

USING DIALOGUE SCENES IN DEVELOPING ADULT MATHEMATICS – TOWARDS A FRAMEWORK OF ANALYSIS

GRAHAM GRIFFITHS

UCL INSTITUTE OF EDUCATION

LEARNING UNLIMITED



BACKGROUND

- Interest in language aspects of learning
- Vygotsky and others – social aspect of learning
- Using scene from Lakatos (1976) with trainee teachers
- Griffiths and Kaye (2010) explored various scenes and how they might be used
- Oughton (2009) has looked at adult learners' discussions of activities

THE SCENE

- Swan (2006) – collaborative learning
- Draws upon Vygotsky for social aspects
- Draws upon Piaget for notion of misconception and accommodation
- Scene involves ‘passengers’ discussing what happens when a ticket price first increases by 20% and is then brought back down by 20%
- Intended as a scene to be discussed in small groups

EXPLORATORY STAGE

- Griffiths (2013) describes some data gathered during this exploratory stage
- The scenario used with four groups of adult learners
- Two groups played the parts and discussed the scene
- One group read (internally) and discussed the scene
- One group given the opening question without the scene

SOME THOUGHTS

- Some evidence that reading out the scene had an effect
- Aspects of the scene pointed to the right answer
- Needed a framework for analysis

THEN...

- A pause ... time out to be a father

- On return...

SFARD

- Two metaphors
 - learning as acquisition
 - learning as participation
- Mathematical objects as a focus of attention →
- Discussion as a focus of attention

COMMUNICATING AS THINKING

- Sfard (2008)
- Theoretical perspective
- Considers that discussion is a key element to be investigated
- The job of the researcher is in interpreting meta rules of discussion

RECONCEPTUALISING NOTIONS

- Sfard reviews notions from the focus on mathematical objects
- Sfard (1991) - mathematical concepts moved from being processes on objects to new objects (called it reification) eg functions are mappings → functions are objects
- Now Sfard (2008) reconceptualises this as how individuals talk about these aspects of mathematics
- Also misconceptions become reconceptualised as miscommunication

FRAMEWORK FOR TEXTS

- Morgan and others have been developing a framework for analysis of texts
- Morgan and Alshwaikh (2014) used a version of this framework to compare Palestinian and English text books
- Tang, Morgan & Sfard (2012) have adapted the framework to compare GCSE Mathematics examinations over time

FRAMEWORK FOR DISCUSSION

- Need for a specific framework to use for discussions
- Will involve some mathematising components and social components
- Can use an existing framework to consider the text of the scene

CONCLUDING THOUGHTS

- The work started by the consideration of a particular intervention ie 'playing' the scenes and then discussion
- The scenes themselves will need some analysis as well as the resulting discussion
- Like many interventions – is this a distraction or scaffold?
- Does it matter that we use a participatory theoretical perspective?

-
- Alshwaikh J & Morgan C (2014) Analysing Palestinian mathematics textbooks, *Research in Mathematics Education*, 16:1, 71-72, DOI:10.1080/14794802.2013.849081
 - Griffiths G & Kaye D (2010) Making a drama out of a crisis. Using theatrical scenes in an adult numeracy classroom. In Christensen et al (2010) *Proceedings of the 17th International Conference of Adults Learning Mathematics – A Research Forum*. Oslo:Vox / ALM
 - Griffiths G (2013) ***Using dialogue scenes with adult numeracy learners: some exploratory data. In Hector-Mason et al (2013) Critical moments in adult mathematics*** PROCEEDINGS OF THE 20TH INTERNATIONAL CONFERENCE OF ADULTS LEARNING MATHEMATICS – A RESEARCH FORUM (ALM)
 - Lakatos (1976). *Proofs and Refutations*. Cambridge: Cambridge University Press
 - Oughton, H. (2009) 'A willing suspension of disbelief? "Contexts" and recontextualisation in adult numeracy classrooms', *Adults Learning Mathematics: An International Journal* 4(1) pp.16-31
 - Stard A (2008) *Thinking as communicating*. Cambridge University Press.
 - Swan, Malcolm (2006) *Collaborative Learning in Mathematics* NIACE and NRDC
 - Tang, S., Morgan, C., & Sfard, A. (2012). *Investigating the evolution of school mathematics through the lens of examinations: Developing an analytical framework*. Paper presented at the 12th International Congress on Mathematical Education, Topic Study Group 28 on Language and Mathematics, Seoul, Korea.