Connected Assessment: An alternative to a timed test for adult numeracy

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## Disconnects and tensions

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Methodology

• Qualitative
• Action research
• Critical theory
Literature Review

- Little research found involving developing alternatives to a timed test for mathematics
- Many adults and young people would prefer alternatives to a timed test
- Mathematics anxiety inhibits performance on timed tests
- Using timed tests for high stakes assessment and accountability is damaging for education
- Numeracy as a social practice supports a more holistic assessment model
- Mathematical problem solving using simple maths in complex situations is needed for the 21st century and in workplaces rather than memorisation and speed of calculation
Teachers’ Questionnaire

52 respondents from FE Colleges, Adult Education, prisons, work based training

- Nearly 2/3 of the teachers who responded would prefer to be able to offer an alternative to a timed test to their students.
- Over 70% of respondents do not think a timed exam gives everyone the same chance to show what maths they can do.
- Only 31% consider a timed test to be the best way to summatively assess mathematics

- However;
- 53% think timed tests are necessary for mathematics
Interviews With Adult Learners

13 interviews in phase one with adult maths learners
All interviews transcribed
Currently in the process of coding and analysis

Emerging themes;
• Time pressure during exams
• Wide variety of motivations for attending classes
• Wide variety of barriers to progress in adult numeracy

Emerging findings;
• Most adults had difficulty when asked to suggest alternatives to a timed test for mathematics.
• Most adults displayed characteristics of a growth mindset
Focus Group

5 adults attended a two hour focus group

• Group discussion with kids
• Maths quiz – Maths krypton factor
• Planning how to answer
• Break down question into small parts and think
• Projects- see poster
‘Connected Assessment’ Model

Features of Connected Assessment;

• a choice of assessment tasks
• learners developing their own assessment tasks to reflect their preferences and interests
• an extended period of time for assessment to take place over several sessions/weeks
• no arbitrary time limit for individual assessment tasks
• ‘open book’ assessment reducing the need for memorisation
• collaboration between learners on some tasks
• gathering a wide range of ‘evidence’ not just written work
• use of technology to support assessment.
‘Connected Assessment’ Model
Supports learners to make connections between;

• Different areas of mathematics
• Mathematics used inside and outside the classroom
• ‘Simple maths and complex situations’
• Mathematics and their own lives and purposes
• Mathematics, numeracy, literacy and use of technology
• People though collaboration and discussion
Suggested Assessment Tasks

**Project** – on anything you like that involves some maths

**Puzzle** – Tarsia puzzle using software on computers

- Kahoot quiz;  [https://getkahoot.com/](https://getkahoot.com/)

**Investigation** – see prompt cards for ideas

**Online quiz/challenge** – Level 1 [http://www.bbc.co.uk/skillswise](http://www.bbc.co.uk/skillswise)
- Level 2 [https://www.mangahigh.com](https://www.mangahigh.com)

**Poster/Cartoon** – choose some maths and create a poster or cartoon to explain it

**Teach some maths to someone else** – think about how you could demonstrate this.
30% of 70 = 70% of 30
Is this true? Investigate further with other numbers

How much does it cost to make a biscuit* at home?
How does this compare to the cost of a bought biscuit*?

Estimate how many babies will be born in the UK in 2017 without using the internet

17 x 48 = 34 x 24
Is this true? Investigate further with other numbers.

How could your household save 10% of its water consumption?

If 15 = 10 + 5,
why doesn't $15^2 = 10^2 + 5^2$?

How far is it to the horizon?

How far away from here could you travel today with £200 to spend?
Making Connections: Pilot

- Cohort recruited from existing ‘support’ sessions for adult numeracy at an Adult Education Service
- Making Connections course 2.5 hours per week over 5 consecutive weeks
- Eleven adults attended the sessions, with a core of six people who attended most of the sessions
- Sessions were double staffed by me and a mathematics teacher from the Adult Education Service
Making Connections Pilot; Data Collected

• Written evidence generated by learners while completing tasks
• Posters created by learners
• Digital evidence of tasks completed online
• Written comments in learners’ journals
• Completed course evaluation forms
• Fieldnotes
Plain flour: 500g = £0.90
Orange juice: 150g = £0.23
Dunkin’ Donuts: 450g = £0.37

Above, 50g sugar will cost me £0.11. We will have 150g sugar left over after making jelly cakes. You can use it to make jelly cakes 3 more times.

My total shopping will cost me £6.90.

Whereas if I buy Marks & Spencer jelly cakes from Tesco, they will cost me £1.40. I will have 500g plain flour left. You can use it to make jelly cakes 1 more times.

£1.19 / 30 cakes = £0.049

1 orange = 3 = 2 eggs
1 large egg = 2 = 0.25
So each egg will equal me £0.15. Overall, I will have 5 eggshells after making jelly cakes. You can use £0.75 to buy Orange Mandarin 453g = £0.33

Our Shop needs to Make 420 Pan Cakes.

For 12 Pan Cakes you need:
- 100g plain flour
- 2 large eggs
- 300mL milk
- 1 tbsp sunflower oil
- 1 tbsp of sugar

How many ingredients will you need to make 420 Pan Cakes?

100g flour x 35 = 3500g (3.5kg)
2 eggs x 35 = 70 eggs
300mL milk x 35 = 10060g (10.06L)
1 tbsp x 35 = 35 Sunflower Oil
1 tbsp x 35 = 35 tbsp of sugar

12 x 35 = 420
Making Connections Pilot: Learners’ Views

“I liked the sessions. It allowed me to look at everyday maths – making the calculations easier – knowing which calculations are needed for a particular type of question.”

• Adults enjoyed these sessions and they were able to show their maths ‘skills’
• Adults learned new maths during the sessions (not just an assessment opportunity)
• Some adults enjoyed being able to work together on maths tasks
Making Connections Pilot: How To Improve?

• More scaffolding needed for investigation tasks
• Very few adults chose tasks involving data
• A larger cohort would have been helpful for those who wanted to work as a pair
• Demonstration of Tarsia software by teachers at the beginning of the course
• Investigate possibility of incorporating ‘my maths’ digital platform
• Make video cameras more readily available
• Consider tracking curriculum areas for individuals
Making Connections Summer School

• Making Connections second cohort currently running in June/July 2017
• Target group; adults on Level 1, Level 2 and GCSE mathematics courses this year at the Adult Education Service