



National Centre for STEM Education

Reflections on Adult Mathematics Education: A view from the sidelines

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Structure of presentation

- Introduction
- Personal worldview/mathematical lens
- Methodology
- SWOT analysis applied to AME in ALM
- Discussion
- Final remarks



Introduction

- Purpose
- Personal bias/framing perspective
- Universe of discourse/restricted
- Licence/Limitations



Introduction/Purpose

□ Purpose

- To offer personal reflections
- To make positive contribution
- Not a fault-finding exercise



Introduction/Personal bias

□ Personal bias/Framing perspective

- Personal worldview
- Mathematical education lens
- National priorities



Introduction/Universe of discourse

□ Universe of discourse/restricted

- Focus on AME as an area of professional practice within mathematics education and issues and questions that arise.
- AME not just numeracy



Introduction/Licence

❑ Licence/Limitations

- Focus on AME in ALM and not ALM
- Tools.



Personal worldview/General

A personal worldview is the way an individual thinks about or sees the world. It is a conceptual model of reality and includes a framework of ideas and attitudes about the world and life generally. It necessarily involves looking at the world from a specific standpoint. For example one might subscribe to a **problem-solving approach** and adopt this as a personal perspective on the real world.

Note: Personal worldview may change /evolve over time.



Personal worldview/Specific

My interpretation of the basic concerns of mathematics education is captured in considerations of all things related to the **Teaching** and **Learning** of **Mathematics** at all levels and **Communication**. This includes adults' mathematics education and numeracy (AME/Numeracy). The core of my professional activity can be described as mathematics teacher education. This also means that I have adopted a mainly **problem-solving approach** to issues in mathematics education.



Personal worldview/General

- Pragmatics approach rather than philosophical,
- Shaped by one's home discipline, personal beliefs and beliefs of significant others in the discipline such as research supervisors and other faculty (Creswell,2),
- Questions related to worldview include model of reality (**Ontology**), **explanations** (model of the past), focus on the future (**Prediction**), guiding values (**Theory of values**), plans of action (**Theory of actions**) and theory of knowledge held (**Epistemology**) (Creswell, 1).



Personal worldview/ Areas of personal professional activity

- Second level mathematics teaching,
- Further education (mathematics),
- Technician education (mathematics and physics/HE),
- Mathematics teacher education (pre-service, postgraduate, and out-of-field),
- Service mathematics teaching (undergraduate/HE),
- Mathematics Learner support (Higher Education),
- Access/bridging mathematics for adults,
- ALM,
- Mathematics education research.



Adults mathematics education (AME)

- Adults mathematics education is understood to be part of a continuum of lifelong learning and penetrates all sectors of the education system, and is based on a broad conception of mathematics and mathematics education (Coben et al, 2000).
- The domain includes: school mathematics; specialist mathematics and service mathematics in HE; vocational mathematics in FET; mathematics for everyday living and adult numeracy in adult basic education; and workplace mathematics.

- It is clear from this description that:

Adult numeracy ≠ Adults mathematics education

- There is more to AME than adult numeracy although it must be acknowledged that numeracy permeates all aspects of AME.

- AME is mainly a **practice-led enterprise** that cuts across virtually all education sectors including training.

ALM and Adult mathematics and numeracy

ALM aims to promote the advancement of education by supporting the establishment and development of an international research forum for adult mathematics and numeracy by:

- Encouraging research into adults learning mathematics at all levels and disseminating the results of this research for the public benefit.
- Promoting and sharing knowledge, awareness and understanding of adults learning mathematics at all levels, to encourage the development of the teaching of mathematics to adults at all levels, for the public benefit.



Methodology/SWOT Analysis

SWOT analysis is a useful management tool for understanding Strengths and Weaknesses in an organisation, and for identifying Opportunities open to you as an organisation and the Threats you face. Hence the acronym **SWOT** for Strengths, Weaknesses, Opportunities, and Threats.

It can be applied at macro level e.g. company or organisation; or at micro level to deal with departments, products or services; or at a personal level.



SWOT Analysis

- Focus on a core area/activity of ALM, not ALM as an organisation
- Uses questioning approach associated with templates but avoids fine-grained approach supported by very detailed templates
- One person analysis (usually by a department or larger unit)
- Might be construed as limitations.



SWOT/Strengths

- AME under the ALM umbrella is an established and recognised core area of activity that includes practice and research.
- The AME area is supported by an international community of practice that includes practitioners and practitioner/researchers that constitutes a collective of members who have generated major resources and substantial published research output.
- ALM has demonstrated a capacity to develop practice and research in AME, and through the efforts of individual members and collectively, has influenced policy formation and developments in AME/Numeracy at national and international level.
- The unique status of AME under the ALM umbrella and the attention it receives as a result from dedicated practitioners and scholars is a fundamental strength that makes ALM unique. ALM does AME/numeracy better than anyone else!



Swot/Weaknesses

- A narrow interpretation of AME,
- Little progress towards integrating Research and Practice in AME,
- Relatively little output in other areas of AME.
- Failure to fully exploit mathematics education research e.g. MKT, PCK etc.

Note:

It is clear that the characterisation of AME in the ALM community places relatively little emphasis on relevant areas such as Mathematics in Further Education/Vocational education, Bridging Mathematics, Access mathematics, Service mathematics, and Mathematics learner support. AME has a significant intersection with all these areas and more and records a small body of work in these areas but more attention is warranted from the ALM community.

SWOT/Opportunities

There are three interesting trends that can potentially offer opportunities for AME/ALM:

- The universal interest at policy level in numeracy and literacy,
- The widespread policy interest in Access/Retention in Higher Education (HE),
- Developments in ICT e.g. web and online learning,
- Mathematics education research – opportunities to advance AME.



SWOT/Threats

- Complacency
- Emphasis on service aspect of education
- AME outside the mainstream



Threats/Complacency

- ❑ ALM is in danger of becoming irrelevant despite its excellent track-record in AME/Numeracy to date because:
 - There are too few practitioner/researchers in ALM, and members generally,
 - AME has been interpreted too narrowly in the ALM agenda,
 - AME/Numeracy is not well recognised as a mainstream research area in its own right or as part of a bigger area e.g. education or mathematics education.



Threats/ Emphasis on service aspect of education

- ❑ While national policies still treat education as a *common good* it is fair to say that these same countries emphasise the *service* aspect of education in policy formulation and funding.
- Invariably, this has led to an employment-oriented, narrow skills approach that fails to do justice to the educational value of AME/Numeracy. Ultimately, AME/Numeracy will not be well served by a skills approach that sells AME and numeracy short.
- Any diminution of the *educational* value of AME/Numeracy for individuals is a threat to the very existence of AME/Numeracy and ALM.



Threats/AME outside mainstream

- ❑ The international education landscape in recent years has been greatly influenced by a country's performance in studies such as IALS, ALLS, PISA, PIAAC and TIMSS and these in turn have driven numeracy and literacy policy in many countries.
- One consequence of these developments is that the burden of delivery of numeracy is placed squarely on the school mathematics curriculum.
- Numeracy = school mathematics well taught?
- Such developments push AME/Numeracy further away from mainstream education where it is not prioritised leaving it under-resourced and dependent upon voluntary agencies and NGOs.
- Another issue caused by these studies is that there is a proliferation of constructs for numeracy that leaves potential for confusion at national/local level.
- One gets an uneasy feeling that such confusion is leading to a lack of discrimination between literacy and numeracy to the detriment of numeracy which will once again be subsumed under literacy.



Final remarks

- My reflections are coloured by my experiences in mathematics education. The focus is on AME as an area of professional practice within mathematics education and issues and questions that arise.
- The wider interpretation of AME presented here and the mathematical underpinnings of numeracy suggest Mathematics education as a natural home for such activity.
- I believe AME/Numeracy should be developed as a domain within a bigger discipline/area for the opportunities such a move offers e.g. continued viability, higher academic status, bigger pool of potential members, impact, and funding for research and other activities.
- This association retains all connections with cognate disciplines such as psychology, education, history, anthropology, language etc. and offers all the advantages mentioned earlier. It also pushes numeracy further out from under the literacy umbrella.
- Such a re-alignment positions ALM advantageously to contribute to and draw strength from a number of emerging areas that are directly implicated in AME/Numeracy e.g. mathematics teacher education, service mathematics, and mathematics learner support.





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End...

Thank you for your attention.

Comments/Questions?



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