# Numeracy in Action

## Curriculum and Resources to Understand and Use Numbers

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COMMUNITY LITERACY
OF ONTARIO

# Acknowledgements

# Introduction

## Project Overview

Community Literacy of Ontario was funded by the Ontario Ministry of Training, Colleges and Universities in April 2014 to research and write Ontario Adult Literacy Curriculum Framework (OALCF) competency-based learning curricula for the "Understand and Use Numbers" competency. These curricula relate directly to the four task groups: Manage Money, Manage Time, Use Measures and Manage Data. As an addendum to the curricula, a list of numeracy resources and materials that may be useful in LBS agencies to support instruction for learners requiring additional skills development has also been included.

## Process

The project work was carried out through the following activities:

- Review of OALCF documents from Employment Ontario, Ministry of Training, Colleges and Universities (see the Ontario Adult Literacy Curriculum Framework website at www.tcu.gov.on.ca/eng/eopg/programs/lbs_oalcf_overview.html

- The consistently positive feedback from CLO's "Moving Forward: Curricula for Learners on the Independence Goal Path" supports the decision to continue the approach used in that resource for the development of the "Understand and Use Numbers Curriculum". Practitioners particularly liked the links between the curriculum's activities and the task level indicators. To reference the Moving Forward Curriculum, you can access the document on CLO's website at: www.communityliteracyofontario.ca/wp/wp-content/uploads/2013/08/Moving_Forward_HI_RES_01.pdf

- To ensure appropriate content for the curricula, in-depth key informant interviews with more than 20 Ontario Anglophone literacy practitioners were conducted. These interviews were used to define the most significant needs and wants, relative to a new curriculum for the "Understand and Use Numbers" competency. Topics surveyed included goal paths, task groups, tasks, numeracy levels, general organization and types of content for inclusion. Suggestions for valuable learning resources were also sought during the interviews.

- As well as interviewing, extensive research was done to see how task-based, adult numeracy instruction was being handled in other constituencies. The research also explored national and international curricula, resources and materials for inclusion in the supplementary listing of numeracy resources.

- Two face-to-face focus groups were held to zero in on the topics for which the need for learning materials was greatest. Initial draft ideas were also discussed.

- The information gathered from all sources was balanced against the resources and parameters of the project to determine the various aspects that would go into the development and design of the curriculum and compendium.

- Review and piloting of each of the modules, by five of Ontario's Literacy and Basic Skills programs, provided valuable feedback on the initial drafts of the learning activities and practitioner instructions.

- An Advisory Group, with representation from the community-based, school board and college sectors, reviewed all the material for quality and appropriateness of content.

## Results of Research

Perhaps the most significant result of the research, gleaned through interviews, focus groups and online keyword searches, was the lack of task-based, goal-directed, learning materials for adult numeracy.

Other noteworthy research results that helped inform the curriculum development were:

- The key informants and focus groups represented a wide variety of literacy programs across Ontario, serving learners with very different needs and abilities. Some programs serve learners at only one level, while others serve all levels; yet all were looking for more resources. Therefore, this curriculum contains materials for a variety of competencies and at all three OALCF complexity levels.

- Many practitioners wanted to have low, level one activities included.

The practitioners wanted an activity chart with OALCF competency articulation to assist with activity selection. At the beginning of each module, there is an Activity Chart which includes the activity number and its starting page, along with the OALCF "Understand and Use Numbers" Indicator Codes (e.g., C1.1) and Task Group Overviews (e.g., Compare costs and make simple calculations) that may be used as the learner performs the task-based activity.

## How to Use this Curriculum

## Intended Audience

This curriculum was designed by Community Literacy of Ontario for use by practitioners, in a wide variety of programs, to assist learners who are working

at different levels;

on different goal paths;

with different learning styles; and

in different communities.

It is intended that practitioners, whether teachers, instructors or tutors, select activities that are suitable to the interests, goals, current abilities and learning needs of their learners. It is not envisioned as a workbook to be given to learners to work through on their own. Some of the activities are meant for individual learners to do with instructional support. Others are designed specifically for group activity. However, most are adaptable to alternate purposes.

Although this curriculum is articulated to the Ontario Adult Literacy Curriculum Framework (OALCF), this does not make it exclusive for use by Ontario's Literacy and Basic Skills (LBS) programs. The OALCF corresponds to the levels of the Essential Skills (Office of Literacy and Essential Skills, Employment and Social Development Canada www.esdc.gc.ca/eng/jobs/les/index.shtml) and the two International Adult Literacy Surveys (IALS and ALLS). For more information on the OALCF, refer to the competency chart on page 6.

We have occasionally suggested adaptations to modify an activity in order to meet your or the learners' specific needs. Practitioners are encouraged to tailor activities further, as they see fit. Community- or learner-specific content assists learners to see how task-based activities relate to their own lives. Practitioners are encouraged to adapt or expand the activities with personalized, local documents and other materials. Adaptations may change the level of the task or the integrated competencies and task groups. When making adaptations, practitioners should compare the activity to the applicable Task Descriptors in the Curriculum Framework (www.tcu.gov.on.ca/eng/eopg/publications/OALCF_Curriculum_Framework_Oct_11.pdf).

## Design

The curriculum contains four modules: Manage Money, Manage Time, Use Measures and Manage Data. Each module has:

1. A chart that lists each activity by number, its title, the page number it may be found on, and the task level indicators' OALCF codes that are the primary focus of the activity.

2. A set of information handouts that contain the background material related to that particular topic. The information in these handouts may be needed for the learners to complete the activities.

3. Learning Activities which will help learners to develop and practise math skills through mostly task-based, authentic activities. Within each learning activity, there are a number of sections:

   a. **Practitioner Notes** with information appropriate to the activity, such as instructions on how to carry out the activity; what materials and/or supplies are to be given to the learners; and who or how many should take part in the activity. Some practitioner notes contain possible modifications to adapt the activity to different learner needs. These are not exclusive adaptations and practitioners are encouraged to adapt any activity as they see fit.

   b. **Answers** to the activities.

   c. A **list of the Task Group Level Indicators** (with OALCF codes) with the applicable **Performance Descriptors** that *may be* practised or demonstrated by the learner(s) during the activity. This list has check boxes to *help* practitioners and learners understand learner progress. It is important to keep in mind the *overall performance* of the learners as they complete these and other task-based activities.

   Note:

   - Some performance descriptors for a task group level may not be listed if they are not applicable to the activity.

   - Task descriptors have not been included in the checklist but have been considered in the approximate levelling of the activity.

   - It is up to the practitioner to determine if a learner succeeds at, or requires further practising of, each Performance Descriptor or Task Group Level. The list of Task Group Level Indicators and Performance Descriptors is merely an example of what a learner *may* accomplish while doing the task-based activity.

   d. **Activity handouts** (if applicable) for the learners. These are instructions the learner reads and follows and/or documents required to complete the activity.

## A Note about the Activities

The learning activities are not tests. There is no pass, fail or marking system applied. They were designed to provide learners with a task-based learning experience to practise literacy and numeracy tasks.

Within the curriculum, there are activities with tasks in all three difficulty levels of the OALCF (the first three levels of the Essential Skills).

The activities also include tasks related to a variety of competencies. "Competencies are not something that can be learned in isolation; rather, they are demonstrated in the performance of tasks and are most effectively developed in contexts with embedded meaning and purpose. Competencies are integrated, holistic and complex, and they include the knowledge, skills, attitudes and values needed to meet the demands of a task." (From: *Knowledge to Action* Chapter 2: Competencies, Alberta Education, 2012)

It is possible, if not probable, that learners may not have all the skills to perform all the pieces of an activity. Practitioners should consider the current skills of learners and provide assistance with any areas with which they may experience difficulty. For example, some activities require Internet use. You could assist the learner to access the Internet and find the information, then suggest the learner continue with the task-based activity. While you would not put check marks in the section on Use Digital Technology, the other performance descriptors may have been demonstrated.

## Choosing an Activity

### *For Individual Learners*

So, how would you go about choosing which activity a learner might try?

1. Find out in what areas the learner wishes to improve his or her "Understand and Use Numbers" skills: Manage Money, Manage Time, Use Measures or Manage Data. Go to the appropriate module.

2. Explore with the learner what specific tasks he or she might be finding difficult in that area. We assume you have already assessed the learner's skills, so you will know what levels could be improved. Considering these pieces of information, check the chart at the front of the module to locate possible activities.

3. Read the Practitioner Notes and any applicable Information Handouts and Learner Handouts to confirm that this is a suitable activity for the learner. Make any adaptations required.

4. Present the learner with the activity. Provide background information and instructions, as appropriate. Support the learner through the activity. Be careful not to assume the learner has sufficient background skills or abilities in other competencies to complete the task areas that you are not focusing on.

5. Assess the learner's performance. Talk to the learner about the activity. Ask them what was easy and what was difficult. Set new objectives and consider further learning options.

### *For Groups of Learners*

In an ideal world, we could work one-on-one with every learner and provide learning activities that were just for that individual. However, many of us work with groups of learners, teaching and adapting activities to many different levels of ability.

Many of the activities in this curriculum are intended for, or adaptable to, pairs or groups. You may also adapt various activities to provide supports to learners with lower-level skills, so that they may work alongside their peers.

### OALCF Curriculum Framework Chart – Competencies, Task Groups and Levels

| Competency | Task Group | Indicators | | |
| --- | --- | --- | --- | --- |
| | | **Level 1** | **Level 2** | **Level 3** |
| **A**<br>**Find and Use Information** | A1 Read continuous text | A1.1 Read brief texts to locate specific details | A1.2 Read texts to locate and connect ideas and information | A1.3 Read longer texts to connect, evaluate and integrate ideas and information |
| | A2 Interpret documents | A2.1 Interpret very simple documents to locate specific details | A2.2 Interpret simple documents to locate and connect information | A2.3 Interpret somewhat complex documents to connect, evaluate and integrate information |
| | A3 Extract info from films, broadcasts & presentations | Not applicable: Tasks in this task group are not rated for complexity | | |
| **B**<br>**Communicate Ideas and Information** | B1 Interact with others | B1.1 Participate in brief interactions to exchange information with one other person | B1.2 Initiate and maintain interactions with one or more persons to discuss, explain or exchange information and opinions | B1.3 Initiate and maintain lengthier interactions with one or more persons on a range of topics |
| | B2 Write continuous text | B2.1 Write brief texts to convey simple ideas and factual information | B2.2 Write texts to explain and describe information and ideas | B2.3 Write longer texts to present information, ideas and opinions |
| | B3 Complete and create documents | B3.1a Make straightforward entries to complete very simple documents<br>B3.1b Create very simple documents to display and organize a limited amount of information | B3.2a Use layout to determine where to make entries in simple documents<br>B3.2b Create simple documents to sort, display and organize information | B3.3a Decide what, where and how to enter information in somewhat complex documents<br>B3.3b Create more complex documents to sort, display and organize information |
| **C**<br>**Understand and Use Numbers** | C1 Manage Money | C1.1 Compare costs and make simple calculations | C1.2 Make low-level inferences to calculate costs and expenses that may include rates such as taxes and discounts | C1.3 Find, integrate and analyze numerical information to make multi-step calculations to compare cost options and prepare budgets |
| | C2 Manage Time | C2.1 Measure time and make simple comparisons and calculations | C2.2 Make low-level inferences to calculate using time | C2.3 Find, integrate and analyze numerical information to make multi-step calculations using time |
| | C3 Use measures | C3.1 Measure and make simple comparisons and calculations | C3.2 Use measures to make one-step calculations | C3.3 Use measures to make multi-step calculations; use specialized measuring tools |
| | C4 Manage Data | C4.1 Make simple comparisons and calculations | C4.2 Make low-level inferences to organize, make summary calculations and represent data | C4.3 Find, integrate and analyze data; identify trends in data |
| **D**<br>**Use Digital Technology** | n/a | D.1 Perform simple digital tasks according to a set procedure | D.2 Perform well-defined, multi-step digital tasks | D.3 Experiment and problem-solve to perform multi-step digital tasks |
| **E**<br>**Manage Learning** | n/a | E.1 Set short-term goals, begin to use limited learning strategies, and begin to monitor own learning | E.2 Set realistic short- and long-term goals, use a limited number of learning strategies, and monitor own learning | E.3 Set realistic short- and long-term goals, use a variety of learning strategies, and monitor and evaluate own learning |
| **F**<br>**Engage with others** | n/a | Not applicable: Tasks in this task group are not rated for complexity | | |

**Introduction**