



Hamburg Numeracy Project

CPH 2019 – Conference on Literacy (5th Aug 2019)



Whose voices matter?

Adults with learning difficulties as delegitimised clientele of adult basic education research and practice.

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Point of departure

Numeracy

- ‘the knowledge and capabilities required to accommodate the **mathematical demands** of private and public life, and **to participate in society as informed, reflective, and contributing citizens**’ (Geiger et al. 2015, p. 531).
- **Both: mastery of school mathematics *and* ‘to bring to resolution real world problems’** (p. 531).

...everyday contexts of out-of-school numeracy practices of adults:
reading bills, reading the clock, using a calculator, do shopping,
calculating / comparing prices, understanding a bus time-table...

Point of departure - PIAAC Framework

Programme for the International Assessment of Adult Competencies (PIAAC) – Framework

- worldwide study by (OECD) in 24 countries
- to **assess** the skills of literacy, numeracy and problem solving in technology-rich environments
- working-age population (between the ages of 16 and 65)

Sample of PIAAC Data Germany 2012 (n=5,379)

- left out persons living in institutional settings
- only 0.4% opted for ‘another school leaving certificate’

„only what is measured gets counted“ (Lockhart 2018)

...whose voices count? also beyond test situations

Research project – Guiding Principles

Numeracy practices of adults with learning difficulties

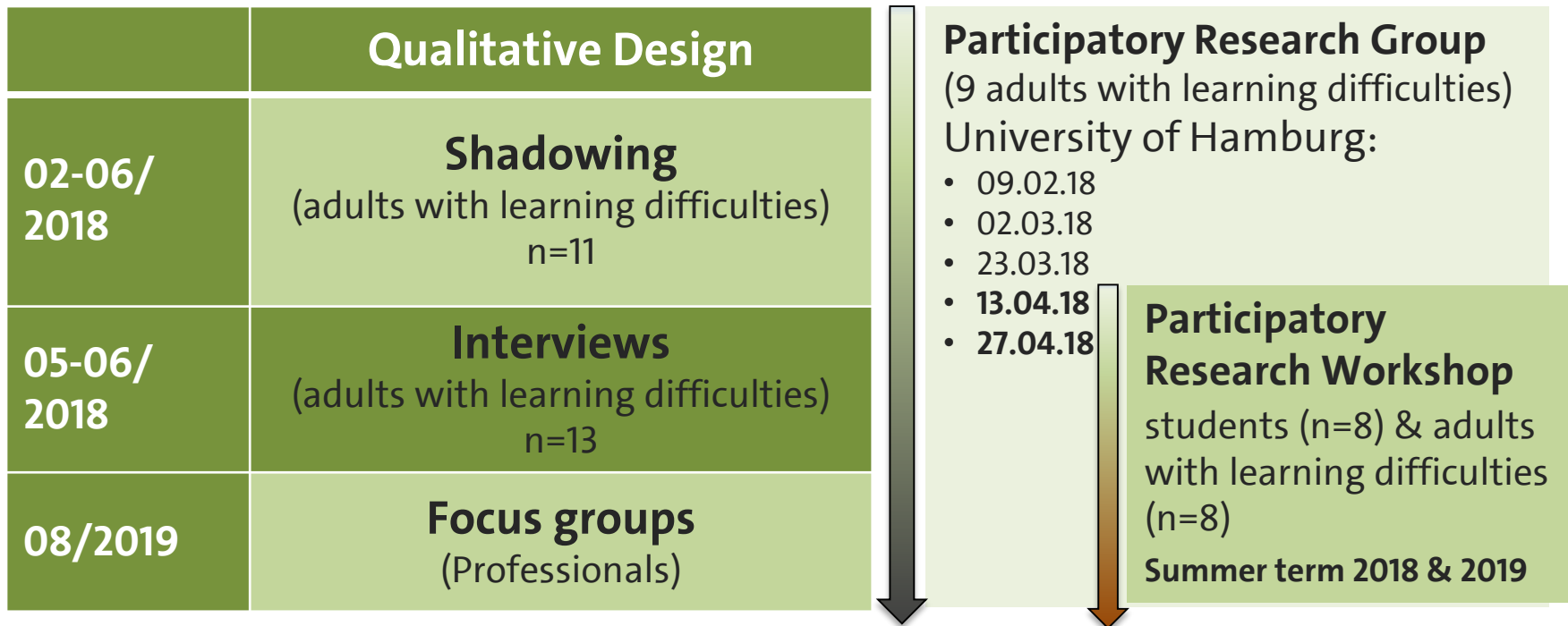
(= **intellectual disabilities**): a social group which is commonly deemed to be vulnerable due to being attributed a very low numeracy proficiency and, in consequence, to be seen as owning fewer opportunities to participate in society (Prendergast et al. 2017; Spassiani and Friedman 2014; ...)

❖ **Numeracy as social practice** (Street, Baker & Tomlin (2008); Yasukawa et al. (2018)): **numeracy practices**: the ways numeracy is dealt with in real world contexts and in relations of power & **numeracy events** (Evans et al. 2017): the ways in which numeracy has **meaning** for individuals

Not: What are they able to do? But: **What are they doing?**

In which ways engage adults with learning difficulties in numeracy practices in everyday contexts, to what extent are numeracy-related abilities mirrored in these practices, and in particular, what are the meaning they ascribe to their practices?

Participatory Research Design



Participatory Research & Grounded Theory (Strauss & Corbin 1990; Strübing 2014)

Qualitative design – bottom-up-approach (Evans et al. 2017) – **Participatory Research** (von Unger 2012; Buchner, Koenig & Schuppener 2011; Stalker 2012)



First findings

SYNTHESIS OF NUMERACY FACETS & ADDITIONAL CATEGORIES

| Facet | Subcomponent(s) of facet | | Source |
|---|---|--|--|
| Space & shape | Spatial orientation / experience / concept | (geographic) positioning / localization | Deductive Synthesis (Rammstedt 2013; DVV 2017; FHH 2011; KMK 2004; ISB 2003) |
| Numbers & calculating | Calculating / quantifying the world with numbers | Understanding / sense of numbers | |
| Size & measurements | Handling with units of measure and measuring instruments | Adjusting choice of measuring instrument and the object to be measured in an appropriate way | |
| Patterns & structures | Patterns and relations | Regularities and routines | |
| Probabilities, frequencies & chances | Identifying probabilities and insecurities | | |
| Artefacts | Visual aids | Useful devices / technologies / objects | |
| Social embeddedness | Social context | Institutionalised / organisational context | Inductive Results |
| Subjective relevance | Ascribing personal meaning to numeracy practices as a reason for engaging in them and in numeracy learning | | |
| Direct interaction | Direct (verbal and nonverbal) social interaction and communication with specific persons within acting out numeracy practices | | |

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Greta: Soon there is our competition in [town]. I am going to swim 100 meters breaststroke, which is 4 lengths' (SH_2, para 7, no. 9-10)

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| Numbers & calculating | Calculation / identifying the wo | Understanding / process of | |
| Size & measurements | Ha an | | |
| Patterns & structures | Pa | | |
| Probabilities, frequencies & chances | Ide ins | | |
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In a vocational training lesson, the teacher refers to folding napkins as one of the recent tasks: 'Teacher (*in a devaluing tone*): 'It was surprisingly difficult for all of them'.
The teacher stops, asks the researcher: '*Is folding napkins part of mathematics?*'
The researcher confirms this, while the respondent adds: '*If you need to fold at right angles to each other, you need to know what this is*' (SH_7, para 9, no. 13-14)

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| Space & shape | Spatial orientation / experience / concept | (geographic) positioning / localization | |
| Number calculation | Calculation / identifying the | Understanding / process of | |
| Size & measurement | <p>I've got several... several alarm clocks, I've got ... After some time, one and the same trick doesn't WORK anymore. For example, I never have the precise wake-up time on my alarm clock. Sometimes I set the time half an hour EARLIER, actually always, up to 40 or 50 minutes earlier than the correct time. So that I cannot REMEMBER. So that I ... when I take a look at the clock, that I never EXACTLY know what is the correct time. So that I outsmart myself, that then comes the impulse: so, now get up! (...) But it is not working all the time. (...) So that the signal comes: Oh, now it is time. (...) So, as I said, it is not working forever, then I have to reset the time again. And that, I'll do randomly. [I_10_#46-54#]</p> | | |
| Pattern structure | | | |
| Probability frequency chance | | | |
| Artefacts | | | |
| Social embeddedness | | | Social context |
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Conclusion

German curriculum for adult basic education in mathematics (DVV 2017): *biographies of failure* (Meyerhöfer 2017, p. 5) for justifying adults' needs?

'crucial role that power plays in making sense of what is or can be learned numeracy-wise, by whom, and for what purposes' (Jackson 2018, p. 169)

Arguing for a **resource-oriented perspective**:

- Recognising adults with learning difficulties as 'knowing participants with a genuine sense of belonging in mathematics' (Tan et al. 2019, p. 10) uncovers the **emancipatory potential of developing and engaging in numeracy practices**.
- Expanding knowledge about **mismatches between educators and learners** views on the quality of numeracy-related abilities (portrayed by the napkin example) and on the evidence of **developing niche proficiencies**, mirrored in the alarm clock example.

Putting up for debate **whose mathematics and voices count and whose do not** (Knijnik and Wanderer 2018).

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