Numeracy Across Learning

This professional learning resource supports staff to develop knowledge and understanding about progression and standards in numeracy across the curriculum.
Numeracy across Learning:
Professional Learning Resource

Introduction

All areas of the curriculum can provide an engaging and motivating context for developing and applying numeracy skills. Focusing on numeracy in a range of contexts can give learners the opportunity to:

- interpret numerical information appropriately and use it to draw conclusions, assess risk, make reasoned evaluations and informed decisions
- apply numeracy skills and understanding creatively and logically to solve problems, within a variety of practical activities
- apply mental agility skills through the development of efficient mental strategies.

This resource supports staff to develop knowledge and understanding about progression and standards in numeracy across the curriculum. It helps to ensure that numeracy is at an appropriate level for learners, promotes challenge and cross curricular links and illustrates how staff can make connections in their planning through exploring clear and relevant links across the curriculum. In particular this may be a model for further developments in learning and teaching across interdisciplinary areas of the curriculum such as STEM.

The purpose of this resource is to outline a process which staff can use to plan for and support progression in numeracy across learning. This process provides a way in which staff can take an in depth look at the progression of individual numeracy organisers through professional dialogue and completing practical tasks.

In selecting the most relevant numeracy experiences and outcomes for each curricular area, staff can ensure that:

- both the numeracy and curricular outcomes provide sufficient challenge for all learners
- further aspects of numeracy are identified which should be included to provide opportunities for learning
- specific professional development needs for staff are identified and supported

Collaborative planning for progression in numeracy through development of a unit of work/focus will support better understanding of the importance of numeracy across learning.

In taking this forward staff may be able to improve attainment and achievement in both numeracy and other curricular areas.
Using this resource

This resource is designed to be used by individuals, in departments or as a school/centre, in primary, early years and secondary sectors or as a learning community. All staff should have a good understanding of progression in numeracy from early level across the broad general education. This knowledge and understanding is important when planning learning and identifying next steps or gaps in learning, where prior learning needs to be built upon and reinforced before progress can be made.

- In early learning and childcare centres (ELCC’s), staff can work together looking at progression in numeracy across early level. This provides an overview which can be looked at in more depth by staff at different stages. Next steps for development should then be able to be identified, planned for and time limited actions agreed.

- In primary schools, all staff may initially work together looking at progression in numeracy across all levels. This would provide an overview which can be looked at in more depth by staff at different stages. Next steps for development should then be able to be identified, planned for and time limited actions agreed.

- In secondary schools, staff may initially work in subject departments to look at the progression through each of the numeracy organisers. Opportunities should arise for professional dialogue across curricular teams, with a view to developing interdisciplinary learning experiences where the progression of numeracy is a common theme.

- Staff could individually look at the progression through the numeracy organisers, evaluating their own planning and teaching approaches, as part of their career long professional learning.
Raising the profile of numeracy in establishments and communities

In ELCC’s, primary and secondary schools, a consistent whole school approach to the progression of numeracy across learning is important. Raising awareness with learners and parents of when, where and how numeracy is delivered will ensure that this is given a high profile.

A whole school overview should include:

- systematic gathering and recording information on the delivery of the numeracy experiences and outcomes across the curriculum, which should be regularly revisited and updated
- gathering evidence of learners’ achievements in numeracy
- accessible attainment information (e.g. stored and regularly updated in an electronic shared area)

Possible developments and activities could include:

- common language and methodology booklet and classroom posters to support learners, staff and parents
- use of ‘numeracy’ logs to identify numeracy in planning documents, learning intentions and success criteria etc. This would help learners to identify when they meet these across the curriculum
- regular high profile numeracy activities in school, such as numeracy tasks on a weekly basis in tutor time (secondary) which are peer marked, discussed and recorded, or a challenge of the week in primary.
- cluster partnerships to support progression of numeracy across transitions, through planning and moderation activities
- the establishment of a numeracy Coordinator or Committee made up of staff, learners, parents and local community partners
- identifying examples of numeracy around the school. These could be suggested by teaching and non-teaching staff or by the learners themselves
- learners contributing to school newsletters or websites with information about numeracy
- assemblies to celebrate numeracy achievements
- use of IDL to specifically target and support learners with regards to their numeracy, refer to CfE: Briefing paper 4 – Interdisciplinary Learning
### Scottish Survey of Literacy and Numeracy (SSLN)

The Scottish Survey of Literacy and Numeracy (SSLN) is an annual sample-based survey that monitors national performance in literacy and numeracy, in alternate years, at P4, P7 and S2. The survey also provides valuable information to help bring about improvements in learning, teaching and assessment within the classroom.

**Professional learning resources** have been produced using in-depth analysis of children and young people’s responses to tasks in the SSLN survey.

<table>
<thead>
<tr>
<th>Description</th>
<th>Resource Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example of exemplification</td>
<td>This professional learning resource supports exemplification of individual skills, however, they should not be developed in isolation. Practitioners should ensure that these skills are applied across a range of contexts.</td>
</tr>
<tr>
<td>Guidance and advice on number and number processes</td>
<td>This professional learning resource provides guidance and advice to help inform learning and teaching in number and number processes.</td>
</tr>
<tr>
<td>Further detail on strengths and areas for improvement in measurement, fractions, decimal fractions and percentages</td>
<td>This professional learning resource provides both an overview and further detail on children and young people’s strengths and areas for improvement in numeracy within measurement, and fractions, decimal fractions and percentages (including ratio and proportion and ideas of chance and uncertainty).</td>
</tr>
<tr>
<td>In-depth analysis of children and young people’s responses to tasks</td>
<td>This professional learning resource is based on an in-depth analysis of children and young people’s responses to tasks in the SSLN survey. It provides further detail on children and young people’s strengths and areas for improvement in numeracy within estimation and rounding.</td>
</tr>
<tr>
<td>Performance in time</td>
<td>This professional resource aims to share with practitioners children’s and young people’s performance in time.</td>
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Activity One: Progression in Numeracy across Learning (Early Years)

**Purpose:**
To ensure numeracy across learning is evident across the nursery setting/playroom with opportunities for appropriate support and challenge to ensure progression.

**Instructions:**
This activity is best completed with colleagues as it requires professional dialogue.

You will need access to the Numeracy Experiences and Outcomes.
It may be helpful to refer to the Numeracy Principles and Practice Paper
It may be helpful to refer to Assessing progress and achievement in Numeracy and Mathematics

1. Choose one of the pathways from the National Numeracy Progression Framework

2. Use the **key milestones cards and key building blocks** cards from this pathway. Identify the key milestones which are most appropriate to early years and match the associated building blocks to the milestones. Put these milestones in order of progression.

**NOTE:** This is not necessarily a linear progression with one milestone per level. It is also important to look at milestones beyond what is explored in the early years in order to become familiar with next steps for learning.

**Reflective questions:**

- Identify the different learning areas in your early years setting. In what ways do you provide opportunities to develop and extend early numeracy skills across these areas?

- How do you provide for and ensure sufficient challenge within numeracy to learners across the different areas in your setting?

- How do you record progression of learners within your setting? Are the learners, other staff and parents involved in this? Are next steps clearly stated and shared?
Activity Two: Progression in Numeracy

**Purpose:**
To identify the key milestones and building blocks in progression across the broad general education—from early to fourth level.

**Instructions:**
This activity is best completed with colleagues as it requires professional dialogue.

You will need access to the Numeracy Experiences and Outcomes. It may be helpful to refer to the Numeracy Principles and Practice Paper. It may be helpful to refer to Assessing progress and achievement in Numeracy and Mathematics.

1. Choose one of the numeracy pathways from the National Numeracy Progression Framework.
2. Use the key milestones cards and key building blocks cards from this organiser and place them in order of progression and match building blocks to milestones from early to fourth levels.

   **NOTE:** This is not necessarily a linear progression with one milestone per level.

3. Discuss the National Numeracy Progression Framework.

**Reflective questions:**

- How do your planning procedures ensure that a variety of teaching and learning approaches are used to meet the needs of all pupils?
- How do your planning procedures ensure that learning experiences have been revisited in order to deepen them?
Activity Three: Progression in Numeracy across Learning

**Purpose:**
To ensure the level of numeracy matches that of the other curricular area. This should support progression within both curricular areas.

**Instructions:**
Use the key milestones progressions that you completed in activity two.

You may want to refer to the Numeracy Experiences and Outcomes. You may want to refer to the Assessing progress and achievement professional learning resource.

1. Consider the content and level of the numeracy experiences and outcomes you support/teach when delivering numeracy across learning.

**Reflective questions:**
- Are these numeracy experiences and outcomes at an appropriate level to achieve progression across learning?
- Do learners have gaps or misconceptions in specific aspects of numeracy?
- Consider your next steps to address any issues you have identified.
Activity Four: Progression in Numeracy across Learning

**Purpose:**

To ensure a unit of work/focus provides progression of numeracy across learning.

**Instructions:**

Consider your next steps from activity three. What needs to happen to ensure progression? How are you going to incorporate this into planning?

1. Select an existing unit of work/focus.

2. Identify the **numeracy experiences and outcomes**, including their level, which are relevant to this unit of work/focus.

3. Are they clearly referenced within the unit, to support planning for learning, teaching and assessment?

4. Ensure this unit of work/focus reflects the numeracy experiences and outcomes and the progression for both numeracy and the chosen curricular area.

**Reflective questions:**

- Does your unit of work/focus ensure that there is progression in both numeracy and the curricular area?

- Does your unit of work/focus ensure that all relevant numeracy outcomes are included and referenced in your planning?

- Does your unit of work/focus include information on how evidence of progression in numeracy will be gathered?