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Numeracy-Meets: professional development and networking for adult numeracy practitioners

Mark Prendergast¹, Niamh O'Meara², Kathy O'Sullivan³ and Fiona Faulkner⁴

¹University College Cork, School of Education, Cork, Ireland; mark.prendergast@ucc.ie

²University of Limerick, EPI-STEM, School of Education, Limerick, Ireland; Niamh.omeara@ul.ie

³National University of Ireland Galway, School of Education, Galway, Ireland;
Kathy.osullivan@nuigalway.ie

⁴ Technological University Dublin, Dublin, Ireland; fiona.faulkner@tudublin.ie

Despite the clear and obvious need for adults to be proficient in numeracy, international studies suggest that many adults continue to struggle in this area. One of the main challenges continues to be the availability and quality of adult numeracy education. Research has highlighted an unmet demand for professional development in this area with many numeracy practitioners looking for opportunities to further develop their practice. Moreover, practitioners have expressed a desire for networking opportunities with colleagues to discuss and share their experiences. Thus, this research aims to establish a series of online 'Numeracy-Meets' for adult numeracy practitioners. These 'Meets' will be an organised but informal community of practice for practitioners to share pedagogy, practical innovations, and personal insights into teaching adult numeracy.

Keywords: Adult numeracy practitioners, needs analysis, professional development model.

Background to the Research

The development of a numerate society is an international and national priority in education. Governments, policymakers, and educators around the world have stated that numeracy is a capability that everyone needs to possess to meet the demands of everyday life (United Nations Sustainable Development Goals [UNSDG], <https://sdgs.un.org/2030agenda>). Numeracy skills are critically important for the adult population to allow individuals to meaningfully engage in society; to earn a good wage; and to protect their physical and mental wellbeing (Carpentieri, Litster, & Frumkin, 2010; Parsons & Bynner, 2005). Research shows that adults with higher competency in literacy, numeracy and problem solving in today's world tend to have better outcomes in attaining a job than their less-proficient peers (OECD, 2019). On the other hand, low numeracy levels amongst adults can contribute to intergenerational cycles of inequality and disadvantage in families (Carpentieri et al., 2013). For example, research has shown that adults who struggle with numeracy are more likely than others to have lower incomes, have trouble finding employment, and suffer from poorer physical and mental health (Carpentieri et al., 2010; Parsons & Bynner, 2005).

Thus, despite the clear and obvious need for adults to be proficient in numeracy, international studies suggest that many adults struggle in this area. In the UK, a study conducted by National Numeracy (2019) found that 56% of adults displayed numeracy skills which were the equivalent of that expected of a primary school child, while only a quarter of the adult population displayed levels of proficiency in the area of numeracy at or above the level of that expected of a 16-year-old. In addition to reports such as this, the Programme for the International Assessment of Adult Competencies [PIAAC] has

also been used regularly by Governments and policy makers worldwide to determine adults' level of proficiency in the area of numeracy. This international assessment measures adults' skills and competencies in a number of different areas, including numeracy, and categorises their skills into one of six proficiency levels. When Ireland took part in PIAAC (2012), it revealed that over one quarter (25.3%) of adults in Ireland scored at or below Level 1 on the numeracy scale (OECD, 2013). This score ranked Ireland 19th out of 24 participating countries and suggested that 754,000 Irish people struggle with everyday maths and may be unable to do a simple maths calculation such as subtraction (NALA, 2017). In 2015, NALA undertook another analysis of the PIAAC data, this time focusing on the themes of skills in the workplace and social wellbeing. When it came to numeracy, the main findings showed that:

- Over half (60%) of the sample with numeracy at level 1 or lower were women.
- The average age of the respondents with level 1 or lower numeracy was 43 years.
- Almost half (49%) of the sample with level 1 or lower numeracy had lower secondary education or less.
- Almost one third (31%) of the sample with level 1 or lower numeracy had had no paid work in the last five years.

(NALA, 2017, pp. 15-16)

The most recent PIAAC study shows that, on average, across all 28 OECD countries surveyed, 22.7% of adults are performing at or below Level 1 (OECD, 2016). In essence, these adults are not capable of going beyond one-step processes in the area of numeracy nor are they capable of dealing with problem scenarios where the numeracy component is not wholly explicit.

In addition to the aforementioned low levels of proficiency in the area of numeracy, research also indicates that many adults also hold negative attitudes towards the domain. According to the work of Breen (2003) and Southwood (2011) fear is the emotion often reported by adults when confronted with numeracy tasks and it has a negative impact on their willingness to engage with numeracy and on their performance in the domain. Mathematics anxiety has been defined by Richardson and Suinn (1972) as “feelings of tension ...that interfere with the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and academic situations” (p. 571). While Martinez and Martinez (1996) determine it to be a construct with multiple causes, many link its origins to negative classroom experiences from the past. Such experiences may include the use of traditional teaching methodologies, where mathematics involves the memorisation of formulas, and the following of rules and procedures (Idris, 2006; Prendergast et al., 2014). While there have been many changes to the teaching and learning of mainstream mathematics in recent years, Carpentieri et al. (2010) determine that in numeracy teaching it is sometimes easier to quantify “bad practice” than to define “good practice”. According to Swain (2005), “bad” practice involves the teacher using a series of procedures, where the students learn by rote and without understanding. No connections are made to other areas of numeracy. With this in mind, and in line with the recommendations of Goos et al. (2021), there is much work to be done in relation to facilitating effective continuing professional development (CPD) for adult numeracy practitioners to help improve their practice. Effective and sustained provision is of huge importance, particularly for those practitioners who may be working in isolation in small centres and also those practitioners who may not have a background in the area.

CPD is also essential for bringing about the pedagogical transformation and educational culture change which is required for the effective implementation of innovative approaches (Bray & Tangney, 2017).

The Irish Context

In Ireland, adult numeracy provision is provided by the Education and Training Boards (ETBs) through their local adult literacy service. Each literacy service is organised by an adult literacy organiser (ALO), and numeracy tutors provide tuition on a one-to-one or group basis.

In addition to numeracy, the literacy service offers a range of programmes that include family learning, English to Speakers of Other Languages (ESOL), and workplace basic education. Goos et al. (2021) found that many adults are reluctant to admit their numeracy learning needs, and instead approach an ETB looking for courses in areas other than numeracy. However, once these adult participants develop confidence and comfort in the learning environment of the ETB, tutors and ETB staff are alert to opportunities for identifying their numeracy learning needs and directing them into integrated courses with a numeracy focus. The vast majority of adult learners engage in ‘mainstream’ tuition which consists of either one-to-one or group tuition, typically for two to four hours a week during the academic year.

Adult literacy services across the country design and deliver a wide range of programmes to meet the needs of adult learners. Some are accredited at levels 1 – 5 on the National Framework of Qualifications; others are non-accredited. The National Framework of Qualifications is a 10-level framework of standards for accreditation purposes. Levels 1 – 4 are of most relevance to those with basic skills needs and provide an opportunity for certification – often for the first time. Tuition is also available in a number of other education settings including community education, Youthreach, Community Training Centres, National Learning Network, probation projects, disability services and special schools

Research carried out by NALA (2013) found that over 60% of adult numeracy tutors reported that they did not have enough training in teaching numeracy to adults, and 15% reported that they had no training at all. More recently Goos et al. (2021) reported that adult numeracy provision in Ireland is predominantly dependent on part-time numeracy tutors. Only three ETBs had full-time staff members involved in adult numeracy. NALA (2015) developed a framework for meeting the professional development needs of tutors of adult numeracy in the Irish Further Education and Training sector. This framework recognises that tutors are also adult learners in the context of professional development. It recommends that professional development should be underpinned by a broad and dynamic view of numeracy that is internationally recognised. The framework also identifies important qualities and knowledge that adult numeracy tutors need to possess, including excellent understanding of elementary mathematics; digital literacy skills; and a view of mathematics as part of everyday life. Goos et al. (2021) recommended that ETBs should consider ways of supporting adult numeracy tutors to develop these qualities, and of making such opportunities accessible to tutors while avoiding costs to tutors in terms of time and financial commitment

The Study

It is imperative that if we are to meet the literacy and numeracy targets set out by UNSDG (<https://sdgs.un.org/2030agenda>), we must address the teaching of numeracy in adult education. This proposal seeks to address Goos et al.'s (2021) recommendation and explore ways of supporting adult numeracy practitioners. In doing so, it aims to work with the National Adult Literacy Agency (NALA) to help practitioners around Ireland in developing their skills in the teaching of numeracy to adult learners. In addition to this, another aim of this project is to create a network of expertise between partners in academia and NALA to support practitioners in fostering a positive and engaging environment for teaching numeracy within the adult education spectrum. NALA is an independent charity committed to making sure people with literacy and numeracy difficulties in Ireland can fully take part in society and have access to learning opportunities that meet their needs. They have a long track record in the provision of professional development opportunities for adult numeracy practitioners in Ireland and the researchers felt that the organisation's knowledge and networks in the area would be a very welcome addition to the project team.

Thus, this study aims to bring together expertise in the field of numeracy, teacher education, adult numeracy education and those delivering courses to adults enrolled in numeracy development programmes.

There are two main objectives to the research, namely to:

- Investigate the professional development and resource needs of adult numeracy practitioners in Ireland.
- Design, implement, and evaluate a professional development and networking model that addresses some of these needs.

Theoretical Framework – The Numeracy-Meet Model

We have termed the proposed professional development and networking model as a series of Numeracy-Meets. These are based on the TeachMeet model which was developed in Scotland in 2006 and mainly involved primary and secondary school teachers focusing on teaching strategies and classroom practices. According to Amond et al. (2018) a TeachMeet is “an event held after-hours between teachers to share practice and ideas, making short presentations and hosting conversations in a convivial and playful atmosphere.” Bennett (2012) notes that TeachMeets usually last a couple of hours and are focused on teachers sharing ideas with one another based on the things that they've used and found effective in their teaching. While the Meets take an informal structure, they do require some sort of facilitation to encourage participation and arrange the running order.

Although there is currently a dearth of research in this area, TeachMeets fulfil needs for CPD and communities of practice (CoP) (Amond et al., 2018; Amond et al., 2020). From an adult numeracy practitioner perspective, the TeachMeet model can meet many of the components of NALA's (2015) framework for developing the CPD needs of adult numeracy tutors. For example, the use of the TeachMeet model is accessible in terms of time and cost and can focus on understanding of elementary mathematics and viewing mathematics as part of everyday life. Thus, this study will adapt the TeachMeet model to suit the needs of adult numeracy practitioners in Ireland. It is proposed that each Numeracy-Meet will be structured around a theme, thereby allowing attendees to focus on one

aspect of the broader concerns. In line with Charles (2021, p.3), our Numeracy-Meet model will be developed with the following goals:

- Create a means of communication around pedagogy
- Provide a forum for sharing of expertise and insights
- Create a pool of instructional resources and strategies
- Gain input in steering instruction and assessment
- Foster teamwork and enable networking

Proposed Methodology

There will be four stages to the study:

- Stage 1: Preplanning which includes the design of a research instrument for an online scoping survey in which practitioners can outline the types of professional development and resources necessary to improve their own teaching of numeracy. The design of this instrument is currently underway, and it is anticipated that there will be three sections:
 - Section A will focus on practitioners understanding of numeracy and issues they identify around the teaching and learning of adult numeracy in Ireland.
 - Section B will involve a needs analysis in which practitioners can outline the types of professional development and resources necessary to improve their own teaching of numeracy.
 - Section C will seek to determine practitioners' perspectives on CoP and to ascertain any prior experience they have of engaging in such CoP and other CPD opportunities.

The survey will be piloted with a group of five numeracy practitioners who will be invited to participate on the basis of the expertise they could bring to the research and the contemporary experiences they have in similar peer groups to the research participants.

- Stage 2: Needs Analysis to Guide the Design and Implementation of the Numeracy-Meet Model (January - February 2022). The research instrument will be circulated online through social media and existing networks (including a NALA mailing list of adult numeracy practitioners around Ireland who have signed up to be kept informed of their CPD offerings) to a sample of numeracy practitioners using a snowball sampling method. It is difficult to quantify the number of numeracy practitioners nationally and so a response rate will be difficult to quantify. The data gathered will provide an evidence base around the specific needs of adult numeracy practitioners and will guide the design and implementation of the Numeracy-Meet model.
- Stage 3: Implementation of six Numeracy-Meets (February - May 2022)
It is anticipated that there will be six Numeracy-Meets hosted between January and June 2022 (one Numeracy-Meet per month). Potential areas of focus for each Numeracy-Meet will be guided by existing research and by the data from Stage 2 but a sample programme may include:
 1. Introduction to numeracy
 2. Family numeracy

3. Financial numeracy
4. Numeracy for health
5. Numeracy in a digital world
6. Overcoming mathematics anxiety

Each Numeracy-Meet will have a similar structure, with the exception of the Introductory Meet. It is envisaged that each Meet will be facilitated by an expert in mathematics/numeracy education who will open the Meet and share some ideas and resources about teaching a particular aspect of numeracy. Following this, the Meet will then involve active participation from adult numeracy practitioners who are in attendance. These practitioners will have volunteered to share their expertise and insights in advance of the Meet. Their involvement may see them sharing a resource that they found worked well or a teaching strategy that they found beneficial. Any lesson plans or resources discussed in the Meet will be collated and packaged by the project team and shared with all participants. As such, a folder of resources and plans would accompany each Numeracy-Meet. The Meet will conclude with participants completing out a brief online evaluation.

- Stage 4: Evaluation of Numeracy-Meets (February - June 2022)
In parallel with Stage 3, Stage 4 will focus on the evaluation of the Numeracy-Meets. This evaluation will adopt a mixed methods research approach and as such will yield both qualitative and quantitative data. As mentioned, on completion of each of the six Numeracy Meets, participating practitioners will be asked to complete a brief online evaluation. This evaluation will allow practitioners to respond to the material shared during the Meet, outline what they feel they gained from the Meet and offer suggestions for future Meets. All evaluations will be anonymous to encourage participants to be honest in their responses and the project team will use the feedback to shape future Meets and to inform the overall evaluation of the project. Furthermore, once all six Numeracy-Meets have taken place, numeracy practitioners who attended two or more of these events will be invited to participate in a focus group which will be facilitated by the project team. The focus group will be used to ascertain practitioners' insights into their perceived effectiveness of the project and the future sustainability of such a community of practice among numeracy practitioners.

Conclusion

As recommended by Goos et al. (2021), professional development for adult numeracy practitioners needs to be widely promoted and accessible and involve practitioners in sharing their practice as well as learning new teaching approaches. It should be coordinated with the aim of establishing CoP of adult numeracy tutors while raising the profile of adult numeracy provision. The Numeracy-Meet model proposed in this study will specifically address this recommendation and offer a structure to CPD activities which are informal and led by adult numeracy practitioners. It is also anticipated that it will create a network of expertise between partners in academia and NALA to support practitioners in fostering a positive and engaging environment for teaching numeracy within the adult education spectrum in Ireland.

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