Creating Metacognitive Environments in Primary School RE Classrooms: A Summary Report of the RE-flect Project

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To cite this article: Shirley Larkin, Rob Freathy, Karen Walshe & Jonathan Doney (2014) Creating metacognitive environments in primary school RE classrooms, Journal of Beliefs & Values: Studies in Religion & Education, 35:2, 175-186

To link to this article: http://dx.doi.org/10.1080/13617672.2014.953298

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Abstract

Recent reports on Religious Education (RE) in England and Wales highlight the need for guidance on pedagogy and learning. The RE-flect project addressed this by promoting the creation of metacognitively oriented learning environments in primary school RE classrooms. Six primary school teachers and 160 pupils (8 - 10 years) took part in the second year of this two year project. Meta-thinking, worldview and resources zones were created in each classroom. Attainment in RE and pupil perceptions of the learning environment were measured. Data from classroom observations, Worldview Profiles, and pupil and teacher interviews were analysed qualitatively. Results show an overall increase in attainment; a positive change in pupil perceptions of the learning environment; and the ability of pupils to reflect on and articulate their worldviews. Implications for RE curricular and pedagogy are discussed.

Keywords: Religious Education; Metacognition; Pedagogy; Worldviews

Introduction

Religious Education (RE) is facing challenging times (Keast 2013, Woodhead 2012) - cutbacks in teacher training; inadequate continuing professional development (CPD) provision; and a crisis of confidence in its perceived value in the curriculum (APPGRE 2013). The necessity for the RE community to focus its attention on pedagogy rather than curriculum content has been noted, as well as the lack of clarity surrounding the meaning of, and relationship between, the terms 'pedagogy' and 'curriculum' (Blaylock, Gent, Stern, & Walshe 2013, 14). Similar concerns have been raised by Baumfield (2012), who believes that pedagogy has suffered a long period of neglect, and Chater and Erricker (2013, 210), who urge the RE community to 'acknowledge the poverty of its pedagogical debate'. For them, this is a debate which has been hindered by three central 'myths' concerning:

- 1. a false dichotomy between skills and content;
- 2. the assumption that some concepts or belief systems are too complex or culturally distanced for children at certain ages and stages; and

3. the belief that 'Learning about religion' (Attainment Target (AT) 1) must precede 'Learning from religion' (AT2) (Qualifications & Curriculum Authority [QCA] 2004).

This article contributes to this pedagogical debate by providing a summary of the RE-flect research project which sought to create metacognitively oriented learning environments in primary school RE classrooms. Through facilitating pupils' metacognition, creating space and time for them to reflect on their worldviews, and fostering inter-active, mutually-supportive, learning *about* as well as *from* religion(s), RE-flect hoped to address some of the difficulties primary school RE teachers face.

Theoretical Framework

The starting point of the RE-flect project was a commitment to providing opportunities for pupils to reflect on and monitor their own thinking during RE lessons, including understanding and developing their own worldviews. RE-flect took seriously RE's remit to enable pupils to critically examine their inner and outer worlds (Chater & Erricker 2013). We agree that it is through reflection and dialogue that pupils are brought to a greater awareness of their own faith position, religious or otherwise; an appreciation that that position is based on particular ontological and epistemological assumptions; a recognition that their own position is bounded and therefore limited; and an openness to the position of the other. An individual's ability to recognise their own position as a position has important implications for their capacity to enter into genuine dialogue with the other, dialogue requires a conscious act of foregrounding one's own beliefs, values and assumptions prior to encounter with the other (Gadamer 2004). Research suggests that dialogue is something that pupils are often reluctant to do, preferring instead to simply trade information (McKenna, Ipgrave, & Jackson 2008). The RE-flect project was based on the premise that effective dialogue requires reflection on thinking, self-awareness and monitoring of thinking and that this needs to be facilitated by a classroom environment which provides the psycho-social conditions necessary for metacognition to develop.

RE-flect was based on Flavell's (1979) theory of metacognition as everything we know and believe about our own cognitive processes and those of others, and the regulation and control of thinking processes. Positive effects of metacognition on learning have been shown in literacy (Artelt, Schiefele, & Schneider 2001), mathematics (Mevarech & Fridkin 2006) and

science (Rickey & Stacy 2000). Metacognition has also been linked to increased motivation to learn and the development of positive learner self-perception (Borkowski, Carr, Rellinger, & Pressley 1990). However, the original aim in developing metacognition was not only to learn better but to enable us to 'make wise and thoughtful life decisions' (Flavell 1979, 910). In RE-flect, metacognition was seen in the widest sense of enabling self-understanding through a reflection on one's own ontology, epistemology, beliefs and values, as well as encouraging pupils to think about and monitor their own thinking and learning. We agree with Wright (2008) that by reflecting on our own views in the light of possible alternatives we become more open to contested truth claims and more capable of responding to them intelligently. We suggest that the first step is to focus on bringing to consciousness the beliefs and values which underpin our actions, but which we may not be aware of. Without developing the skills to reflect on their own thinking, pupils often view RE as simply a 'matter of opinion' (Freathy & Aylward 2010) and thus oversimplify the nuances of difference within faiths as well as the complexity of identity and culture more generally (Inter Faith Foundation 2006).

RE-flect focused not only on the individual developing, but on the metacognitive orientation of the classroom environment. Research suggests that the beliefs and practices of the communities within which students learn to learn strongly influence their metacognition; that language plays a key role in metacognitive development; and that pupils require particular encouragement if they are to reflect on, critique and possibly alter their thinking processes (Thomas & Mee 2005). In RE-flect, this socio-cultural theory of metacognition was put into practice through the creation of three zones:

- 1. Meta-thinking thinking about learning in RE (thinking processes)
- 2. Worldview thinking about myself as a learner in RE (self-awareness)
- 3. Resources thinking about religious phenomena (encounter with subject knowledge)

This article reports on the design of the RE-flect project and the findings from the classroom element of year 2 of the project. Other aspects of the project will be published separately.

Project Design

The RE-flect project was a two year (Year 1 – pilot; Year 2 – main) collaborative project between a university research team and a group of primary school teachers and their pupils, informed by consultative action research principles (Carr & Kemmis 1986), with a mixed methods design.

Participants

Six teacher volunteers from different co-educational, state-maintained primary schools (including two voluntary controlled Church of England schools) in the South West of England took part. Five of the teachers taught Year 5 pupils (aged 9-10). Between year one and two, the sixth teacher was re-deployed to a Year 3 class (aged 7-8). Three teachers were also the main classroom teacher; one was a higher level teaching assistant. Teachers were not RE specialists. 160 pupils participated in the second year of the project. Six pupils from each class (girl/boy pairs) formed focus groups. Teachers attended three Teacher Days where they collaborated with the research team; shared feedback and ideas.

An initial questionnaire and group discussion showed that none of the teachers was following the Local Education Authority's RE Agreed Syllabus. RE provision was *ad hoc*, and lessons often focussed on ethical and environmental issues or simplistic creative activities.

Research Questions

- 1: What is the impact of creating metacognitively oriented classroom environments on attainment in RE in the participating schools?
- 2: What is the impact of creating metacognitively oriented RE classrooms on participating pupils' perceptions of their learning environment?
- 3: How was metacognition demonstrated by focus group pupils during RE-flect activities?
- 4: Does Worldview Profiling facilitate participating pupils' reflection on, and articulation of, their worldviews both in isolation from, and in relation to, the worldviews of others?

Methods

Data collection methods were matched to the above research questions as follows:

Question 1

As there was no control group, teacher predictions of post attainment scores were compared with actual attainment. The use of national numerical level descriptors (QCA 2004)in the pilot year to assess pupil attainment failed to discern small amounts of progress, so in year 2 a more nuanced low, medium, high category for each level was used, resulting in a 12 point scale e.g. 1Low =1; 4High=12.

Question 2

A variant of the General Studies Metacognitive Orientation Scale (GSMOS, Thomas & Au Kin Mee 2005) was adapted for RE and renamed REMOS. This has 15 items which ask pupils to rate their classroom environment on a 3 point Likert scale e.g.: '1.The teacher asks us to think about how we learn in Religious Education' and '3.The teacher tells us how she thinks when she learns in Religious Education'. Items were scored: Always = 3; Sometimes = 2; Never = 1. Thus a high total score indicates a perception of a highly metacognitive classroom environment. The scale was modelled using Rasch analysis: Real Person Rasch Reliability is 0.66.; Person Separation Index is 1.39 which is above the 0.7 threshold criterion. Point Biserial Correlations are between 0.33 and 0.57 suggesting the items are reasonable indicators of a unified construct. The scale has a Cronbach's Alpha of 0.692. Based on a sample of 160, Real Item Reliability is 0.96 suggesting high internal consistency. Thus, REMOS acts as a unified scale that gives an overall figure of pupils' perceptions of the Metacognitive Orientation of the classroom.

Focus group children were interviewed in girl/boy pairs at the beginning and end of the year. Questions focussed on pupils thoughts about their RE classroom; their learning in RE; and RE lessons.

Question 3

Three video-recorded observations were made in each school, one per term. Recordings captured teacher set up and whole class interactions during starter and closing activities. During RE-flect activities, filming focussed on the six focus group children in each class.

Question 4

Pupils in the focus groups were invited to submit their Worldview Profiles (see Zone 2 below) for qualitative data analysis. Focus group interviews were also explored for mention of Worldview Profiles. Teachers completed an evaluative questionnaire about Worldview Profiling at the end of the year.

Three Zones

In order to create a metacognitive environment, teachers were asked to create three physical zones. These could be a corner of the room; a table; a bookshelf; even a window ledge.

1. Meta-thinking zone (thinking processes)

This zone was designed to enable pupils to develop knowledge of their own thinking and learning in RE as well as to monitor and control their thinking. It consisted of posters and cue cards including images depicting "thinking"; individual mental state words such as 'believe', 'know', 'think', 'imagine' and 'guess'; and questions or phrases, such as 'How do I know that?', 'Who or what has influenced my beliefs?', 'How well is my group doing?', 'How do I feel about the task', and 'Could we think about this in a different way?'. Whether they were engaged in group collaborative tasks or pieces of individual work, pupils were encouraged to visit this zone, so as to make them more aware of how they were thinking and feeling.

2. Worldview Profile zone (self-awareness)

This housed the pupils' Worldview Profiles. These ranged from exercise books to computer files, in which pupils responded to a series of questions based on Valk's theory of worldview education. Valk (2009) suggests that by encouraging students to reflect upon and examine the religious and secular worldviews of others (knowing others), they simultaneously come to a greater understanding of themselves (knowing self). Students 'come to recognize that worldview neutrality is difficult to achieve - we all embrace beliefs and values of some kind' (Valk 2009, 73). We adapted Valk's framework for exploring beliefs, values and principles (Valk 2010) and created questions suitable for RE-flect pupils. There are five individual frameworks: (F1) Personal Identity; (F2) Ultimate or Existential Questions; (F3) Worldview Dimensions; (F4) Ontological/Epistemological; and (F5) Primary/Secondary Beliefs, Values and Principles. With their components and questions, these made up the RE-flect 'Worldview Questions Framework' [WQF], which was used, during RE-flect lessons throughout the year,

to structure pupils' reflections on their developing worldviews. Moreover, we encouraged pupils to revisit questions to see how and why their answers may have changed.

Table 1: Example from RE-flect WQF

| Framework 4 | Components | | Relevant questions for Year 5 | | |
|---------------------------------|--|---|--|--|--|
| | | Material: our physical nature | What do you think exists and does not exist? What do you think is real and unreal? You can see, hear, touch, smell | | |
| Ontological/ Epistemological | Nature of being | Metaphysical: our spiritual nature | and/or taste physical things, but do non-physical things exist? | | |
| | | Origin/future: the beginnings & future of the universe & and humans? | Where do you think the world came from? Do you think it had a beginning? Do you think it will have an end? Where did humans come from? | | |
| | Nature of our knowing: certainty of knowledge. | Subjective: what role does the subjective play in determining certainty of truth, truthfulness? | What is true and false? What is fact and fiction? How do you know? What source(s) do you use to decide? What is knowledge? What is belief? What is opinion? What is faith? | | |
| | | Objective: is truth determined objectively? | | | |

3. Resources zone (thinking about religious phenomena)

This included RE-flect activities and materials and also acted like a 'nature table' where pupils and teachers displayed resources and artefacts relevant to the current topic. This zone was designed to encourage teachers to create activities based on a metacognitive framework.

Researchers, teachers and a specialist RE consultant developed a series of 30 activities for year 5 pupils based on the local Agreed Syllabus. Activities include board games, role play, arts and craft-based tasks, and research. All were based on a metacognitive framework and encouraged self-regulated and active learning. Activities were differentiated to take account of children with special educational needs or language support needs, including extension elements for more able pupils. Whilst the majority of the activities were designed for collaborative group work they also include individual elements and written work.

Changing the physical environment of the classroom highlights questions around the 'ownership' of classroom space. Some primary schools can be very small and their RE teachers may be part-time, peripatetic or teaching assistants. In RE-flect, the three zones

differed depending on the status of the RE teacher, the physical space available and other curriculum demands. The physical zones are a demonstrable manifestation of the desire and motivation to create a metacognitive learning environment and as such the size or complexity of the zone created is less important than the understanding and motivation of the teachers to foster such environments.

Data Analysis and Findings

This section provides a summary of data analysis techniques and headline findings for each research question.

1: What is the impact of creating metacognitively oriented classroom environments on attainment in RE in the participating schools?

Teacher predicted scores on AT1 (Learning about religion) and AT2 (Learning from religion) (QCA 2004) were compared with end of year actual assessment scores. As School F did not provide complete data sets, it was excluded from the analysis.

Analysis

Data did not meet the conditions necessary for parametric tests (AT1 K-S = .160 (130), p < .001; AT2 K-S = .149 (130), p < .001); non-parametric tests were used.

Table 2 Assessment data AT1 and AT2 teacher predicted and post intervention scores Wilcoxon Signed Ranks Test (Related Samples) by School

| School | n | Media predic | | | | AT1 Post attain1-T | Asymp. Sig. (2 | AT2 Post attain2-T | Asymp. Sig. (2 |
|--------|----|-----------------|------|--------|------|-----------------------|-------------------|-----------------------|-------------------|
| | | predic | ι | Attain | | predict | tailed) | predict | tailed) |
| | | | | | | Z | p = | Z | p = |
| | | AT1 | AT2 | AT1 | AT2 | | | | |
| A | 26 | 9.0 | 8.5 | 8.5 | 9.0 | -1.500 | .134 (ns) | -3.036 | .002 |
| В | 21 | 7.0 | 7.0 | 8.0 | 8.0 | -3.345 | .001 | -3.624 | < .001 |
| С | 33 | 9.0 | 10.0 | 10.0 | 9.0 | -2.711 | .007 | 832 | .405 (ns) |
| D | 21 | 7.0 | 7.0 | 7.0 | 7.0 | $.000^{a}$ | 1.000 (ns) | 577 | .564 (ns) |
| G | 29 | 9.0 | 9.0 | 10.0 | 10.0 | -2.372 | .018 | 3.924 | < .001 |

^a the sum of negative ranks equals the sum of positive ranks

Whilst we can claim some positive impact on attainment in RE for all except School D, these data need to be treated with caution. The RE-flect project was not an experimental design and

there were no control schools. Pupils did do better than predicted on both ATs in Schools B and G and on one of the ATs in Schools A and C.

2: What is the impact of creating metacognitively oriented RE classrooms on participating pupils' perceptions of their learning environment?

Pre and post intervention REMOS questionnaires were compared. Scores were totalled for each questionnaire. Exploration of these data suggested that the data were not normally distributed (K-S = .95 (130) p = .006). Therefore a non-parametric test was used.

Table 3 REMOS pre and post questionnaire, Wilcoxon Signed Ranks Test (Related Sample) by school

| School | n | Median | Range | Median | Range | Z | Asymp. Sig. (2 tailed) |
|--------|----|--------|-------|--------|-------|--------|------------------------|
| | | Pre | Pre | Post | Post | | p = |
| A | 26 | 31 | 14 | 33 | 26 | -2.576 | .010 |
| В | 21 | 30 | 16 | 31 | 22 | -0.328 | .743 ns |
| С | 33 | 27 | 15 | 34 | 26 | -3.596 | < .001 |
| D | 21 | 31 | 15 | 34 | 14 | -1.050 | .294 ns |
| G | 29 | 34 | 30 | 35 | 13 | -1.936 | .053 ns |

There was a positive significant difference between pre and post questionnaires when all schools were taken together (n=130): Z = 4.723 p < .001, r=.41. The median score rose for all schools, but the pre- post difference was only statistically significant for Schools A and C using the standard 0.05 significance level.

3: How was metacognition demonstrated by focus group pupils during RE-flect activities?

A coding scheme based on Flavell's (1979) model of metacognition combined with a grounded analysis was used. Incidents of metacognition were extracted from video data and categorised. Incidents varied in length and complexity. Codes were clustered into three components: 'Metacognitive Strategy', 'Metacognitive Experience' and 'Metacognitive Knowledge'. Each component consisted of categories e.g. Metacognitive Strategy had three categories: 'Evaluation', 'Monitoring' and 'Planning'. There were nine categories in total. Each category held a number of codes which related to specific incidents observed. At this level the codes were grounded in the data e.g. 'Evaluation' had seven codes including 'child evaluates own/group learning' and 'child evaluates own understanding of a religion'. Data were also coded for cognition related to learning in RE, e.g. 'child compares religions' and 'child co-constructs a text'. Teacher behaviour was coded in relation to facilitating metacognition. Analysis allows for quantification in terms of frequency counts. However the

main intention was to examine metacognitive incidents more closely, to discern the contextual factors which led to them, and to explore their features in relation to extant theory.

All codes were present in all classrooms. Through the year, metacognitive incidents increased in terms of complexity and quantity. RE activity was an important factor in determining the type and length of incident. Unsurprisingly, collaborative group work provided some of the richest incidents, although this also depended on the task. Pupils demonstrated metacognition e.g. when they had to recall facts, they challenged each other's understanding and knowledge using mental states words, distinguishing between knowing, believing and thinking. Their ability to monitor and evaluate the process and product of collaborative group work developed during the year as they gained confidence in expressing their views. Teacher mediation of metacognition differed in quality and scale between classrooms.

4. Does Worldview Profiling facilitate participating pupils' reflection on, and articulation of, their worldviews both in isolation from, and in relation to, the worldviews of others? The Worldview Profiles (WVP) were analysed with the following questions in mind: How did teachers utilise the WQF?; How did pupils engage with the WQF?; and How did Worldview Profiling relate to RE curriculum content and learning processes? Interviews with focus group pupils and teachers' responses to the evaluative questionnaire were also analysed.

WVP Analysis

Analysis showed that all teachers used the questions from F1 'Personal Identity', but the other frameworks were not used by all schools. None of the teachers addressed the following questions from F5 'Primary/Secondary Beliefs, Values and Principles': 'Which beliefs and practices will you put up with?' and 'Which beliefs and practices will you NOT put up with?'. Some teachers devised their own questions e.g. 'Do you think it is right for countries to solve problems using physical means?'.

All pupils engaged with F1 'Personal Identity', using writing and pictures to create something akin to a diary. With regard to F2 'Ultimate or Existential Questions', many pupils, for example, reflected on the existence and nature of God and the purpose of life (e.g. one pupil wrote the 'purpose in life is to find a purpose'), as well as the moral questions of right and wrong. A range of answers were given to questions from F3 'Worldview Dimensions'

including many which displayed a failure to understand the nature of ritual. Pupils found difficult F4 'Ontological/Epistemological', although there was some consideration of the nature of what exists and how we can know it, as well as some speculation about abstract concepts, such as love. In the context of F5 'Primary/Secondary Beliefs, Values and Principles', the majority of pupils were clear that everyone is of equal importance, but, as with other examples, they rarely cited reasons, and sometimes their answers were contradictory.

Finally, WVPs were used primarily as a means of exploring and recording pupils' own worldviews without an explicit connection being made to their knowledge about religion(s). Some misunderstandings about specific world religions were left unchallenged by teachers in written feedback, although these may have been discussed later.

Analysis of pupil interviews and teacher questionnaires

The pupils responded positively to (i) reflecting on spiritual questions, (ii) the intellectual challenge of thinking about such issues, (iii) seeing their views change over time, and (iv) comparing their views with those of others. On the other hand, there was evidence that some pupils (i) found the questions too challenging, (ii) used the confidential status of the profiles to disengage from the tasks, write 'silly' things or select an inappropriately creative medium (usually a visual art) for undertaking the tasks; and (iii) came to regard their completion as formulaic and boring over time. The teachers' responses were overwhelmingly positive about Worldview Profiling in the end of year evaluative questionnaire.

Discussion

Findings showed that overall the RE-flect project had a positive impact on attainment in RE, although this varied across schools and between the two ATs. Most of the teachers on the project did not use the national level descriptors prior to this project and there was a marked lack of knowledge about application of the criteria. This experience is reflected by Blaylock *et al.* (2013). The lack of a common practice in assessment may reflect the lack of common purpose across primary RE classrooms, even within the same local authority area.

However, RE-flect was not primarily about attainment, but rather about developing pupil metacognition in relation to RE through the creation of a metacognitively oriented classroom. Whilst findings from the REMOS questionnaire were mixed it was clear from classroom

observations that pupils were engaging with RE-flect activities in a positive and thoughtful way. Collaborative group work was one way by which pupils engaged with others and reflected on their thinking, although RE-flect was not a dialogically-focussed project. Its theoretical background was firmly within the tradition of cognitive and developmental theories of learning, which include language and dialogue, but do not privilege these above individual, constructivist learning.

The emphasis on self-knowledge evident in much theoretical literature and policy documents, for example, Erricker and Erricker (2000), Aylward and Freathy (2008), QCA (2004) and Office for Standards in Education (Ofsted) (2007), also informed our use of Valk's (2009) framework. Findings from the WVPs, based on the work of Valk, demonstrate that pupils can and will reflect on the 'big questions' if given a supportive environment in which to do so. Every classroom created a metacognitive learning environment and engaged pupils in reflecting on their own thinking and 'learning from religion'. Through the project we observed teachers growing in confidence in their ability to teach RE and pupils growing in confidence in entering into discussion about their own beliefs, values and practices. Teachers provided us with anecdotal evidence of increased interest in RE from their pupils and greater tolerance towards others. This was manifested in better behaviour more generally. Whilst this report has not included the third strand of developing teacher metacognition; the findings summarised above suggest that a comprehensive professional development programme is needed to build teacher confidence to create metacognitively oriented classrooms in primary RE lessons.

RE-flect forced teachers and pupils to focus more explicitly on the complex learning processes involved in RE than on subject knowledge *per se*. 'Learning about religion' at Key Stage 2 is primarily described using verbs which encourage teachers to focus on the transmission of knowledge e.g. 'describe', 'understand' and 'identify' (QCA 2004, 26). It is not surprising that teachers, particularly non-specialists, worry so much about subject knowledge (APPGRE 2013), whilst failing to consider the cognitive skills necessary to learn both *about* and *from* religion. When 'Learning from religion' pupils are invited to 'reflect on', 'respond to' and 'discuss' specific issues, but this is still in relation to the beliefs, responses and views of others, including religious traditions, and there is no opportunity for pupils to determine the object, nature and/or purpose of the reflection, response or discussion themselves (QCA 2004, 26). By contrast, RE-flect sought to clarify the distinction between

learning *about* and *from* religion, as well as to promote the self-directed and authentic pupil engagement with the subject matter which is more likely to lead to synthesis, creativity and imagination.

RE-flect sought to facilitate pupils' metacognition and critical reflection on their worldviews, as well as inter-active, mutually-supportive, learning *about* and *from* religion. Findings from the project suggest that this approach can help teachers think more about pupils' cognitive and metacognitive development in RE. However, in initial and continuing professional development and curriculum and policy documentation, this requires a focus on pedagogical knowledge and processes of learning on the one hand, and subject content on the other (Chater & Erricker 2013, 119). Moreover, by prioritizing the development of metacognition in order to facilitate deeper engagement with key concepts, beliefs and practices in RE, the project offers alternative conceptions of both ATs, challenging the misconception that information must always come first, and personal response must follow (Chater & Erricker 2013). RE-flect simultaneously places the learner at the heart of the process and builds a bridge between the learner and the curriculum content.

Acknowledgement

RE-flect was funded by The Esmée Fairbairn Foundation [10-0901]

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