PLANS, PLANS AND MORE PLANS: MAKING SENSE OF THE SECTIONS IN THE MATHEMATICAL LITERACY CAPS CURRICULUM THAT DEAL WITH PLANS AND MODELS

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TARGET AUDIENCE: FET Mathematical Literacy teachers (Grades 10 to 12)

DURATION: 2 hours

MAXIMUM NUMBER OF PARTICIPANTS: No limit

MOTIVATION

Many learners find working with plans difficult. And many teachers do not particularly enjoy having to build models with their learners and often argue that because the construction of a model cannot be assessed in an examination it is not necessary to complete this section or activity with learners.

In light of the above challenges, the aim of this workshop is three-fold:

- Firstly, to explore with participants different types of questioning that can be based on plans and possible ways in which to help learners to successfully engage with these types questioning.
- Secondly, to explore with participants particular methodologies for helping their learners to more successfully engage with plans as a form of a 2-dimensional representation of an object.
- Thirdly, to demonstrate to teachers the importance of model construction as a means for helping learners to translate from 2-dimensional to 3-dimensional space.

A key point presented in the workshop will be that for many learners it is only through the physical construction of a 3-dimensional model that they are able to visualise the object that has been represented on plans, and that this movement from 2-dimensional representation to a 3-dimensional physical object is a key movement in the development of the learners' 3-dimensional visualization and reasoning skills.

CONTENT

Please note that all resources and worksheets – including various floor and elevation plans – will be provided at the workshop. The plans are not included in these proceedings due to the scaled nature of the plans and the fact that inclusion of the plans in the proceedings will reduce the scaling factor and potential accuracy of the plans. The plans will be provided on A4 and/or A3 paper – which does not fit with the design dimensions of the proceeding book.

North, M. (2013). Plans, plans and more plans. Making sense of the sections in the Mathematical Literacy CAPS curriculum that deal with plans and models. In Z. Davis & S. Jaffer (Eds.), *Proceedings of the 19th Annual Congress of the Association for Mathematics Education of South Africa*, Vol. 2. (pp. 52– 53). Cape Town: AMESA.

The plans will also be accompanied by a PowerPoint presentation and worksheets that provide notes and questions relating to the topics of scales and plans.

Approximate time allocation	Activity
15 min	Discussion of a broad overview of the sections on Plans and Models in the curriculum Mathematical Literacy curriculum
50 min	Exploration and discussion of a set of floor and elevation plans and of the types of questioning that can be based on these plans.
40 min	Construction of a model of the object shown in the plan
15 min	Discussion and questions

ABSTRACT

Many learners find working with plans difficult; and many teachers do not particularly enjoy having to build models with their learners and often argue that since the construction of a model cannot be assessed in a written examination it is not necessary to complete this section or activity with learners. In this workshop participants will explore why it is important for learners to be able to interpret plans, the types of skills that are developed through exposure to plans, and the necessity of model construction for the development of the learners' skills in 3-dimensional visualisation and representation.

In engaging with these various issues, this workshop will engage participants in the sections in the *Mathematical Literacy* CAPS curriculum (*Grades 10 to 12*) that specify content relating to *Plans and Models*. Participants will work with a variety of different floor and elevation plans, and may even construct a small model of the building presented in the plans. Participants will be provided with the opportunity to engage with the different plans and with the different types of questions and problems that can be posed in relation to the plans. Discussion will also focus on possible methodologies for helping learners to engage more successfully with these sections of the curriculum and on possible options for sequencing and pacing. Participants will also explore how the construction of 3-dimensional models of objects shown in plans is essential for helping learners to develop the ability to translate from 2-dimensional to 3-dimensional space and for the development of 3-dimensioanl reasoning and visualisation skills.