

Trade union learning and the Numerate Environment

Dr. Beth Kelly and Dr. Jeff Evans

Session plan

- ▶ Thinking through the concept of a ‘Numerate Environment’ - Jeff Evans(15 minutes)
- ▶ What does a numerate environment look like? Adults learning mathematics in the workplace through trade unions in the UK. Beth Kelly (15 minutes)
- ▶ Small group or pair discussion exploring :
 - ▶ How can the concept best be utilised?
 - ▶ What other aspects of a numerate environment might need to be considered? (15 minutes)
 - ▶ What makes a good ‘numerate environment for teaching purposes?
- ▶ Feedback (15minutes)

What is the numerate environment you live in?

- ▶ Do you hold your family's 'purse-strings' (money)?
Are you the Treasurer of an organisation?
- ▶ Does your work involve the use of numbers, or shapes, or measurement, or probabilities / 'chances'?
- ▶ What do you do in your leisure time [if any 😊] ? Betting?
Playing bridge or other card games? Sudoku? Participating in
or watching sports ... then & now?

These activities can be considered to make up the *numerate environment* you live in.

Characterising the worlds lived in by adults

Long-standing debates on characterising the *context* of mathematical activities faced by students or (groups of) adults (Lave, Wedege, FitzSimons, Coben, Knijnik, Yasukawa, Limerick group, Utrecht group, Rutgers group, Lancaster grp)

Evans et al (ALM-23 / 2017) drew on the idea of a '*literate environment*' in EU High Level Group on Literacy (2012)

EU HLG emphasised *quality* of literate environ. in diff areas

- ▶ *The availability* at home, and in public places incl. workplaces, the internet - of reading materials, e.g. books
- ▶ Reading *promotion policies* to stimulate reading and access to books (e.g. media campaigns, public readings)
- ▶ The role of parents

Literate environment

EU HLG suggests: adults' skills *respond to* and *are shaped by* the environment in which they act ... and environment is seen as a set of practices

Recommendations are about *availability* and hence *opportunities* ... of *texts* to read

Note:

- ▶ 'the' literate environment is different for different groups of adults
- ▶ the environment even for a given group (or individual) is fluid and unstable

Numerate environment

Opportunities to exercise numeracy: Information increasingly available:

Macro Level

- ▶ National Statistical Office websites, now more user-friendly
- ▶ Hans Rosling and Associates: interactive graphics
- ▶ Mass media: e.g. sports, news (retrieve stats)

Meso

- ▶ ‘league tables’ showing school performance

Individual

- ▶ Personal finance: information on ‘savings products’

Numerate environment

BUT besides Opportunities, *Supports* needed in exercising numeracy :

- ▶ ‘pedagogic’ supports, related to certain *opportunities*
- ▶ friends, family, peers
- ▶ broadcasters, newspapers: e.g. Ionika Smeets (ALM-24)
- ▶ fact-checkers (stats, logic) ...e.g. Full Fact, BBC in UK

- ▶ Professional financial advisers, financial organisations’ support for ‘financial literacy’? *partial*
- ▶ the wider culture: norms about presentation / discussion of numerical information (Blastland & Dilnot, 2008) *ambivalent*
... → notion of *barriers (non-helpful non-supports)*

Numerate environment

So besides *opportunities & supports* for using numeracy skills,

Need to ask what are the *demands* for exercising such skills?

... at work, in personal life, and in the community / society?

If they are low, and/or if adults are not required to use numbers or maths, as a consequence their skills may *decline*,

... or *fail to develop*, leaving a large sub-class excluded from the literate / numerate environment, and *relying on others* for (critical?) access to information and interpretation

... or *relying on the media* for explanations

... or ?

The literate / numerate environment

So ... three key aspects:

- ▶ the *opportunities* the practices may offer to adults engaged in them
- ▶ the *demands* that the practices may (or may not) make on adults
- ▶ the *supports* offered within these practices (and cultures), that facilitate adults' numerate development - or the *barriers* put up

Interim Conclusion

... we argue the *numerate environment* can be used to describe (actual) numeracy environments, using ideas of *opportunities, demands, supports* - though these are *distributed differently (for different adults)* and are *fluid ...*

To understand better, look around us and consider examples:

E.G.

- (1) A country engaged in converting currency to the euro, e.g. Slovak Republic in 2008-2011 (Kubaschikova et al., 2019)
- (2) Trade union learning situation (Kelly, 2018)

(1) Slovak Republic currency conversion

- ▶ a '*total numerate environment*, facing every citizen every day - though in different ways (different resources).
→ adults learning to better handle their immediate needs, to make currency conversions in varying situations, and to develop / extend the required numeracy practices, incl:
 - ▶ *calculation* (e.g. using conversion rates);
 - ▶ *estimation* (Yasukawa et al., 2018);
 - ▶ *comparison of values* (to judge importance of apparent differences, *given one's circumstances*); etc.
 - ▶ choosing *strategies* for conversion, developing them in context (Finland 2002, at 5.945 to 1 euro, different from Slovakia, 2009, at 30 SKr to 1).

Slovak Republic currency conversion

Opportunities, demands, and supports in the situation?

Opportunities to learn, but these may better be described as *demands* to engage in consumer practices in new ways.

Supports aimed to help people learn to adapt to the euro, and to produce positive attitudes towards it.

(i.e. Practices are emotional, not only cognitive!)

E.G. of Supports: both *informal* and *institutionalised*

- ▶ *Pedagogic materials* aimed at upper secondary students + others, on basic notions relating to euro + ‘financial literacy’. For adults, additional ‘revision’ of ‘times tables’.
- ▶ Tools such as *pre-programmed calculators* provided to support those wanting *exact conversions* at any stage.

Slovak Republic currency conversion

Supports (*cont'd*):

- ▶ Copies of *conversion tables* widely distributed nationally, relating 'round numbers' of euros and crowns
- ▶ '*Bundle of Shopping*' poster, showing what items could be purchased for 10 euro, 20 euro and other amounts.
- ▶ *Local programmes* to help groups with limited access to information, including the elderly, visually / hearing impaired, economically weaker, e.g. the Roma, using drama and performing arts

An example of *collective* learning of new numerate practices in this society: a 'multiplier effect'

(2) Trade union learning and the numerate environment

▶ **Demands (motivations)**

- ▶ Economic- improving job security (extrinsic- Ryan and Deci, 2000)
- ▶ Economic - gaining public recognition of their knowledge or skills through certification to further a new career (extrinsic)
- ▶ Personal -filling perceived knowledge or skills gap (intrinsic- Ryan and Deci,2000)
- ▶ Social - helping their children to integrate into a 'host' country education system(intrinsic and extrinsic)

Trade union learning and the numerate environment

▶ Opportunities

▶ Opportunities to Learn:

- ▶ Funded by central government and increasingly by trade unions (McIlroy & Croucher, 2011) who negotiate with employers to provide space and sometimes time to learn mathematics in the workplace
- ▶ Reengaging with learning, giving a 'second chance' for those whose learning has 'stalled' (Ross et al, 2011)

▶ Opportunities to use the learning:

- ▶ when negotiating on behalf of fellow trade union members
- ▶ with their finances, enabling adults to better support their families
- ▶ to become teachers of mathematics
- ▶ to supporting the integration of newly arrived children into the UK education system (Kelly, 2018).

Learning through trade unions in the UK

▶ **Supports**

- ▶ Encouraged by ULRs whose job it is to persuade and help motivate workers to reengage with learning, (Reisenberger et al, 2010; Melrose, 2014)
- ▶ Family support - e.g. preparing the meal, being a role model
- ▶ **Supportive process of learning -content and pedagogy**
- ▶ Cultural practices and collective ethos (Ross et al., 2011) within trade unions acting in the workplace
- ▶ Learners preparedness (motivation)to engage in **discussion** (Kelly, 2018)
- ▶ Relevant pedagogical topics - making the mathematics relevant to life or trade union issues such as Health and Safety, what Ryan and Deci (2000) call ‘social and cultural belonging’.

Learning through trade unions in the UK

▶ Supports

▶ ‘different’ learning experience

- ▶ **more supportive /collaborative** - ‘Emotionally safe environment’ (Schorr & Goldin, 2008) where misconceptions can be discussed openly with no fear of ridicule or shame(T. Bibby, 2002)
- ▶ **smaller classes**
- ▶ **relaxed atmosphere**, closer to the idea of **informal or non - formal learning** (Coben et al.,2007; Evans et al., 2013)

▶ **Learning space and environment**

- ▶ Workplace meeting rooms , chairs arranged around large tables so everyone can see each other
- ▶ Or adults sitting at computers, with teacher assistance
- ▶ **Teacher acting more like a chair of a meeting**, encouraging discussion and facilitating thinking and learning from each other (different use of authority)

References

- ▶ Bibby, T. (2002). Shame: An emotional response to doing mathematics as an adult and a teacher. *British Educational Research Journal*, 28(5), 705-721. doi: 10.1080/0141192022000015543
- ▶ Coben, D., Brown, M., Rhodes, V., Swain, J., Ananiadou, K., Brown, P., . . . Storey, V. (2007). *Effective teaching and learning numeracy*. Institute of education, NRDC. London: University of London.
- ▶ Findlay, P., & Warhurst, C. (2011). Union Learning Funds and trade union revitalisation: A new tool in the toolkit. *British Journal of Industrial Relations*, 49(1), 215-234.
- ▶ Hume, S., O'Reilly, F., Groot, B., Chande, R., Sanders, M., Hollingsworth, A., . . . Soon, X. (2018, February 1). Improving engagement and attainment in maths and English courses: Insights from behavioural research. Retrieved August 8, 2018, from www.gov.uk/government/publications
- ▶ Kelly, B., Moon, P., & Dudley, K. (2012). *Welcome to the UK research report Year 2 (Learning Unlimited)*. London: European Integration Fund.
- ▶ Kelly, B. (2018). Motivating adults to learn mathematics in the workplace: a trade union approach. *International Journal of Lifelong Education*, DOI: 10.1080/02601370.2018.1555190.
- ▶ McLroy, J., & Coucher, R. (2013). British trade unions and academics: The case of unionlearn. *Capital and Class*, 37 (2), 263-284.
- ▶ Melrose, K., The Behavioural Insights Team. (2014, August 1). Annex A: Encouraging participation and persistence in adult literacy and numeracy. Retrieved July 4, 2018, from www.gov.uk/government/publications
- ▶ Reisenberger, A., Barton, D., Satchwell, C., Wilson, A., Law, C., & Weaver, 1. 2. S. (2010, Retrieved August 11, 2018). *Engaging homeless people, Black and Minority Ethnic and other priority groups in skills for life*. London: NRDC.
- ▶ Ross, C., Kumarappan, L., Moore, S., & Wood, H. (2011). *Learning journeys: Trade union learners in their own words*. TUC, Unionlearn. London: Unionlearn.
- ▶ Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54-67. doi:10.1006/ceps.1999.1020
- ▶ Schorr, R., & Goldin, G. (2008). Student's expression of affect in an inner city Sincalc classroom. *Education Studies in Mathematics*, 68, 131-139.
- ▶ Stuart, M., Cutter, J., Cook, H., & Winterton, J. (2010). *Evaluation of the Union Learning Fund rounds 8 to 11 and Unionlearn: Final report*. Leeds: Leeds University, Centre of Employment Relations and Change, CERIC.
- ▶ TUC. (2014). *Still making a difference: The continuing impact of trade union education in workplaces*. London: Author.
- ▶ Wallis, E., Stuart, M., & Greenwood, I. (2005). 'Learners of the workplace unite!': An empirical examination of the UK trade union learning representative initiative. *Work, Employment and Society*, 19(2), 283-304. doi:10.1177/0950017005053174
- ▶ Wojecki, A. (2007). 'What's identity got to do with it, anyway?' constructing adult learner identities in the workplace. *Studies in the Education of Adults*, 39(1), 168-182. doi:10.1080/02660830.2007.11661547