Using philosophy for children as a means of fostering high quality learning and teaching: can using a 'Question Quadrant' help children at Key Stage 1 ask higher-order questions?
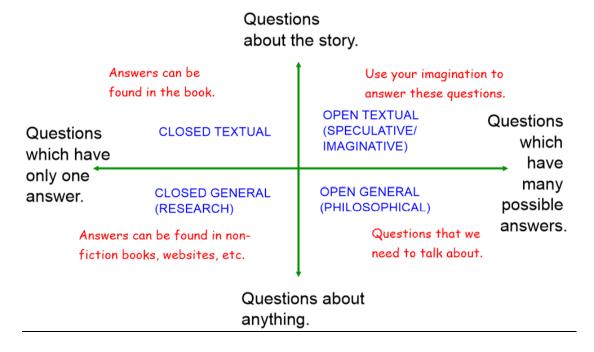
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Abstract
Available evidence suggests that philosophy for children (P4C) is a highly effective pedagogy in developing children's higher-order thinking skills and has significant positive effects both in raising children's attainment in core subjects and in the broader curriculum. This paper challenges the Piagetian assumption that younger children cannot use abstract higher-order thinking skills and suggests that learning and applying such skills should be central to primary education in the information age. It uses quantitative and qualitative data from my practitioner research using the 'Question Quadrant' P4C tool with a class of 6- and 7-year-olds to demonstrate that it is a pedagogy that, although challenging to pupil and teacher, can have demonstrable positive effects on children's critical, creative, caring and collaborative thinking, even in the short term. It also suggests that more longitudinal research using quantitative methods is urgently required.

Introduction and Theoretical Background
My own experience of classroom questions has tended to suggest that many children can find it difficult to formulate questions which would really further their learning and are not routinely given opportunity to do so within a traditional classroom context. This small-scale action research therefore set out to investigate the merits of the Philosophy for Children pedagogy and explored whether adopting this approach could lead to higher quality teaching and learning. It specifically focused on Cam's (2006) Question Quadrant tool (see figure 1) as a means to encourage children to ask higher-order questions.

Figure 1: Question Quadrant (adapted from Cam, 2006 and Scholl, 2010).

This paper follows Vansieleghem and Kennedy's (2011) definition of 'philosophy for children' (P4C) as the general concept outlined in the 1970s by Lipman (2003) and subsequently developed and expanded by a second generation of practitioners and theorists such as Cam (2006), Stanley (2004), Fisher (2013) and Haynes (2014), to mean a collaborative enquiry-based pedagogy which is focused on developing thinking skills through communal deliberation.

In my teaching practice to date I have found that many children are over-reliant on the teacher as an expert imparting information which they are required to learn. This 'transmission' model of education, where 'the teacher is the subject' and 'the learners mere objects' (Freire, 1990, p. 59), is characterised by an imbalance in classroom talk, where the teacher does most of the talking and asks most of the questions and the children are expected to listen and to provide the answers (Topping and Trickey, 2014). Research of 500 children and 20 teachers in Milton Keynes primary schools found that most classroom talk is monologic teacher talk and children rarely use higher-order exploratory talk (Mercer and Littleton, 2007, pp. 57-66).

Many theorists have followed Dewey (1966) in asking whether this is the best way of educating children. Why is it that our classrooms are structured so that the teacher asks the questions and the learners, who have most to ask, sit in silence (Fisher 2013, pp. 95, 141)? Many people who have observed the natural curiosity of children (see Splitter and Sharp 1995, pp. 115-8; Hymer and Sutcliffe, 2012, p. 46) would concur with Bruner that this instinct to question is perhaps better nurtured through 'discourse, collaboration and negotiation' than repressed via pedagogic authority (Bruner 1996, pp. 56-7).

The social constructivist outlook inherent in P4C theory draws on the claims of Vygotsky that 'all higher mental functions originate as social interactions' (1978, pp. 57), where language-based social interaction is the precursor to individual, internalised mental processes. High quality thinking skills are therefore more likely to follow from a pedagogy which maximises rather than restricts meaningful classroom talk. The circle time dialogue at the core of the P4C 'community of enquiry' (Lipman, 2003) embodies this Vygotskian philosophy.

 At the heart of P4C is the teaching and learning of thinking skills, sometimes classified as the '4 Cs', namely, critical, creative, caring and collaborative thinking (Lipman, 2003; Stanley, 2004). There are several powerful arguments supporting the centrality of thinking skills to high quality education.

Dewey (1966), Freire (1990) and others suggest that learning thinking skills is essential for meaningful participatory citizenship in democratic societies; that all children have a right to learn to think equivalent to their rights to literacy and numeracy (Aronowitz, 1992, p. 18; Fisher, 2013 pp. 5-10; Lipman, 2003, p. 203); and that the traditional education system has 'systematically failed' children in this respect (Cam, 2006, p. 2), producing not critical thinkers but generations of 'tabloid fodder' (Quinn, 1997, p.5).

Even if education is conceived less as a vehicle for future citizenship than as an instrument to provide the workforce of the future, a recent wide-ranging survey of British employers reveals that four of the top five most sought-after skills are directly related to the '4 Cs' (University of Kent, 2016). Robinson (2008) suggests that our traditional, subject-knowledge oriented education system, rooted in the relatively static requirements of the industrial revolution, is failing to equip future workers with the flexible cognitive skills demanded by the information age. This echoes Bruner's

(1996, pp. 15-25, 56-61) assertion that thinking skills, rather than factual knowledge or skilled performance, are the fundamental tools required to engage in a culture in which increasingly rapid change is the norm.

Recent neuroscientific research has lent weight to these theoretical justifications. Sanz de Acedo Lizarraga et al. (2012) found that training in thinking skills improves neurological 'executive function' and that the effect is physical and permanent; Adey et al. (2007) demonstrated that mental plasticity, in terms of the variety and dynamism of neural connections, is improved in the brains of people having undergone cognitive training programmes and that they used less brain volume to process a task; and Smith (2002) found that in terms of mental function, most higher order thinking is general rather than domain-specific. This implies that children's quality of learning across the entire school curriculum would be enhanced by their being taught general thinking skills within a programme such as P4C. It appears to discredit earlier apologists for traditional subject-oriented education such as McPeck (1984, 1990) and Barrow (1991) who claimed that learning is not transferable across domains.

As pointed out by Ten Dam and Volman (2004, p. 367), much of the evidence specifically supporting P4C's efficacy in improving thinking skills is from small-scale research projects, and therefore likely to be 'too minimal to be valid' (Cohen et al., 2011). Such studies nevertheless typically find strongly in favour of P4C as a means to deliver high quality learning. Millet and Tapper's (2012) meta-analysis of 18 such studies in Australian schools found that children having one year of weekly P4C sessions made average gains over their non-P4C peers of 24 percentile points in standard tests in literacy, science and mathematics and 7 points in IQ tests.

Three comprehensive, larger-scale studies in UK primary schools have supported many of the claims made by advocates of P4C. Research in six large primary schools in Milton Keynes found that using a P4C programme led to measurable improvement in questioning and problem-solving skills, increased higher-level talk and collaborative working, improved SATS scores in science, maths and English, and increased scores in RPM cognitive tests (Mercer and Littleton, 2007, pp. 84-93). A four-year P4C research project in Clackmannanshire primary schools showed that large comparative gains in attainment and cognitive ability tests made by children after 16 months of weekly P4C lasted at least two years after the programme had ended, and various measures of child behaviour and children's self-esteem also indicated positive, sustained outcomes for the personal, social and emotional development of children (Trickey, 2007; Topping and Trickey, 2004, 2007). In the most comprehensive research to date, involving 3159 children across 48 English schools, 1 hour per week of P4C was found to improve cognitive ability as measured by CAT4 tests, significantly raise attainment in Key Stage 2 in literacy and maths for all children, and had the biggest positive impact among disadvantaged pupils, who made gains in SATS equivalent to four additional months progress. It also found 'very positive social effects' in reducing violence and low-level disruption and improving self-esteem, speaking and listening skills (Gorard et al., 2015).

Opposition to P4C such as that of Kitchener (1990) and McPeck (1984, 1990), tends to focus on theoretical objections: firstly, that it is not true philosophy – which does not seem relevant to an evaluation of its efficacy – and secondly, by citing Piaget's (2002) development theory that primary school-age children are in a concrete, heteronomous developmental stage of mental processing and therefore simply unable to think abstractly or understand moral relativism. This empirically unsupported claim is made in spite of research demonstrating clear evidence of high-order 'reflective and critical' thinking skills in primary school children (Daniel and Auriac, 2011, pp. 423-5).

In the light of the above evidence supporting the teaching of thinking skills in general and P4C in particular, it is perhaps surprising that the traditional, transmission classroom ethos has proved so enduring. This may be for political reasons: as school is instrumental in creating the society of the future, it is a battleground for differing political conceptions of society (Bruner, 1996, p. 25; Lipman, 2003, pp. 1-27). At the classroom teacher level, the vacillating demands on education made by successive governments can present themselves as a curriculum beset with intractable paradoxes – for example, between the requirement to teach thinking skills on the one hand and the core subject focused, test-oriented 'standards agenda' on the other (Mercer and Littleton, 2007, p. 68; Jones, 2010; Edwards, 2005).

On a practical level, the difficulty of embedding P4C within an already fully-packed school timetable has been noted by Gorard et al. (2015). Other pedagogical challenges in the early stages of a P4C programme include that many teachers find it difficult to adapt the 'facilitator' role while still maintaining sufficient authority to focus dialogue (Splitter and Sharp, 1995, pp. 135-9), many less articulate children can feel bewildered by the uncertainty involved (Quinn, 1997, pp. 12-13) and it is easy for an inexperienced facilitator to allow dialogue to become exclusively dominated by the more confident pupils (Barrow, 2015). The widely-held proviso that P4C takes a lot of time and effort to establish in order for it to become effective probably further reduces its potential appeal to practitioners (Gardner, 1996; see also Mercer and Littleton, 2007; Stanley, 2004).

Mindful of this long-term emphasis, this paper does not attempt to evaluate P4C as a whole but focuses instead on one facet of its pedagogy which could be usefully analysed in a one-off intervention. According to Lipman (2003, pp. 98-9), the fundamental skill of P4C is learning to formulate, adapt and critique questions: 'To question is to institutionalise and legitimise doubt and to invite critical evaluation... it opens the door to dialogue, to self-criticism, and to self-correction'. In a Vygotskian sense, learning to question others is a prelude to thinking reflectively; this ability is key to attaining the higher-order thinking skills of analysis, synthesis and evaluation outlined by Bloom et al. (1956).

It is not therefore surprising that the 'Question Quadrant' designed to scaffold asking and classifying questions should be described by Cam (2006) as the first of his 20 'tools for thinking'. This tool has been enthusiastically recommended by P4C advocates such as Haynes (2014), Hymer and Sutcliffe (2012) and adapted by others such as Scholl (2010) and Robinson (2012) with versions for different age groups, but it has not as yet been subjected to methodological research as to its efficacy.

This study uses a deductive data analysis combining quantitative and qualitative data in order to investigate the contribution of the Question Quadrant to high quality teaching and learning. It also explores the practical challenges of incorporating P4C in primary school education.

Method
The intervention described here consisted of a 1½ hour, one-off P4C session within the wider context of a collaboratively-taught 'Creativity Week' for Key Stage 1 as part of the School Direct PGCE programme. The children's normal timetable and classroom settings were jettisoned in favour of a cross-curricular, creative, varied approach, and the children and teachers were new to each other.

Participating in this study were myself and two other trainee teachers and a class of twenty-three 6 and 7 year-olds, all of whom had only occasionally participated in any form of circle time and had no prior experience of P4C lessons. The session was modelled on lesson plans outlined by Lipman

(2003) and Cam (2006) and followed the typical P4C process of relaxation, shared stimulus, thinking time, then questioning (see also Hymer and Sutcliffe, 2012; Fisher, 2013; Scholl, 2010; Robinson, 2012).

The classroom had been transformed into a 'swamp' themed area complete with pungent mossy logs, dangling vines, creepy crawlies, sound effects and atmospheric lighting. The P4C session began with a quiet relaxation session absorbing this immersive sensory experience. Following Stanley (2004, p. 110), this part of the lesson emphasised listening skills in order to help facilitate discussion later. There followed a guided discussion to agree upon some basic ground rules for circle time dialogue (on the importance of which, see Fisher, 2013, pp. 160-1; Mercer and Littleton, 2007, pp. 67-8; Quinn, 1997, pp. 83-92).

The stimulus used for discussion was the illustrated story *Croc and Bird* (Deacon 2012). This visually appealing, humorous, imaginative, emotionally engaging book satisfied all the criteria suggested by Fisher for 'stories for thinking' (2013, pp. 90-109) and the necessary 'ambiguities and paradoxes' for a P4C text (Lipman 2003, pp. 20-27). While reading the story with the children, I took care to model asking and classifying questions, distinguishing between open and closed questions.

The class was then divided into three mixed-ability groups based on prior discussion with the regular class teacher considering children's assessed ability in literacy and science. This was done in order to make comparison between the three groups as fair as possible. Each group was led by a trainee teacher whose role was to encourage children to ask open general questions based on the stimulus story. The first group (control) received no further support, the teacher of the second group used the Question Quadrant as a reference tool without sharing it with the children, and in the third group I used the Question Quadrant as per the advice of Scholl (2010, p. 5), drawing out the quadrant in the centre of the circle as the children suggested and classified questions.

Finally, the plenary consisted of a whole class circle time where children were given the opportunity to evaluate the lesson.

This method allowed for both quantitative and qualitative data collection. These will be dealt with in turn.

In each group, all of the questions posed were scribed by the teacher, including statements where children did not reformulate these into questions. Following the session, I categorised all the questions into the four classifications of the Question Quadrant (closed textual, closed general, open textual, open general) to allow for a quantitative comparison between the three groups. In an attempt to mitigate my potential confirmation bias in doing so, the questions were randomised before classifying them and then re-sorted into the 3 study groups. (see figure 2)

	Statements	Closed Textual	Closed General	Open Textual	Open General	Total
1 - Control - QQ not used	6	2	6	9	0	23
2 - QQ discretely used by teacher	0	2	13	12	3	30
3 - QQ Used openly with children	0	4	5	7	4	20

Figure 2: Number of questions asked by each group per category.

The qualitative data was sourced from interviews, observations and a transcribed plenary session.

Although a key principle of action research is that it is open-minded about what counts as evidence (Kemmis and McTaggart, 1992), I decided not to interview children individually. The unreliability of this method is well-documented (Aydin and Ceci, 2009, p. 79; Burton and Bartlett, 2009, p. 88; Baker-Ward et al., 1993; Rocha et al., 2013; Peterson and Grant, 2001). Evidence of children's perspectives was instead gathered through audio recording of the plenary review. On reflection this supported my decision not to interview children, as transcribing the discussion revealed to me how suggestive some of my questioning had inadvertently been.

I felt a more useful perspective on the session would be gained from Brookfield's (2002) first and third critical lenses – that is, my reflections and those of my two colleagues. I chose to gather this data using semi-structured interviews, in light of Pathak and Intratat's (2012) research supporting this method in qualitative, small-scale studies. I chose six questions as a basis for these interviews and for writing my own reflections. Semi-structured: Key questions were:

- What is your assessment of the children's questioning skills during the session?
- Did a dialogue develop within your group or was it mostly one-to-one teacher-pupil exchanges?
- Did the dynamics of the discussion change at all as it went on?
- Were all children engaged?
- How was it to teach?
- Was the QQ useful? /Would the QQ have been useful?

Additional qualitative evidence was supplied by a Peer Review of the session.

Findings: Quantitative data

The results reveal a marked quantitative difference in the three test groups in the questions asked by the children, especially in the open general or 'philosophical' questions that demonstrate higher-order thinking skills. They strongly support the efficacy of the Question Quadrant tool whether used with the children or as a teacher reference tool.

Both the quantity and proportion of all open questions asked was higher in the two groups using the quadrant than in the control group, and the latter's open questions were limited to speculative and imaginative rather than philosophical questions. It was only the two groups using the quadrant that demonstrated questioning at the higher, more abstract 'open general' level, and the group asking the highest quantity of these philosophical questions was the group in which the quadrant was used openly by the children to classify and develop their questions.

It is perhaps noteworthy that the only group formulating some questions as statements was the control group. The complete absence of statements from the two groups using the Question Quadrant suggests that it may have also assisted children to differentiate between statements and questions of any type.

A review of the content of the questions asked in the three groups also supports the use of the Question Quadrant as a high quality teaching and learning tool. The questions in the control group

were quite varied and unconnected, showing little evidence of attempts to revise and improve or of building on one another's ideas. Questions in the groups using the quadrant, however, show clear interconnectivity and development of ideas, particularly on the themes of brotherhood and abandonment. There is evidence of collaborative and critical thinking, for example, in the progression from the closed general question ("Can crocodiles actually be brothers with birds?") to the speculative ("Why did they think they were brothers?") to the philosophical ("What does it mean to be a brother?"). This suggests the Question Quadrant effectively scaffolded the children's collaborative efforts in reformulating and revising questions.

While the above findings provide empirical support for using the Question Quadrant as a tool to develop higher-order thinking skills, the data is derived from a small sample size typical of much action research and open to the usual criticism as 'too minimal to be valid' (Cohen et al., 2011, p. 360). In addition, there is an element of subjectivity in how I classified some questions from the control and second groups. For example, "Why was Croc bigger than Bird when they were born?" could be interpreted differently depending on its context. My retrospective, statistical categorisation of the questions perhaps contradicts the P4C collaborative ethos that 'the notion of correct placements is not always appropriate and dialogue… is vital in understanding question types' (Scholl, 2010, p. 6).

Qualitative Data
My reflections alongside those of my interviewed colleagues revealed a useful additional perspective on the efficacy of the Question Quadrant as a quality learning tool. All observed that children's questioning skills had improved over the course of the session, as children warmed to the novel task of asking rather than answering questions, and noted that most of the open questions came in the latter part of the session. Although the dialogue in all groups was initially characterised by teacher-pupil rather than pupil-pupil exchanges, in the two groups using the quadrant this dynamic changed as some children began to remodel each other's questions in order to improve them, the teacher involvement in dialogue diminished, the quantity of questions decreased, the children became quieter and more thoughtful, and the quality of the questions increased. This was most obvious in the group using the quadrant directly – where children began aiming their questions specifically at the 'philosophical' quarter – but was not observed at all by the control teacher, who "would have welcomed the quadrant to use as a model" to guide children. The teacher using the quadrant indirectly felt that it was a "really useful tool to help the children develop their questions".

In considering whether the intervention constituted high quality teaching, it is important to emphasise the radical change in pedagogy this lesson entailed. Along with Barrow (2015, pp. 78-84) Daniel and Auriac (2011, p. 429) and others, we found that taking the step back from authority figure to facilitator was 'exhausting and challenging teaching' (Fisher, 2006, p. 167). Personally, I found the change in role stimulating, intellectually and emotionally invigorating, as if I were on a joint venture of discovery with the children. This view was echoed by one of my co-teachers. However, one of my two colleagues felt it was simply "too difficult to relinquish control", to resist asking streams of questions, to allow for a more democratic flow of conversation, more uncertainty, more risk.

For a one-off intervention this view would probably be shared by many in the profession; however, as outlined above, P4C pedagogy is explicitly not a 'quick fix' but a long-term programme which requires time to establish for both children and teachers. The feeling of uncertainty and risk we felt as trainee teachers undertaking this intervention would almost certainly be addressed by having either training or experience in teaching in this way.

The teachers' perspectives revealed a further potential difficulty with establishing P4C, at least in the short term. As the dialogue developed, it seemed that not every child engaged and that the more confident children tended to dominate the circle. This apparent failing in terms of inclusivity should however be treated with caution, as the limited time-span of the intervention prohibited the necessary habituation of P4C ground rules and routines.

The evidence of children's perspectives of the session is perhaps more circumspect. The Peer Review conducted by a colleague noted the stimulating, engaging classroom atmosphere and stimulus text, and observed that children were enthused and excited to ask questions. It also noted that the clear ground rules, specifically the emphasis that everyone should take a turn to speak, ensured children engaged fully in the following discussions. This perhaps suggests that the circle time dialogue was more inclusive than it had appeared from the closer, teachers' perspective.

The plenary session revealed that many of the children, especially those using the Question Quadrant directly, had perceived the session as mentally taxing. This tallied with teachers' perceptions that children had been making increasingly effortful thinking as the session progressed. There were several comments such as: "It was hard to think of the questions. It's easier to think of the answers!" This suggests that P4C pedagogy – even as a one-off intervention – had succeeded in the sense that it had encouraged children to think at a higher level than normally required of them. Accordingly, two children commented that using the Question Quadrant "makes it harder to think of questions" as "it was easier to think of questions which I already knew the answer". This suggests that the quadrant was scaffolding higher-order questioning to the point where some children had begun the metacognitive process of evaluating their questions even while formulating them, and had begun to reject closed questions out of hand. Other children's comments such as "we could change the question to move it [around the quadrant]" further support the efficacy of the Question Quadrant, suggesting that it was scaffolding higher-order thinking skills.
The qualitative data obtained has limitations. The perspectives sourced from the plenary are from those engaged and confident enough to speak in the larger circle; time limited the range of speakers and so views expressed may not be representative. Further, the evidence from colleague interviews and from my reflections is highly subjective. Perhaps the interviews were most useful in terms of reflecting on our shared experience in what had seemed a risky novel approach given our lack of experience in P4C pedagogy.

Conclusions and Future Directions
Data from this project indicates that the Question Quadrant is a useful tool for developing higher-order thinking. This was further enhanced when employed collaboratively with the children. Engagement was high (children wanted to continue through playtime) and effortful thinking was observable.

This intervention involving one class of children for 90 minutes was, like many of its type, limited by its brevity. Foster's (1999) meta-analysis of various educational action research studies found very few that were rigorous, extensive or systematic enough to usefully contribute to theory or practice. Nevertheless, like much of the research into P4C, this study indicates positive results.

The quantitative data-gathering approach was useful, if limited by possible subjectivity in question classification and small sampling. It would have greater potential if repeated across a number of schools over more time using rigorous blind classification methodology.

My research suggests that the Question Quadrant has potential as a standalone tool for encouraging high-order thinking and in future I will certainly modify it for use in different subjects. There is scope here for further action research over a longer time span. The danger, it is suggested, is that incorporating it into the current test-oriented methodology could well dilute its impact.

 The value to be gained from teaching P4C in general is worth pursuing. It needs more comprehensive, longitudinal studies to follow Gorard et al. (2015) and Topping and Trickey (2004, 2007). All evidence so far suggests it entails high quality learning and teaching, and increases cognitive skills which are lasting and transferable to core subjects.

It is however a challenging approach, both for learner and teacher. The novelty of the pedagogy may have partly excluded children lacking in confidence or with little experience of the type of discussion generated by the P4C method (Quinn, 1997; Barrow, 2015). The teachers involved found this one-off exercise challenging, even discomfiting, a finding echoed in other studies (Gardner, 1996 and others). But, as has already been stressed, the teaching of P4C is not to be considered as an isolated stratagem but as a long-term practice that is embedded in the curriculum.

The efficacy of P4C is difficult to assess within the current test-driven school system, and using current methods of testing for the assessment of P4C would be too limiting (Edwards, 2005). This paper follows Splitter and Sharp (1995), Fisher (2013), Quinn (1997) and others, in suggesting that using pupil self-assessment and collaborative displays like 'Wall of Skills' and 'Talkometer' (Stanley, 2004) – or using the Question Quadrant itself (Scholl, 2010) – are means of effectively assessing P4C better suited to its reflective, collaborative nature.

Given that there is a need to develop tools for assessment, I see potential for using this social constructivist pedagogy in my future practice. It is liberating, invigorating, even risky. It reaches to the central concept of education. How do we conceive our schools of the future? Can we genuinely develop creative, critical, caring, collaborative thinking without fundamental upheaval to a conservative system of traditional authoritarian transmission schooling?
'The power to question is the basis of all human progress.' – Indira Gandhi (1975).

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