.
- Looking up, interpreting, and using work-related formulas.
- Using spreadsheets to model different sales options and preparing graphs that illustrate these options.
- Maintaining and using quality control charts.
- Optimising networks to discover efficient ways to plan work processes.
- Understanding the value of statistical quality control and statistical process control.

Then Steen shows the benefits to citizens (and through them, to society) of quantitative literacy:

- Understanding that unusual events (such as cancer clusters) can easily occur by chance alone.
- Understanding quantitative arguments made in newspapers or voter information pamphlets (e.g., about school budgets or tax proposals).
- Understanding the difference between rates and changes in rates, for example, a decline in prices as compared to a decline in the rate of growth of prices.
- Understanding how small samples can accurately predict public opinion, how sampling errors can limit reliability, and how sampling bias can influence results.
- Understanding how apparent bias in hiring or promotion may be an artefact of how data are aggregated.
- Understanding that mathematics is a deductive discipline in which conclusions are true only if assumptions are satisfied.
- Understanding the role mathematics played in the scientific revolution and the roles it continues to play today.
- Understanding the difference between deductive, scientific, and statistical inference.
- Understanding how the history of mathematics relates to the development of culture and society.

Foundational Mathematical Literacy was informed by and compares favourably with the guideline offered by Steen on the following areas of need:

About numbers and measurement:

- *Measurement*. Direct and indirect measurement. Use of appropriate instruments (rulers, tapes, micrometers, pacing, electronic gauges, plumb lines). Squaring corners and constructions. Estimating tolerances; detecting and correcting misalignments.
- *Calculation*. Strategies for checking reasonableness and accuracy. Significant digits; interval arithmetic; errors and tolerances. Spreadsheet methods for handling problems with lots of data.
- *Mental Estimation*. Estimating orders of magnitude. Quick approximations of total costs, distances, times. Proportional reasoning. Mental checking of calculator and computer results.
- *Numbers*. Scientific notation; units and conversions. Intuitive comprehension of extreme numbers (lottery chances, astronomical distance). Decimal, binary, octal, and hex coding; ASCII code; check digits.
- *Index Numbers*. Creation of stock market averages; consumer price index; gross national product; unemployment rates. Definitions and deficiencies; uses and abuses.

About space and geometry:

- *Dimensions*. Geometric dimension (linear, square, and cubic) vs. coordinate dimensions in multivariable phenomena. Proper vs. improper analogies. Discrete vs. continuous dimensions.
- *Dimensional Scaling*. Relation of linear, area, and volume measures under proportional scaling; fractal dimensions.
- *Spatial Geometry*. Shapes in space; interpreting construction diagrams. Calculating angles in three-dimensions (e.g., meeting of roof trusses); building three-dimensional objects and drawing two-dimensional diagrams.
- *Global Positioning*: Map projections, latitude and longitude, global positioning systems (GPS); local, regional, and global coordinate systems.

About data and risk:

- *Financial Mathematics*. Loans, annuities, insurance. Personal finance; nonlinear impact of changes in interest rates. Investment instruments (stocks, mortgages, bonds).
- *Data Analysis*. Visual displays of data (pie charts, scatter plots, bar graphs, box and whisker charts). Quality control charts. Recognising and dealing with outliers.
- *Risk Analysis*. Estimates of common risks (e.g., accidents, diseases, causes of death, lotteries). Confounding factors. Communicating and interpreting risk.
- *Probability*. Chance and randomness; hot streaks; bias paradoxes.

About planning and modeling:

- *Planning*. Allocating resources; preparing budgets; determining fair division; negotiating differences; scheduling processes, decision trees; systems thinking.
- *Growth and Variation*. Linear, exponential, quadratic, harmonic, and normal curve patterns. Examples of situations that fit these patterns (bacterial growth, length of day) and of those that do not (e.g., height vs. weight; income distribution).
- *Mathematical Modeling*. Abstracting from real-world situations; reasoning within mathematical models; testing results for suitability and accuracy; revision and repetition of modeling cycle.
- *Information Systems*. Collecting and organising data; geographic information systems (GIS) and management information systems (MIS); visual representation of data.
- *Scientific Modeling*. Common mathematical models such as acceleration, astronomical geometry, electrical current, genetic coding, harmonic motion, heredity, stoichiometry.
- *Technological Tools*. Facility with scientific and graphing calculators, spreadsheets, statistical packages, presentation software, and Internet resources. Experience converting data from one form and system to another.

About reasoning and inference:

- *Statistical Inference*. Rationale for random samples; double blind experiments; surveys and polls; confidence intervals. Causality vs. correlation.
- *Scientific Inference*. Gathering data; detecting patterns, making conjectures; testing conjectures; drawing inferences. Verifying vs. falsifying theories.
- *Verification*. Levels of convincing argument. Legal reasoning ('beyond reasonable doubt' vs. 'preponderance of evidence'). Informal inference (suspicion, experience, likelihood). Logical deduction.
- *Mathematical Inference*. Assumptions, conclusions, and counterexamples. Axiomatic systems; logical deduction; theorems and proofs. Mathematical 'induction'.

Foundational Mathematical Literacy was also informed by a variety of other international theorists as follows:

Forman and Steen[4]

Industry Needs

Employees in business and industry need employees to:

- recognise and use core concepts of elementary school mathematics such as ratio, proportion, and percentage
- understand certain advanced topics such as statistical inference, data analysis, and process control

[4] Adapted from "Beyond Eighth Grade: Report of a Workshop on Mathematical and Occupational Skill Standards", Susan L. Forman, Lynn Arthur Steen

What Mathematics is Essential?

The fundamental need is the ability to:

- understand the value of quantitative information,
- conceptualise problems, and
- organise and interpret data in useful ways
  i.e., data analysis, advanced arithmetic, risk analysis (probability and statistics), and financial mathematics.

At work:

- numbers are used for measurement and are always accompanied by both uncertainties and units,
- many tasks involve considerable complexity but very little advanced mathematics,
- tasks involve many complex facets simultaneously,
- envisions statistics are envisioned in terms of quality control and management decisions.

Ewell[5]

Critical aspects of functional citizenship require facility in:

- interpreting graphic representations of data,
- understanding basic notions of statistical confidence, and
- being able quickly to recognise inappropriate uses of data to support a public policy position constitute.

Shroll[6]

Business wants new employees who can do mathematics accurately, within benchmark time periods, and frequently with the use of a calculator.

In the world of work *problem solving* means dealing with real, unpredictable, and unorganised situations where the first task is to organise the information and only then calculate to find an answer.

In the world of work, organising the information is the most important aspect. The mechanical calculations are now often done with computers or calculators or electronic cash registers.

The use of charts, graphs, maps, etc., are absolutely essential in the world of work and therefore should be essential in the world of education. Charts, graphs, diagrams, etc., are the evolving language of business, made necessary because of the significant problems associated with communication based only on words, written or oral. The ideal situation is when someone has the ability to communicate in many different ways including charts, graphs, words, symbols, and more.

[5] *Numeracy, Mathematics, and General Education, Peter T. Ewell, National Center for Higher Education Management Systems*
[6] *C.J. Shroll; National Coalition for Advanced Manufacturing.*

Stage[7]

As a **consumer**, the core would include number sense, estimation ability (to recognise when a scanner is broken, or that something was entered twice, or with a misplaced decimal), and the ability to figure out personal finances such as whether it's worth taking out a loan to pay off your credit cards. To stay healthy, consumers also need to be able to read and interpret nutritional labels, and to figure out what information is relevant for one's own diet and health choices.

As an **employee**, apart from job-specific skills, there's an increasing need to be able to develop spreadsheet models and 'what if' manipulations, as well as an ability to decipher quantitative information, interpret it, and communicate it to others in forms (e.g., graphs, charts, tables, formulas) that make sense in context.

The core includes mainly arithmetic and middle school concepts, emphasising a facility with estimation, manipulation using technology, or mental arithmetic, all of it in context, all of it sense-making.

ARTICULATION OPTIONS

This part qualification, by definition, articulates directly with all occupational and trade qualifications at NQF levels 3 and 4, as well as with those occupational and trade qualifications at NQF level 2 that specify Foundational Learning as a requirement. Any stipulations regarding the LOLT and the language of occupational assessment (e.g. trade tests) for the Foundational Communication component of the Part Qualification must be made in the relevant occupational qualification.

The development process for occupational qualifications at NQF Levels 2, 3 and 4 needs to be closely linked to an understanding of the *Foundational Learning Competence Part Qualification* as the platform of generic competence in language and mathematical literacy. Occupational qualifications can then specify any further requirements for their sector or needs (e.g. additional mathematics in engineering qualifications; or specialised vocabulary in financial services sectors or legal environments).

ACCREDITATION REQUIREMENTS

Providers will need to meet the QCTO's requirements for institutional accreditation as a provider, with particular emphasis on the need to demonstrate the expertise of facilitators as revealed by the achievement of the Foundational Learning Facilitator Certificate or equivalent.

Providers of Foundational Learning programmes will need to meet a number of challenges. They will need to identify gaps in the knowledge and skills of individual learners so that they can help them meet the requirements of the Foundational Learning Competence Frameworks. Facilitators will need to adapt learning materials and create individualised learning activities. These challenges will require them to be confident with their learning area and to possess a high level of facilitation skills in an adult learning context.

[7] *Elizabeth Stage; The New Standards Project, University of California*

Providers who wish to be accredited to deliver Foundational Learning must meet the following criteria:

- All requirements for **institutional accreditation** as set out by the QCTO.
- **Human resources**: Suitably qualified educators must be available to deliver Foundational Learning for either or both components, depending on the provider's accreditation status.

This means that all three of the following criteria must be met:

Subject matter expertise in the relevant component of the Part Qualification	Competence in either First Language or First Additional Language (in the LOLT for which the provider is accredited) at NQF 4 (or equivalent).
	Competence in either Mathematical Literacy or Mathematics at NQF 4 (or equivalent).
Experience in facilitating the relevant subject component of the Part Qualification	Minimum of one year's experience in facilitating in the relevant learning area at ABET Level 3/Grade 7 or equivalent or above.
Teaching/Facilitation/Training qualification or certification	A minimum of six month's formal training above NQF Level 4 in facilitation skills, in a teacher training or workplace training context. This includes ABET practitioner training.

Evidence requirements for proof of competence (or opportunities for top up or for demonstration of competence) in any of these areas is specified by the QCTO.

The broad competencies required from facilitators are as follows:

(i)	Full understanding of all the subject matter components addressed in the Foundational Learning Competence Curriculum Frameworks.
(ii)	The ability to interpret the curriculum framework for the purposes of designing delivery plans and specific learning sessions and learning activities.
(iii)	The ability to source, adapt and use learning resources and learning activities that are appropriate to the learners and at a level that matches the learners' needs and the level of the curriculum framework.
(iv)	Understanding of and the ability to apply a range of activity-based, facilitative methodologies appropriate to an adult learning environment and the learning area, including problem-solving, inquiry, discovery, collaboration, interaction and self-discovery.
(v)	Understanding of and the ability to apply adult learning principles in general and appropriate theories of learning related to communication and/or mathematical literacy.
(vi)	The ability to apply and adapt formative assessment instruments to monitor the progress of learners, followed by appropriate actions to address the results of formative assessments.
(vii)	The ability to manage the learning environment, learning resources, learners and learning administration.
(viii)	The ability to participate in and apply summative assessment instruments and processes.
(ix)	An understanding of the context of occupationally-based education and training, and the role of Foundational Learning within the context of occupational awards that fall under the QCTO.

- **Learning resources**: Learning programmes and materials that meet the demands of the Foundational Learning Competence Curriculum Frameworks.
- **External assessment agreements**: agreement with an assessment centre recognised by the Assessment Quality Partner for Foundational Learning to provide external assessment opportunities (or recognition as such a centre in own right).

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The assessment model for Foundational Learning is in accordance with the QCTO model of Assessment Quality Partners (AQP). An AQP will be registered by the QCTO on the basis that the AQP meets the QCTO's general requirements for registration as an AQP, as well as the ability to meet the particular requirements of assessing Foundational Learning as outlined in the external assessment requirements above.