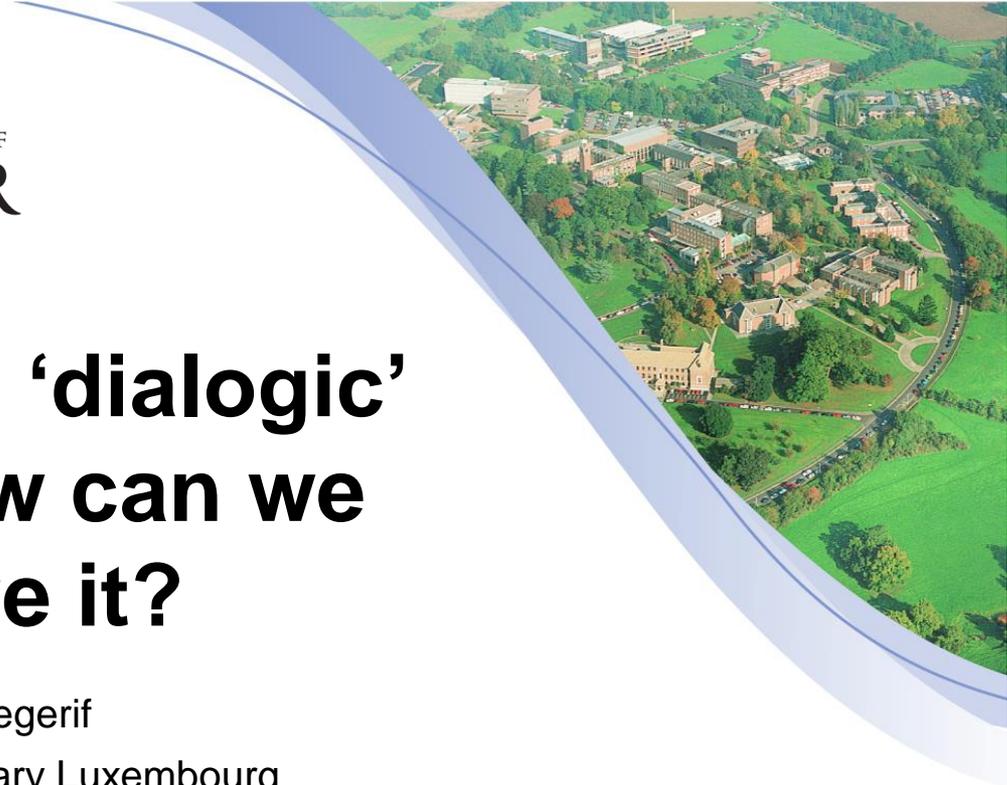




What is 'dialogic' and how can we measure it?

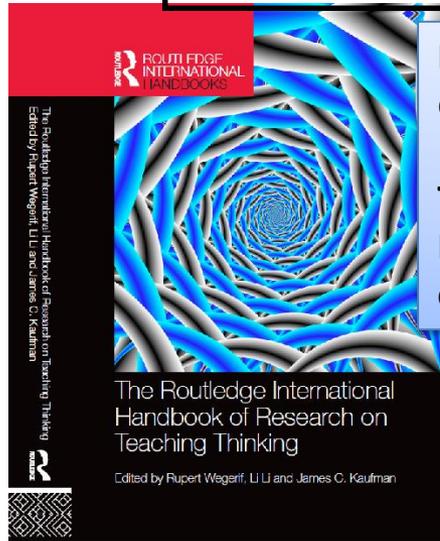
Rupert Wegerif

2nd February Luxembourg



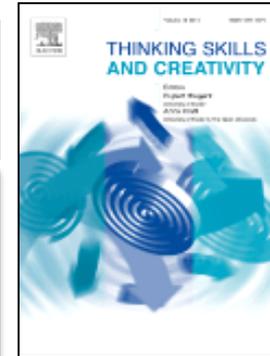


Centre for Teaching Thinking and Dialogue (CTTD), University of Exeter



Publications
e.g. Wegerif, Li and Kaufman (for 2015)
The Routledge Handbook of Research on Teaching Thinking

Research Projects
Virtual Reality
Global Dialogue for Peace
Metafora
Statstalk

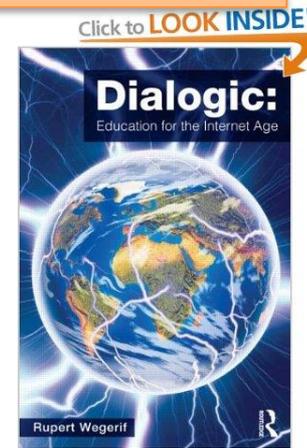


Accreditation of "Thinking Schools" and "Digitally Excellent Schools"

Assessment tools:
Autonomous Learning Scale
Group Thinking Measure

PhD Students
Mobile learning
Affordances of social networks
etc

MA in Education: Technology, Creativity and Thinking (TCT)
Module: Teaching Thinking in the Internet Age. + PhDs and EDDs.

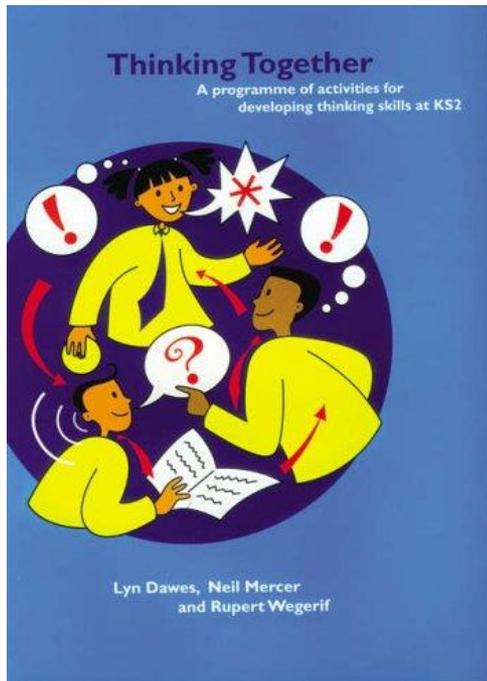


Overview

1. Brief history of some research on teaching and measuring group thinking
2. Why this led to a dimension from monologic to dialogic
3. Dialogic measurement project 1: Attempting to support the measurement of group thinking (work in progress)
4. Dialogic measurement project 2: Evaluating global internet mediated dialogue to counter extremism (work in progress)
5. Conclusions about dialogic thinking and its measurement

I am sharing work in progress. Defining and measuring dialogic thinking is difficult. I need your help.

1: Brief history of some research teaching and measuring group thinking



Work with Neil Mercer and Lyn Dawes back in the 90's but still continuing

We taught sensible 'ground rules' for thinking together

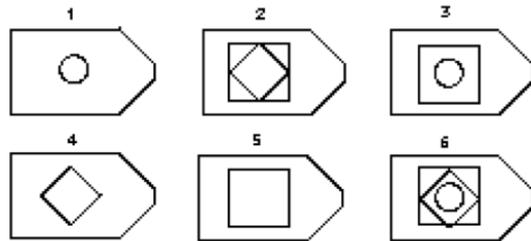
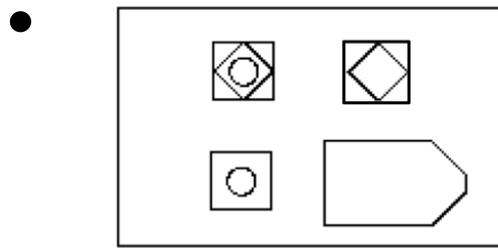
- All relevant information is shared openly.
- Each group member should be actively encouraged to contribute to the discussion.
- Everyone should listen to others attentively.
- Each suggestion should be carefully considered.
- Group members are asked to provide reasons for ideas and opinions.
- Constructive challenges to ideas are accepted and a response is expected.
- Alternatives are discussed before a decision is taken.
- The group works together with the purpose of reaching agreement.
- The group, not the individual, takes responsibility for decisions made, for success achieved or for problems that may occur.

But each class had their own rules. An example:

(Class 5 D) Rules for Talk

- 1. Everyone should have a chance to talk**
- 2. Everyone's ideas should be listened to**
- 3. Each member of the group should be asked**
 - what do you think?**
 - why do you think that?**
- 4. Look and listen to the person talking**
- 5. After discussion, the group should agree on a group idea**

We measured impact with Ravens Non-Verbal Reasoning Tests



Stats

We used two versions of the Ravens SPM test – one for individuals and one for groups both before and after a three month intervention teaching ‘Thinking Together - and we found that both individuals and groups did significantly better. We used this result to argue for a Vygotskian model of learning to think.

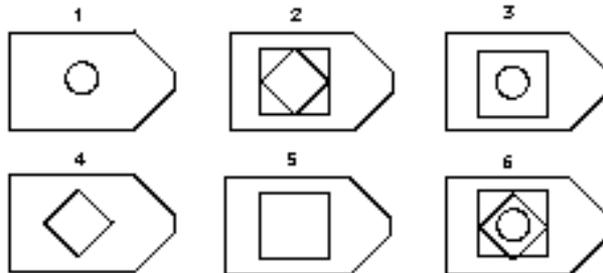
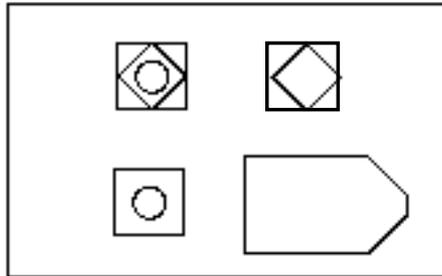
But what was the causal process behind these results? Why did teaching talking lead to better ‘non-verbal’ reasoning?

Videos of groups thinking together gave us some ideas

Wegerif, R., Mercer, N., & Dawes, L. (1999). From social interaction to individual reasoning: an empirical investigation of a possible socio-cultural model of cognitive development. *Learning and Instruction*, 9(6), 493-516.

B12 from Raven's SPM non-verbal reasoning test

12



Group 1 before the Thinking Together lessons

Trisha: Square and diamond, it's 2

George: No it's not

Trisha: It is 2

George: No it's not

Trisha: It is

George: No it's not

Group 1 after the Thinking Together lessons

Trisha: That has got to be a diamond, a square with a diamond with a circle in that one, number 6, do you agree?

George: No, what do you mean?

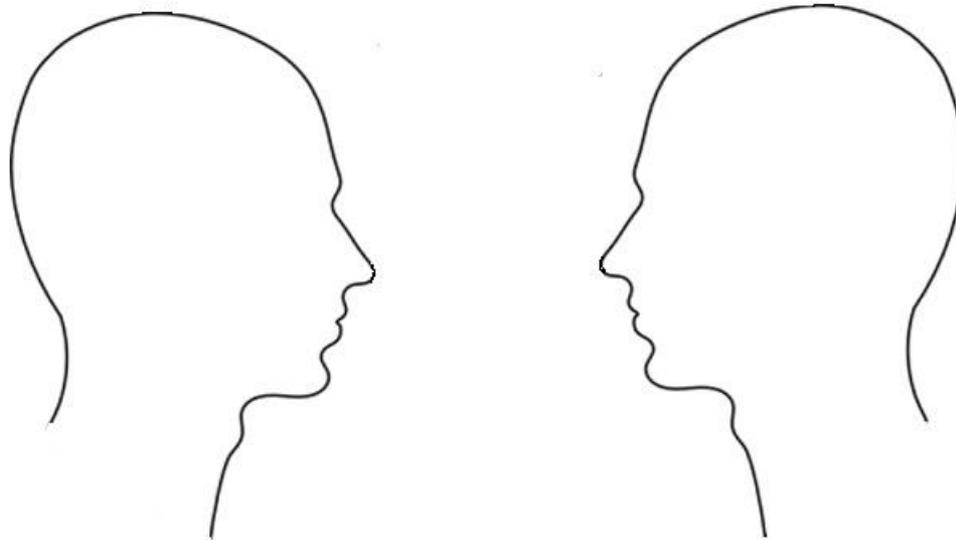
Trisha: OK no it's got to be square

Later ...

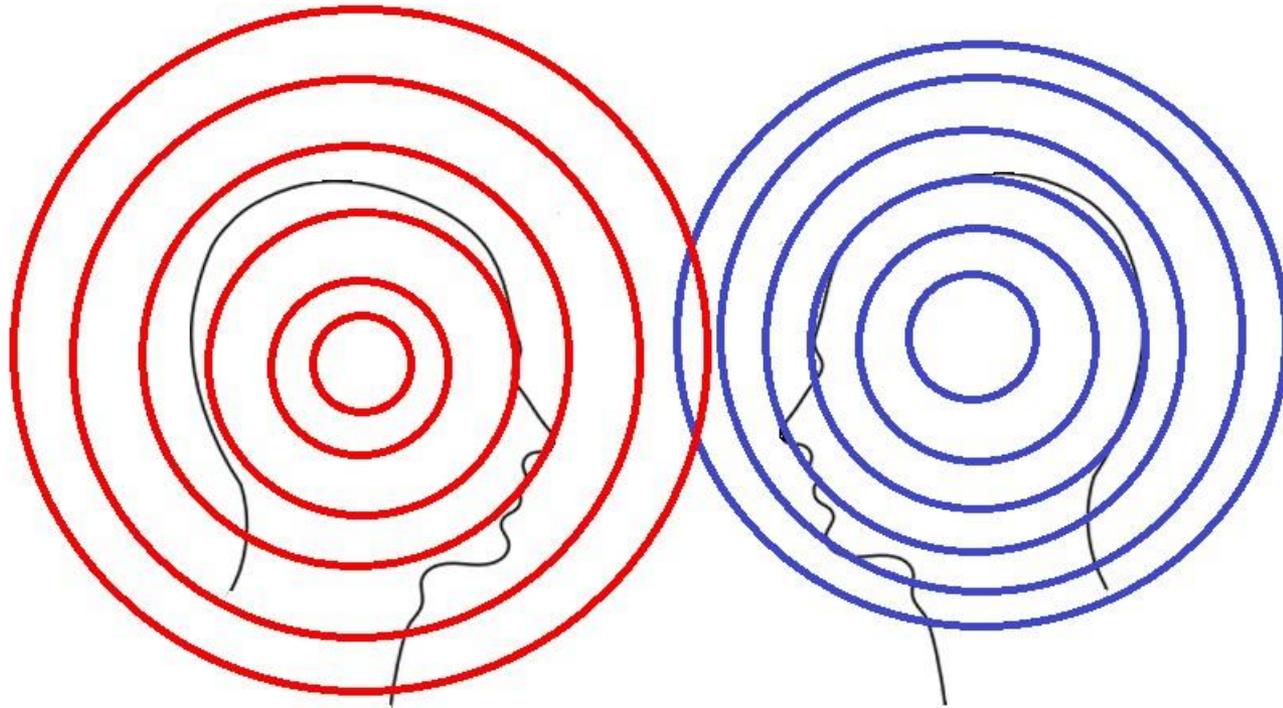
George: I don't understand this at all

Trisha: Because look on that they've taken the circle out yes? So on that you are going to take the circle out because they have taken the circle out of that one

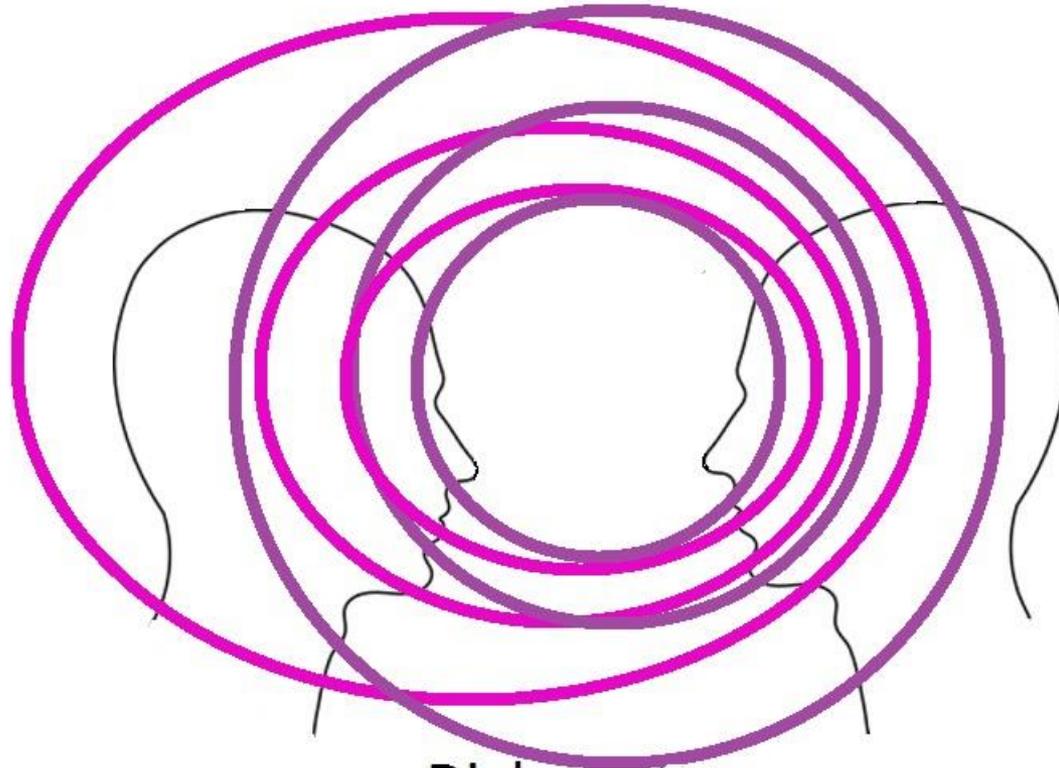
George: On this they have taken the circle out and on this they have taken the diamond out and on this they have put them both in, so it should be a blank square because look it goes circle square



Dialogue?



Dialogue?

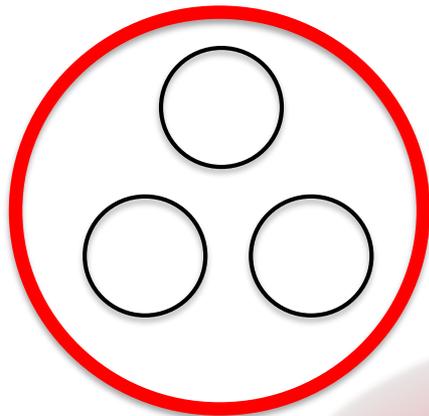


Dialogue

When researching groups of children solving reasoning test problems together I found that the key to success was the children learning to listen and to change their minds. They entered into shared thinking – a ‘dialogic space’.

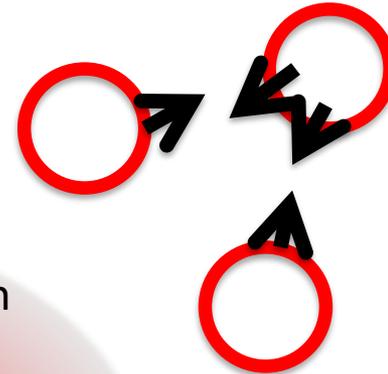
Dialogic orientation is collaborative, ‘open to the other’, but also critical and questioning.

Three kinds of talk as types of identification

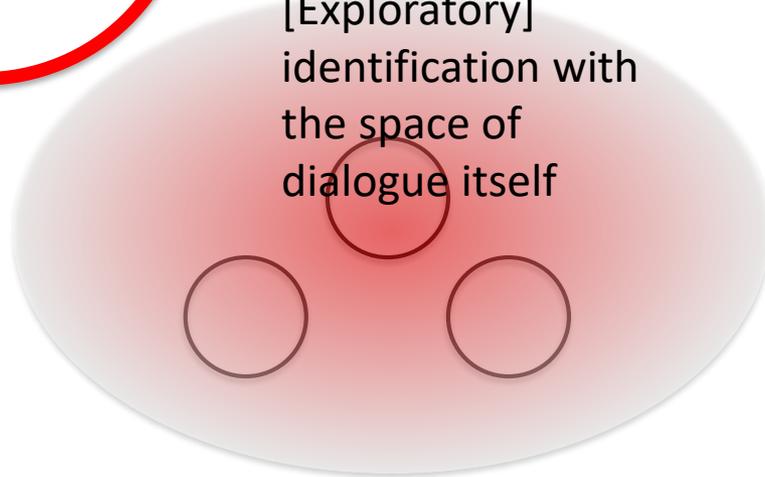


1. Cumulative –
identification
with the group

2. Disputational –
identification with self



3. Dialogic
[Exploratory]
identification with
the space of
dialogue itself



Dimension from monologic to dialogic

Less successful groups tended to be disputational or cumulative – two types of ‘monologic’ identity with a fixed image, in one case identifying with the ego and in the other the group.

More successful groups were more open to each other, able to share ideas, challenge and change views.

From what perspective were they able to change their minds?

This implies identifying with the dialogue itself or the ‘dialogic space’ that opened up between them.

-> A dimension of identity shift from more monologic to more dialogic

Dialogic?

The meaning of an utterance depends upon its position in a dialogue: the previous utterances that it is responding to and the future utterances that it influences.

Kind of obvious but from this it follows that:

- a) There are always multiple voices in play, and
- b) There is no final meaning – the conversation remains open

Monologic thinking versus dialogic thinking

Monologic: $A = A$

- one true representation or perspective
- thinking as the reduction of apparent difference to identity.

Dialogic: A not equal to A (the other is always at the heart of the same)

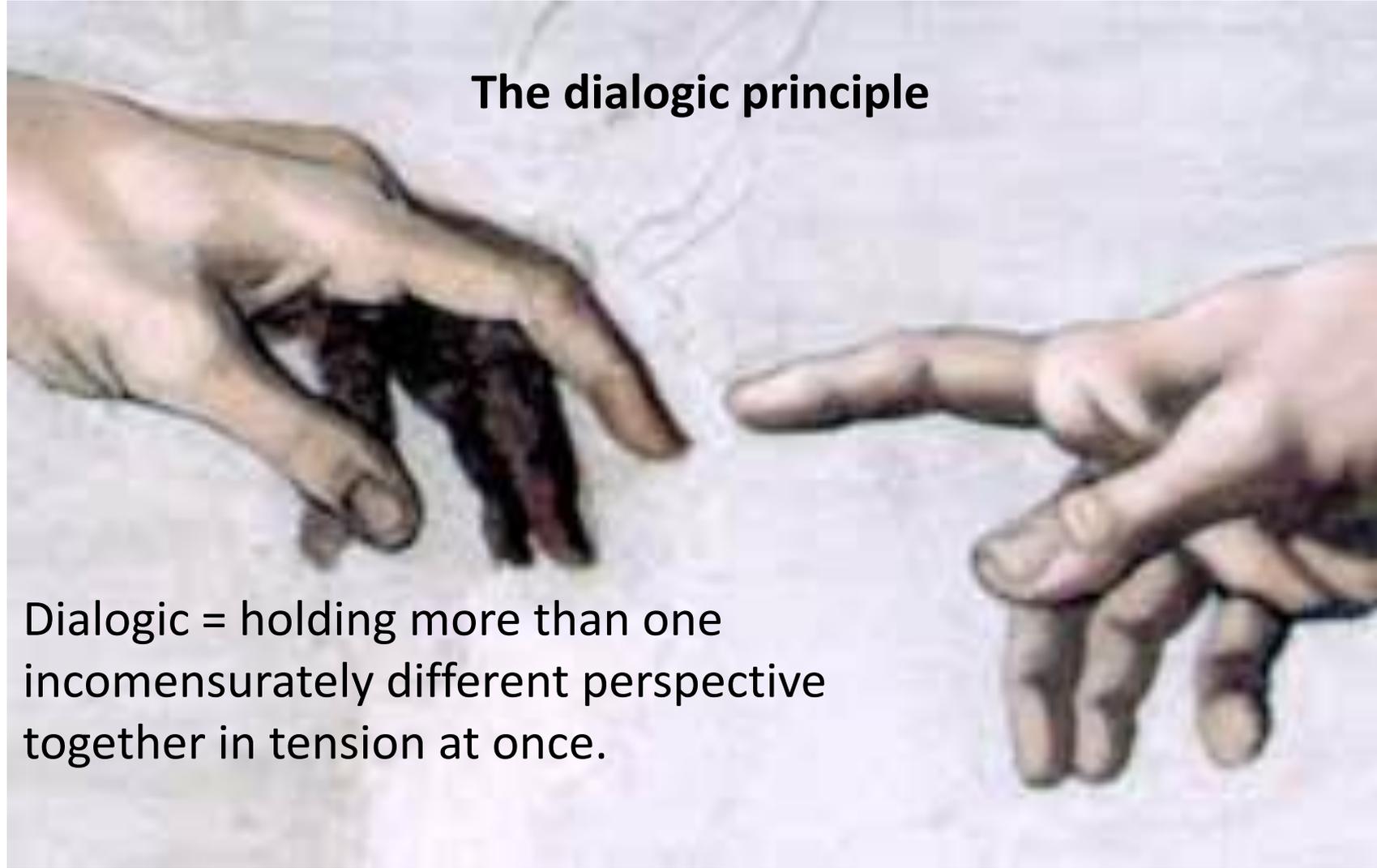
- meaning presupposes difference
- thinking as play of perspectives
- in place of reduction to unity there is unlimited potential for creativity
- From idea of thinking as critique to idea of thinking as design

The BIG dialogic idea. .



meaning 'is like an electric **spark** that occurs only when two different terminals are hooked together' (**Volosinov/Bakhtin**).

The dialogic principle



Dialogic = holding more than one incomensurately different perspective together in tension at once.

Dialogic “space”

Dialogos = reason (λογος) through and across (δια) difference.

Dialogic space is shared meaning space characterised by lack of certainty and an inescapable multiplicity of perspectives

Good thinking is messy, complex, creative

Resnick found that what practitioners mean by 'Higher Order Thinking' :

- is non algorithmic. That is, the path of action is not fully specified in advance.
- tends to be complex. The total path is not “visible” (mentally speaking) from any single vantage point.
- often yields multiple solutions, each with costs and benefits, rather than unique solutions.
- involves the application of multiple criteria, which sometimes conflict with one another.
- often involves uncertainty. Not everything that bears on the task at hand is known.

(Resnick, 1987) She referred to individual thought but this is 'dialogic'

Section 4: measuring group thinking

Collective intelligence or 'c'

Anita Woolley et al Science 29 October 2010:

Evidence for a Collective Intelligence Factor in the Performance of Human Groups

Used a similar design to us – if a single test then ravens best at 0.86 correlation with c

‘By analogy with individual intelligence, we define a group’s collective intelligence (c) as the general ability of the group to perform a wide variety of tasks. Empirically, collective intelligence is the inference one draws when the ability of a group to perform one task is correlated with that group’s ability to perform a wide range of other tasks’.

Not correlated with individual IQs but with women on the teams and then with ‘social sensitivity’

The Group Thinking Measure project

It consists of two sets of 15 graphical puzzles online. These short tests are carefully matched for difficulty. Children do one test working in groups of three and the other test working individually. The difference in the scores of the individuals and the groups gives a measure of how well the group thinks together. If the group score is higher than any of the scores of the individuals making up the group then that indicates that the group is working well. If the group score is lower than any of the individual scores then that indicates that the group is not working so well. Two measures of group thinking are generated: firstly, the difference between the group score and the highest individual score and secondly, the difference between the group score and the mean of the individual scores.

We have validated the two tests as being of equal difficulty and found no significant effect for doing the group test first or the individual test first.

Value adding and value detracting groups

- Value Adding Group VAG: the group score is higher than the highest score of any individual in the group eg on Test A Anne scores 7, Ben scores 6 and Claire scores 8. On Test B two days later the group scores 11. This implies that the group adds value.
- Value Detracting Group VDG: the group score is less than the highest score of any individual in the group.

Video of a VAG

Look at the use of the fingers
– creates a shared space
Giving elaborated
explanations
Expressing humility 'I don't
understand'
Exploring alternatives
Changing minds



Value adding behaviours found so far through thematic analysis (without a model)

- Encouraging each other, for example responding to suggestions with 'could be ...'
- Expressions of humility, for example 'I do not understand this.'
- Giving clear elaborated explanations, for example 'the triangle here is removed and here it turns around by 90 degrees'
- Equal participation with everyone in the group actively involved in each problem.
- Actively seeking agreement from others, for example by asking 'do you agree?'
- Not moving on until it is clear that all in the group understand for example asking 'I do not understand it, can you explain again?'
- Open questions, for example 'can anyone see a pattern here?' and 'what do you think?'
- Humour with jokes and shared laughter.
- Willingness to express intuitions, for example, 'I am not sure but I have a feeling it is that one'
- Indications of mutual respect in tone and responses.
- Taking time over solving problems seen in accepting pauses and giving elaborated explanations when asked.

Work in progress - need help with this

I think that this has the potential to be a useful tool but there are many problems with it.

Some groups that work badly together do well if, for example, one 'clever' child takes over and does everything. Some groups that appear to work well together do not do so well. The only way to be sure that the good score results from group process is the video. (This issue might be resolved with larger numbers where the test is used to evaluate a teaching programme).

So far the differences between the group scores and the highest individual scores are small, one or two points, we are testing to see if this is a statistically significant difference but I doubt that it is very significant.

We are exploring if the difference between the mean scores of the individuals and the group score indicates better group process. Again this might need scale.

Perhaps this is best not as a 'measure' but as a support for teaching interventions promoting better group thinking – both group and individual scores can be improved and videos can make the group problem solving processes visible and so support the teaching.

5: Evaluating the Face-to-Faith programme



Face-to-faith programme (Tony Blair Faith Foundation)

Hundreds of schools around the world in dialogue about differences in culture and faith via video conferences and team blogging. Involves an eight week educational programme in dialogue. Aim is to promote open-mindedness and combat extremism.

Developing a Measure of Dialogic Open-Mindedness (MDOM)

Meaning, according to Bakhtin, only arises because there is a difference between voices in a dialogue so if we were to overcome this difference that would leave us with no meaning. It is the difference between voices that enables us to become more aware of ourselves as we become more aware of others. The aim of dialogue is mutual illumination in a way that augments and expands perspectives without reducing them to sameness (Bakhtin, 1986)

Being 'open to others' in the dialogic sense is not about agreeing with others but is about understanding and validating their perspective as participants within a dialogue from which all can learn.

Not just cognitive open-mindedness but includes being able to inhabit the positions of others and so understand not only what they say but also how they feel and why they might feel that given their history and cultural context. (ie beyond the information processing model of cognition to a more embodied notion)

Student Questionnaire

Tolerance of ambiguity (MDOM)

‘There is not always a correct answer...’

Self-confidence in the face of diversity (MDOM)

‘I can interact confidently with people from another culture or point of view – without getting angry or defensive..’

Knowledge and Experience of Difference – Approach and Avoidance (MDOM)

‘Do I approach or avoid the Other...?’

Just World Hypothesis (MDOM)

‘you get what you deserve and deserve what you get’

Knowledge and Experience of Difference (KED)

Repeated Measures Design

							
Event	Baseline	Post event	Post event	Post event	Post event	Post event	Post event
Student							
Teacher (Part A)							
Teacher (Part B)							

Student Questionnaire

Just World Hypothesis (MDOM)

- ‘you get what you deserve and deserve what you get’

Tolerance of ambiguity (MDOM)

- ‘There is not always a correct answer...’

Self-confidence in the face of diversity (MDOM)

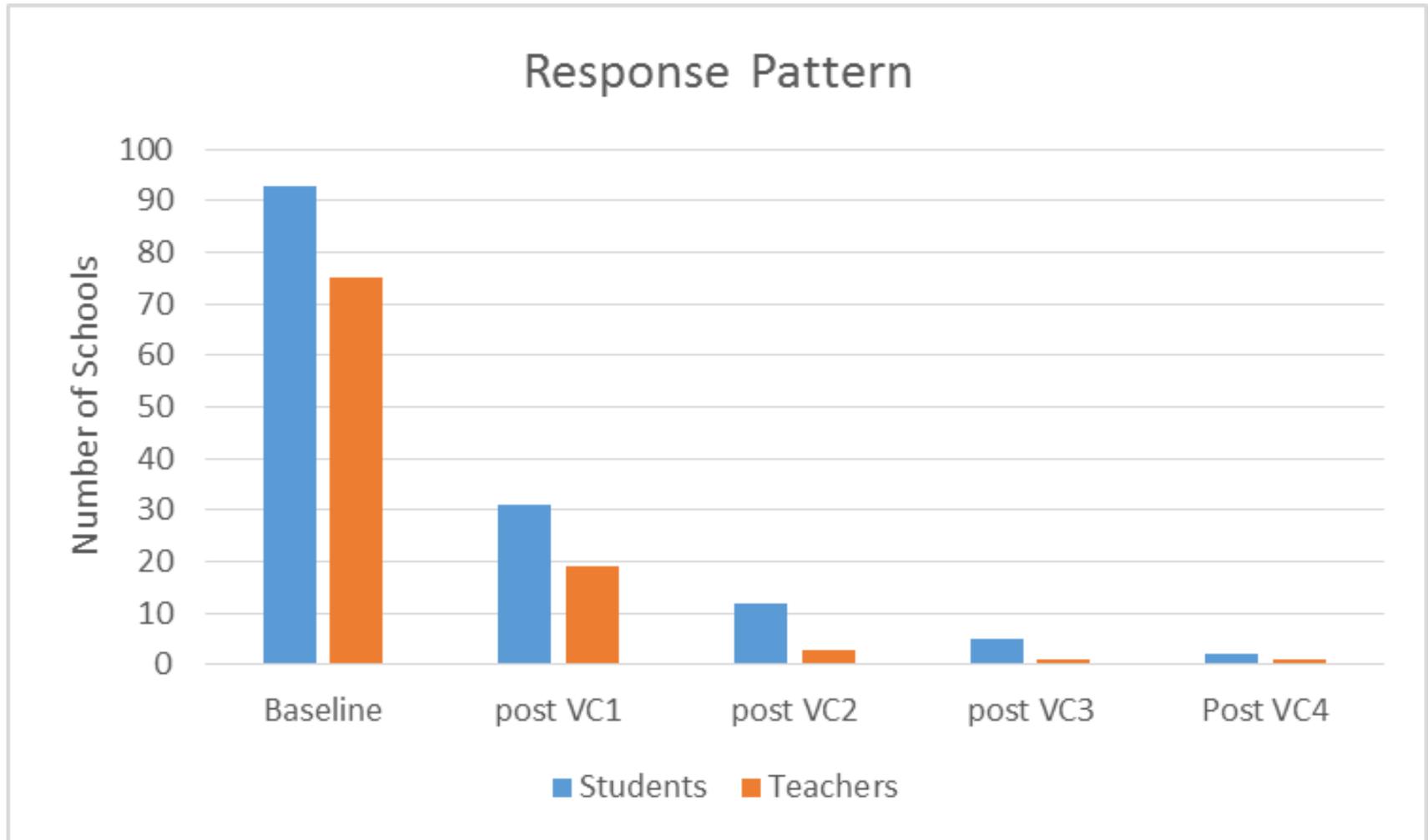
- ‘I can interact confidently with people from another culture or point of view – without getting angry or defensive..’

Knowledge and Experience of Difference – Approach and Avoidance (MDOM)

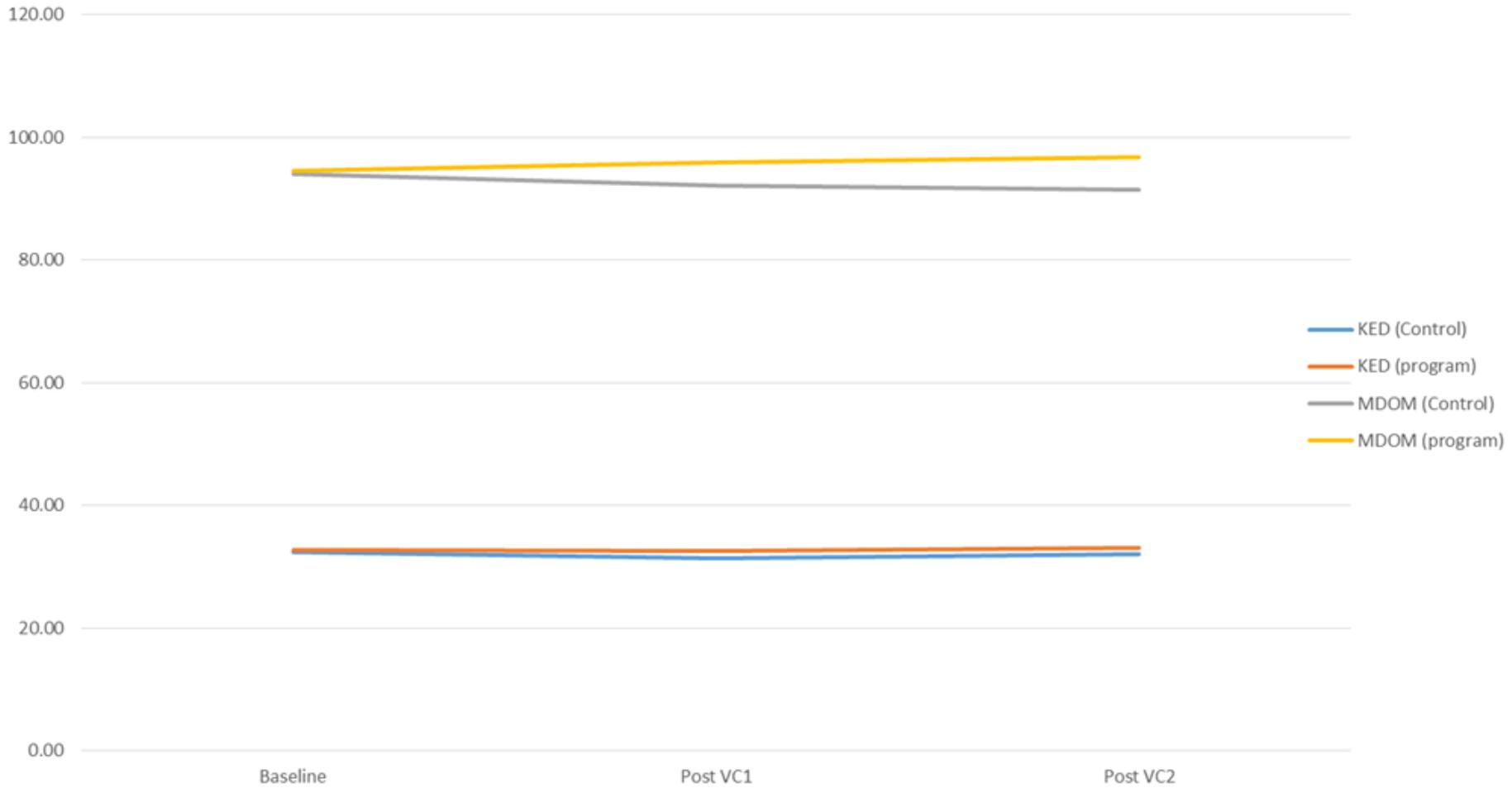
- ‘Do I approach or avoid the Other...?’

Knowledge and Experience of Difference (KED)

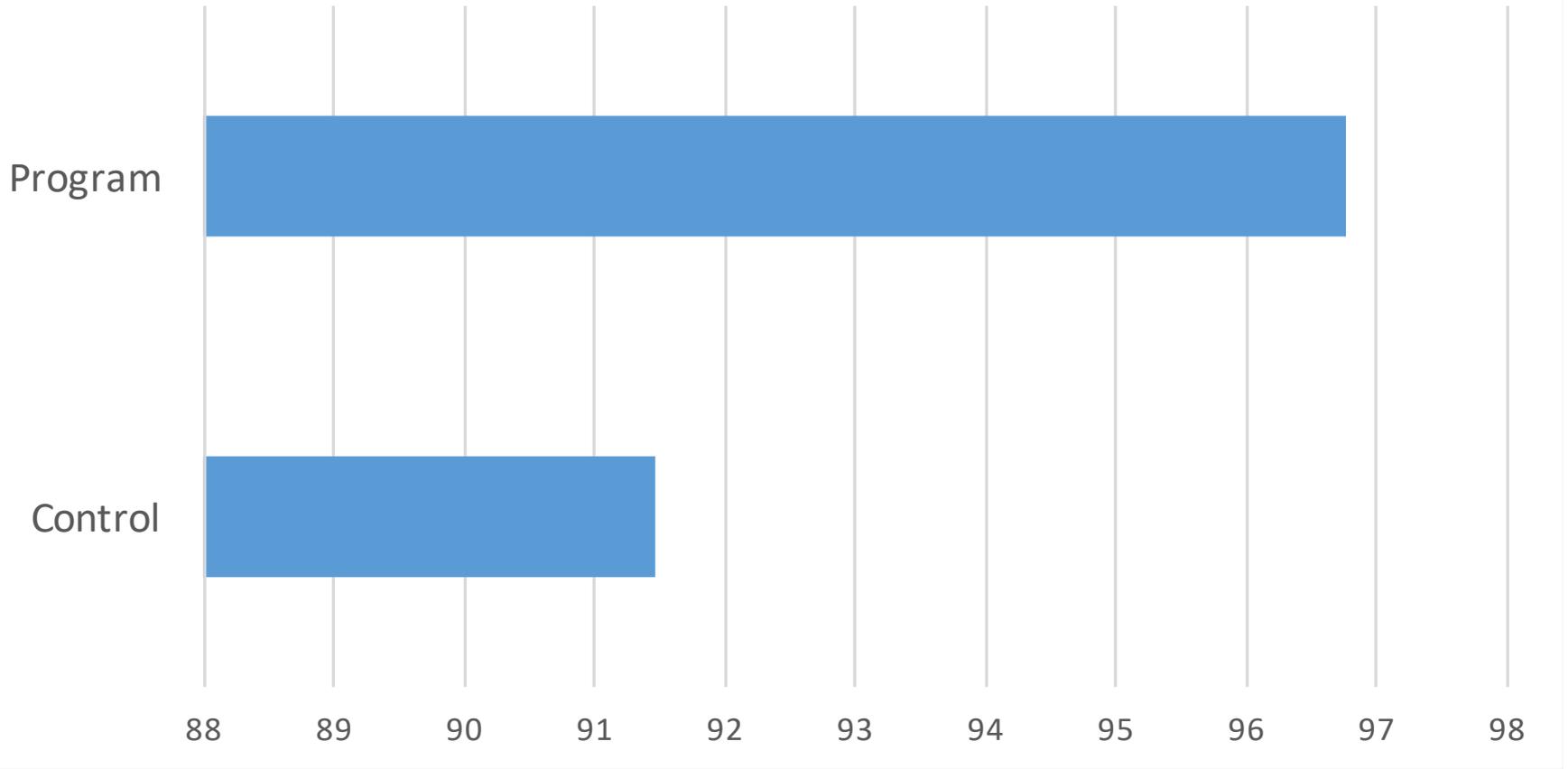
Interim Results



Development of KED and MDOM over time



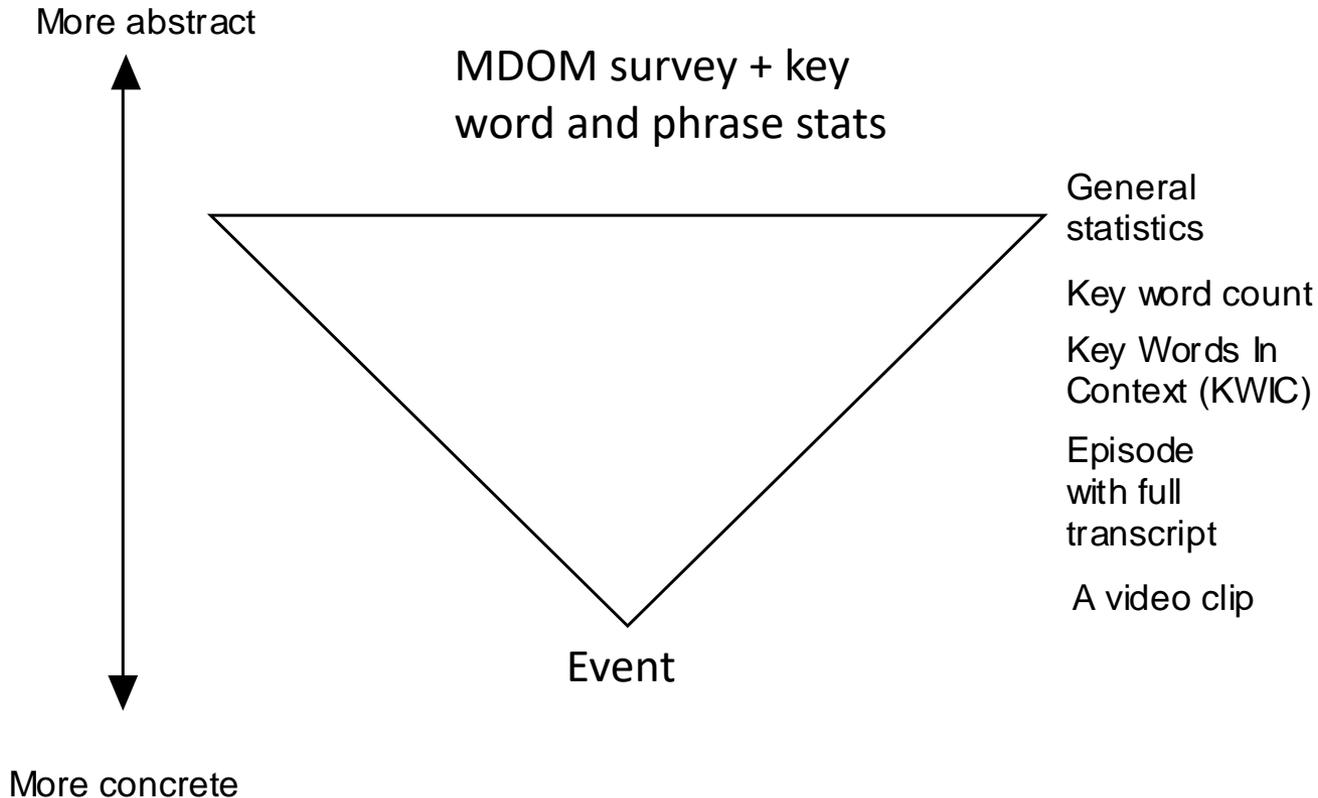
Control group vs program group post VCs MDOM



Statistically very significant difference - $t(794) = -4.08, p < 0.0001$

The Dynamic Inverted Pyramid Approach

Events are selected by statistics and – when possible - statistics are drawn out from and informed by events

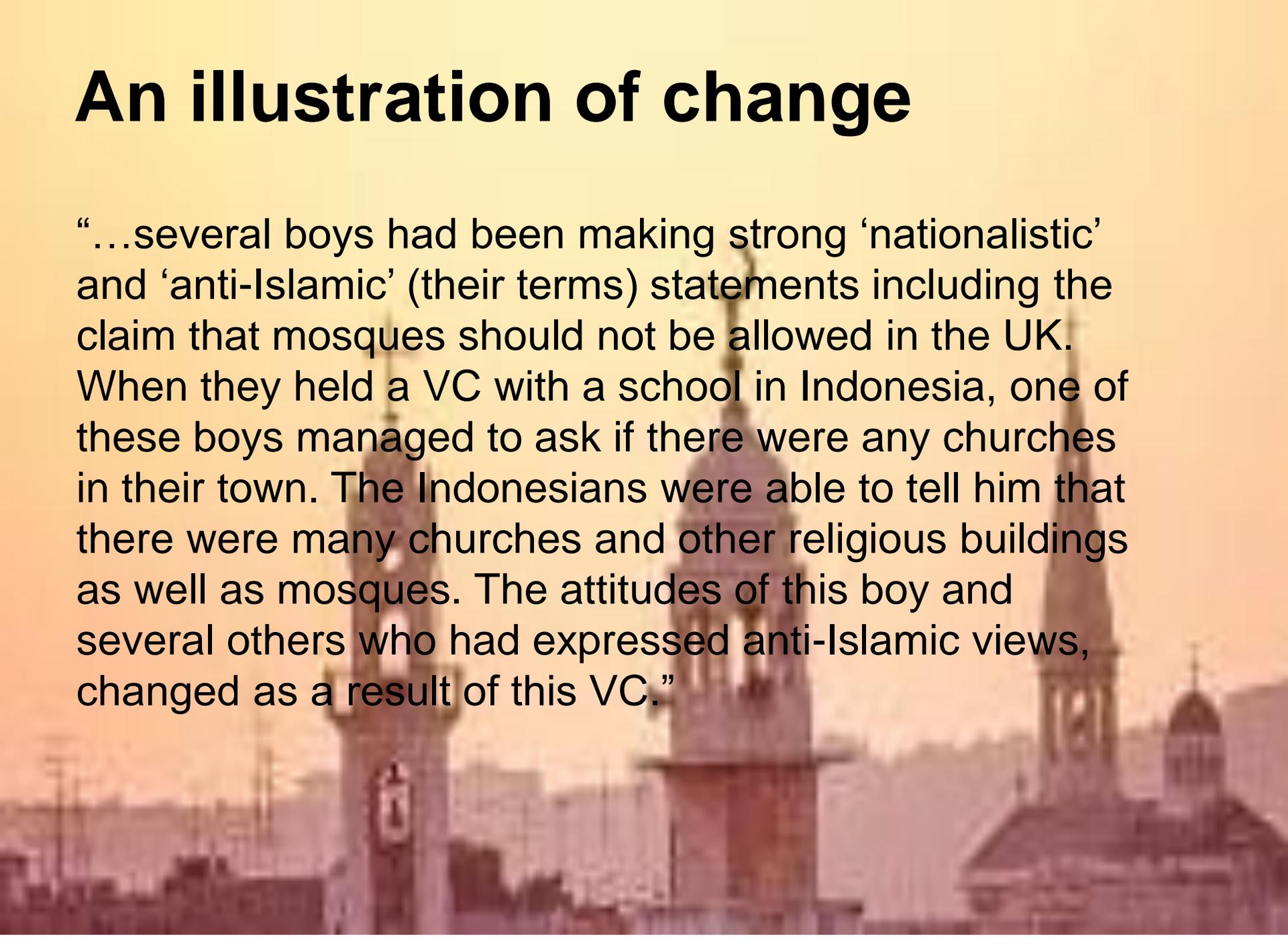


Case studies

The findings of the questionnaire data will help us to focus in on schools where the programme is working well and also schools where it is not working so well. Case studies of eight schools in total across four countries will help us to find out why it is working or not working and also give us vivid examples.

An illustration of change

“...several boys had been making strong ‘nationalistic’ and ‘anti-Islamic’ (their terms) statements including the claim that mosques should not be allowed in the UK. When they held a VC with a school in Indonesia, one of these boys managed to ask if there were any churches in their town. The Indonesians were able to tell him that there were many churches and other religious buildings as well as mosques. The attitudes of this boy and several others who had expressed anti-Islamic views, changed as a result of this VC.”



Team-Blogging Reflections

“...team blogging have changed my opinion about people from different faiths,communities,country. before i used to believe that my religion is the best. now i believe that all religion are the same.”

Difference in tone between the pre and the post-VC blog reflections. In the pre data we find expressions of nervousness, anxiety and excitement. In the next phase of the project we will be able to use standard concordancing techniques to find statistically significant changes in the language use.

Video conferences

Focus in on key events found through interviews and observation. For example in one video between a school in Israel and a school in Egypt, we saw high tension and engagement around the issue of the treatment of Arabs in Israel:

' ... it's a different culture they are different then us and it is not bad exactly but I think they have less chance in Israel to get a high job –'

We will link measurements of change in attitude to such events through interviews and through statistics.

Discussion of TBFF F2F Evaluation

The statistical evidence points to change and the qualitative data suggests some of the processes that might lie behind that change. In the next phase, using case studies and a larger data-set we expect to be able to make stronger claims linking statistical findings to the analysis of processes in order to say not only that the programme works (assuming the final data still shows this) but also how and why it works.

Why these two measures are linked

Group thinking might be origin of individual thinking (Vygotskian hypothesis) but there are differences: social sensitivity is needed in group thinking. Some thinking is faster alone.

Learning to think together improves individual thinking but it also improves classroom behaviour. Link to ethics.

The Face-to-Faith programme involves teaching dialogue before the video-conferences and teachers report that results go up.

Dialogicity – being open to the other – is the antidote to extremism. But it also helps small groups think together better.

The dimension of identity change from monologic black and white, true and false thinking to dialogic complex thinking is both about values and about cognition.

So what exactly is ‘dialogic thinking’ and ‘how can we measure it?’

'There are no last words' Bakhtin

The essence of dialogic thinking is the creativity that comes out of the gap between different perspectives when they are held together in the tension of a dialogue.

But dialogue also includes critical thinking, assessing and comparing perspectives.

Dialogic thinking is complex and 'embodied', including issues of identity and emotion. It has many levels, individual 'reflection', small group thinking, whole planet thinking.

The main issue is assessing a shift in disposition and identity from monologic to dialogic

Measurement is not easy! I have shared work in progress on a cognitive measure for small groups and a dispositional measure for global dialogue. What do you think?

Thanks for listening!

www.rupertwegerif.name

Papers are available to download on this site.

r.b.wegerif@exeter.ac.uk

Some references

Wegerif, R., Mercer, N., & Dawes, L. (1999).
From social interaction to individual reasoning:
an empirical investigation of a possible socio-
cultural model of cognitive development.
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Resnick, L. (1987). Education and learning to
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