

# Numeracy in Situations of Vulnerability. Emancipating Numeracy Practices in Situations of Over-Indebtedness, Living with Learning Difficulties and in Older Age

Lisanne Heilmann<sup>1</sup>

University of Hamburg

lisanne.heilmann@uni-hamburg.de

*How important is numeracy in our everyday lives? Which role does numeracy play for vulnerable subgroups? In the Hamburg Numeracy Project, six research projects are looking into these questions. Each research project focusses on a specific subgroup or a specific type of vulnerability (e.g. adults living in over-indebtedness, seeking refuge, in higher age or with learning difficulties). We are using Large-Scale-Assessments like the Survey of Adult Skills (PIAAC) to determine general factors for and circumstances of vulnerability and their relation to numeracy. The separate research projects conducted group and single interviews, undertook participatory research workshops, observed learning situations, and everyday situations.*

## Introduction

The Hamburg Numeracy Project is a joint project of six different chairs in four institutions, all set in Hamburg. The project looks at different social groups or situations that are often seen and described as vulnerable. We analyse the role numeracy practices play in their lives and in these vulnerable situations.

The concepts of numeracy and vulnerability are often closely connected. Numeracy is supposed to protect against vulnerability; people and societies benefit from investing in numeracy education (Craig, 2018). We understand numeracy (as well as mathematics) to be socially constructed, to be embedded in social relations, in context, and values (c.f. Baker 2006). We conceptualise vulnerability as an increased risk of exclusion on the one hand, and as a public responsibility not to marginalise certain groups on the other. We see and use vulnerability not as an characteristic of an individual or a group but as a focal point for analysis (c.f. Hurst 2008).

While digital challenges were not originally a focus of our research, new and changing digital and technological challenges and questions emerged in the research. Mathematical aspects of everyday challenges become more and more invisible due to the demathematising effect of

---

<sup>1</sup> Further researchers in the project are: Katharina Angermeier, Harald Ansen, Melanie Benz-Gydat, Wiebke Curdt, Anke Grotlischen, Hanna Gundlach, Gabriele Kaiser, Huacong Liu, Maike Lüssenhop, Antje Pabst, Alina Redmer, Silke Schreiber-Barsch, Christine Zeuner.

technology (Jablonka & Gellert, 2007) – with ambivalent consequences. Technologies (e.g. for budget planning) facilitate mathematical tasks. At the same time, it becomes easier to lose track of one's financial situation (Angermeier & Ansen, 2019, p. 3). In addition, the invisibility and implicitness of numeracy practices in most of our lives (Coben, 2002), might make it more difficult to see and acknowledge numeracy practices and skills. This may pertain to - for example - people with learning difficulties, or to (post-)war generations who have had interrupted educational careers. They have to learn how to deal with technological changes, which can be a support but also an additional challenge. When reaching retirement age, many of them are faced with big life changes and new numeracy-related challenges to which they have to find answers. This presentation will present the preliminary findings of four subprojects who focus on three specific questions around vulnerability and numeracy using quantitative and qualitative approaches:

- (1) Which relevance and meaning do people of the war and post-war generation attribute to numeracy?
- (2) What role do numeracy practices play in the everyday lives of adults with learning difficulties?
- (3) Can numeracy skills be a protection against and/or a way out of over-indebtedness?

## **Methods**

Different methods and methodologies are used to find answers to these research questions. Multiple research projects inside of the Hamburg Numeracy Project investigate these questions in qualitative as well as quantitative approaches. Focussing on a social environment, interviews with people in older age are carried out. Two group interviews with professionals in debt counselling started the research on over-indebtedness. They will be followed by several individual interviews with over-indebted people. To learn about numeracy practices of adults with learning difficulties, a participatory research design was chosen (c.f. von Unger, 2012). In a participatory research group, which included nine adults with learning difficulties, the general process, as well as the used wording, were determined. After that, eleven adults with learning difficulties were accompanied through their everyday life by the researchers. For quantitative secondary analyses, three main sources of data are used: The Programme for the International Assessment of Adult Competencies (PIAAC), Curriculum und Professionalisierung der Finanziellen Grundbildung (CurVe), and Competencies in Later Life (CiLL).

## **Preliminary Findings**

Overall, the preliminary findings affirm an emancipatory potential of numeracy practices. Adults with learning difficulties can gain moments of autonomy and control. Numeracy practices are not in of themselves a protection from becoming over-indebted. However, numeracy practices might be helpful to overcome debt and over-indebtedness. These numeracy practices need to be accompanied with relevant context knowledge. The interviews with people

of an older age indicated that they see numeracy as less relevant, especially when compared to reading and writing, but at the same time, they rely heavily on their numeracy practices to handle everyday challenges.

## References

- Angermeier, K., & Ansen, H. (2019). Alltägliches Rechnen im Kontext von Überschuldung. *Schlaglicht Der Überschuldung*.
- Baker, D., & Street, B. (2004). Mathematics as Social. *For the Learning of Mathematics*, 24, 19–21. Retrieved from <http://www.jstor.org/stable/40248453>
- Coben, D. (2002). Mathematics or Common Sense? Researching 'Invisible' Mathematics through Adults' Mathematics Life Histories. In D. Coben, J. O'Donoghue, & G. E. Fitzsimons (Eds.), *Mathematics Education Library: Vol. 21. Perspectives on Adults Learning Mathematics: Research and Practice* (Vol. 21, pp. 53–66). Dordrecht: Kluwer Academic Publishers. [https://doi.org/10.1007/0-306-47221-X\\_3](https://doi.org/10.1007/0-306-47221-X_3)
- Craig, J. (2018). The promises of numeracy. *Educational Studies in Mathematics*, 99(1), 57–71. <https://doi.org/10.1007/s10649-018-9824-5>
- Hurst, S. A. (2008). Vulnerability in research and health care; describing the elephant in the room? *Bioethics*, 22(4), 191–202. <https://doi.org/10.1111/j.1467-8519.2008.00631.x>
- Jablonka, E., & Gellert, U. (2007). Mathematisation - Demathematisation. In U. Gellert & E. Jablonka (Eds.), *Mathematisation and demathematisation: Social, philosophical and educational ramifications* (pp. 1–18). Rotterdam: Sense Publ.