An investigation into the use of writing frames and writing structures to overcome boys' reluctance to write in geography lessons

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Abstract
Studies on gender disparity in literacy reveal a recurring trend of boys' reluctance to write. As such male pupils find themselves with fewer self-generated words on the page in front of them and consequently are deprived of vital scaffolding to develop their metacognitive facility. Furthermore their teachers lack a vital diagnostic tool when appraising boys' cognitive processing and misconceptions. These detrimental effects indicate that reluctance to write represents a significant barrier to learning and progress. This study compares the effects of scaffolding methods to overcome boys' reluctance to write. It finds a significant gender-based variance in response to writing frames against writing structures and makes suggestions on implementation and praxis.

Keywords
Gender; boys' literacy; scaffolding; writing frames; writing structures; reluctance to write.

Literature Review
Preface
This literature review intends to introduce the field of study into writing frames and their impact on boys' reluctance to write. There is little research into this exact niche so this document aims to triangulate using two pertinent areas of study, namely gender disparities with regard to written communication and the application and efficacy of writing frames as an intervention strategy with specific reference to geography. This research is prompted by my previous investigation into a boy with SENs and a subsequent CPD seminar led by David Didau on 'Boys' Writing'. Both of these experiences steer the direction of this study.

Context
The gender gap in education is well documented but its root cause is not clear. 'When the differences are examined in terms of gender, it is revealed that female students are more successful academically than male students and they have better study habits and attitudes' (Arslantas, 2001; Brown & Holtzman, 1984; Grabill et al., 2005; Gadzella & Fournet, 1976; Hong & Lee, 2000; Houtte, 2004; Kucukahmet, 1987; Mullen, 1995; Tinklin, 2003 from Ozsoy et.al., 2009, p156). Ofsted note: 'It is not a recent development, nor is it English. But it has become an accentuated area for focus because of concern about boys' employment opportunities.' (HMI/Ofsted, 1993, from Noble & Bradford, 2000, p11). Nowhere in schooling is this gap more apparent than in literary subjects. Noble and Bradford state; 'If the humanities are Applied English and boys are so much worse than girls in English, it stands to reason that boys will under-achieve in humanities as well…' They continue to note that the source of

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this gender disparity '…may be interesting but hardly useful. It is the practical strategies with which teachers are most concerned' (Noble & Bradford, 2000, p22).

The geography national curriculum (GNC) places great emphasis on learning through enquiry and states that children should be taught to; 'Ask geographical questions' and 'evaluate evidence and draw and justify conclusions' amongst other literacy based demands (DfEE, 1999a, from Roberts, 2003, p10). From this Roberts (2003) deduces that writing is a critical component in geography in that it helps students make sense of information and concepts (Roberts, 2003, p52). Warwick *et al.* (2003) support this and also state that writing has a lower success rate in demonstrating pupils' understanding of topics than spoken communication (Warwick *et al.,* 2003, p173). The two disciplines of writing and speaking stem from the same skillset of critical thinking, but speaking is reinforced by *'*nonverbal and gestural tools'. This he argues increases pupils' preference for speaking over writing as a means of cognitive feedback from pupil to teacher (Warwick, 2003, p173 and Brookfield, 2012, p132). This literature combined leads to the reasonable statement that writing has the capacity to assist in cognitive processing but comes less naturally to pupils than speech. It is noteworthy that further reluctance to write may be generated by the fact that there is a disparity between the need to write for exam papers whose purpose is to assess, and for the classroom teacher whose purpose is to prompt and enhance cognitive engagement as averred by Butt (2001, p17, from Roberts, 2003, p64).

In addition to the use of writing in cognitive processing it is noted that written work is an essential tool of diagnosis for teachers to examine where a concept is robust in a pupil's schema, and where if anywhere it collapses (Subramaniam, 2010, p33). Furthermore, Roberts (2003) highlights that 'The culture of schooling generally encourages students to conceal ignorance and misunderstandings.' (Roberts, 2003, p77). In support of this statement Warwick et al. indicate that; '…the use of writing frames enables an insight into pupils' procedural understanding through their written work' (Warwick et al., 2003, p179). By extension it follows that when a pupil does not write for any reason, these diagnostic phase-gates are absent and any reactive teaching opportunities are lost. In this way, reluctance to write closes a door into the student's cognitive process and is a clear barrier to learning and progress.

Reluctance to write is examined by Rowan *et al.* (2002) who acknowledge gender differences in the classroom but warn that essentialist gender paradigms bring both clumsy falsities and useful, observed patterns in equal measures. Rowan *et al.* (2002) also note that well-meaning gender-based responses can have both in and out of class repercussions on social dynamics within schools (Rowan *et al.*, 2002, p108). The authors discuss a distinct brand of 'considered essentialism' which; '…allows us to recognize the similarities between groups – women, men, boys, girls – in order to draw upon the power that this acknowledgement supports' (Rowan *et al.,* 2002, p.101). These works strengthen the case for further research into non-segregating interventions into geographical writing.

Winnie & Hadwin (1998, 2008) explain the immense but instantaneous decision-making processes undertaken by habitual learners. They argue that learners self-regulate their journey based on a set of 'metacognitive regulatory skills' needed to '…monitor their understanding and modify their plans, goals, strategies and effort in relation to contextual conditions (cognitive, motivational and task conditions)…' (Winnie and Hadwin, 1998, 2008, from Azevedo *et al.,* 2011, p108). This compartmentalised view of metacognition can however be viewed as a more traditional two-factor model of knowledge and regulation of metacognition (Scott and Levy, 2013, p113). Cowley (2002) attributes her pupils' fear of writing to self-regulatory cognitive conflict similar to that described by Winnie and Hadwin (1998, 2008) and suggests that 'removing the stress' can have beneficial impacts on written productivity (Cowley,

2002, p5). With this in mind it is understandable that many pupils find the additional pressure of structuring written responses overbearing. It could be the case that reluctance or refusal to put pen to paper is the ultimate manifestation of this cognitive conflict; quashing what Cubukcu (2009) terms 'learner autonomy' (Cubukcu, 2009, p54). This investigation hopes to establish whether; '…the use of writing frames might be one way to mitigate against this somewhat fearsome array of problems for the learner' (Warwick *et al.*, 2003).

It is noted by Warwick *et al.* (2003) that the benefits of writing frames are multiple. Not only do they provide the pupil with an appropriate structure, they also eliminate problems associated with using technical vocabulary (by providing its correct context) and sequencing and transitioning between technical concepts. Furthermore they provide a breakdown of concepts to aid development of metacognition, or 'thinking about thinking' which is strongly linked to performance '…former studies point out that there is a significant relation between metacognition and academic achievement' (Case, Harris & Graham, 1992; Desoete & Roeyers, 2002 from Ozsoy, 2009) and '…training of metacognitive skills also increases the achievement' (Kramarski, Mevarech & Arami, 2002; Lioe, Fai & Hedberg, 2005; McDougall & Brady, 1998; Schoenfeld, 1985; Schurter, 2002; Teong, 2002; Victor, 2004 from Ozsoy, 2009). This modular approach offered by writing frames / structures provides infinitely more digestible material to scaffold metacognition. In turn, this is more easily integrated into the pupil's 'schema', following Pritchard's (2014) definition of '…a framework with numerous nodes and even more numerous connections between nodes.' Therefore it is anticipated that these measures will be an effective measure in 'enriching metacognitive experience' (Lv, 2010, p138).

Writing frames also '…provide a vehicle for learning as a social process' (Lave and Wenger 1991, Licht and Littleton 1999 from Warwick et al. 2003) and help '…to develop metacognitive processes, as a result of socially interactive learning taking place in a sociocultural context.' (Warwick *et al.*, 2003, p181). It could be argued that this benefit comes from the 'distributed cognitions' in a whole-class or group setting and supports the concept of cognitions as an outcome of social constructivism (Light and Littleton 1999, from Warwick *et al.*, 2003, p181). In fact Bruning and Horn (2000) argue that this process is reciprocal and that writing is, in turn, a 'critical tool for intellectual and social development' (Hammann, 2005, p15).

Interestingly Azevedo *et al.* (2007) investigate how writing frames impact students' ability to self-regulate their learning, but do not differentiate between a writing frame (unfinished sentences to be completed) and a writing structure (prompts allowing for student-led sentence creation). Roberts' (2003) work states that as well as being a useful tool for scaffolding, writing frames can also limit the content and freedom of students' work, further emphasising the significance of the distinction between these two scaffolding methods (Roberts, 2003, p77). In other words, writing frames may foster '…a formulaic response from pupils that may mask, rather than reveal, understanding' (Warwick *et al,* 2003, p184). This 'scaffold or straightjacket' paradox is a particular concern with regard to gifted and more able pupils, especially those who are extrinsically motivated by exams rather than intrinsically motivated by a desire to learn. The author notes one teacher who switched to 'prompts-only' scaffolding, which in this investigation are being referred to as writing structures (Warwick *et al,* 2003, p183). Investigating this distinction will be one of the core objectives of this professional enquiry.

Conclusion
In terms of both writing strategy and gender studies, this research has a valid place. Lv (2010) states that '…the study of metacognitive strategies-based writing instruction for vocational college students has been neglected for the past years' (Lv, 2010, p136) and Hammann (2005) notes that 'self-regulatory

strategies for academic writing is a recurring recommendation from research (e.g., Harris & Graham, 1996; Langer, 2001; Zimmerman & Risemberg, 1997)' (Hamman, 2005, p17). The literature on gender disparities in writing suggests that intervention may prove beneficial to reluctant boys. Which groups of pupils the writing frames / structures will impact and in what ways cannot be predicted, however, the lack of concrete research noted above suggests that it is an avenue worth exploring. Warwick *et al*., support this in stating; '…that boys might have greater difficulty in expressing understanding in a written form, even with the introduction of prompts in writing frames. Some work might fruitfully be carried out in evaluating possible differential responses by boys and girls to the use of writing frames…' (Warwick *et al.*, 2003, p183)

It is acknowledged that there are multiple factors not fully considered by this investigation, for example, socioeconomic background, EAL students and thorough detail of SENs and these could all have possible impacts on reluctance to write. These factors are deemed outside the scope of this investigation and the focus will remain on boys' response to three indices: unscaffolded questions, writing structures and writing frames.

Introduction to research
In 'conventional literacy' practices boys' attainment falls behind girls on a global scale (Mullis, Martin, Gonzalez, & Kennedy, 2003; OECD & UNESCO Institute for Statistics, 2003; Ontario Public School Boards' Association, 2004, from Sun *et al.,* 2010, p5). It is clear then that alongside the consistent drive for progress in all pupils there is a critical issue of literacy in male pupils. This represents a formidable challenge; Frater explains that the lagging male pupil must not only catch up, but also maintain a trajectory of improvement (Frater, 1997, p34).

However interesting the source of this gender disparity it has no real application in today's classrooms; it is on practical and applicable mitigating strategies that teachers should focus their attention (Noble & Bradford, 2000, p22). Indeed it is in application and praxis that the mettle of 'New Literacy Studies' is tested (Street, 2003, p82). In line with the call for actionable strategies to reduce boys' reluctance to write, significant research has been led into boy-centric methods including making literacy purposeful, seeking male role models, using experiential and kinaesthetic learning and using spatial-visual representations (King & Gurian, 2006, p3). However Lv (2010) notes that the study of *'*metacognitive strategies-based writing instruction' has been poorly served by researchers to date (p136). This stance is supported by Hammann (2005) who notes that research papers regularly call for investigations into 'self-regulatory strategies' for writing-based practice in schools (Harris & Graham, 1996; Langer, 2001; Zimmerman & Risemberg, 1997, from Hamman, 2005, p17). The literature review preceding this investigation exposed a dearth of research into gender-centric literacy scaffolding methods to address the issue. It is acknowledged by Ofsted that*;* '…a number of features… helped to motivate boys in particular… writing frames, templates and discussion frames' (Ofsted, 2003, p19) however the intricacies of implementing such scaffolding methods are little-studied. This investigation aims to close the gap in understanding of how best to scaffold boys' literacy with a view to tackling the gender attainment gap.

In this research boys' reluctance to write is considered a barrier to learning. When pupils do not write, the following two points cause significant impacts on learning and progress:

1. The teacher loses student-generated text as a diagnostic tool
2. The pupil has nothing in front of him to challenge and develop his metacognitive facility

The aim of this work is to establish the relative impacts, advantages and disadvantages of two methods of scaffolding, namely writing frames and writing structures. As these are not universally accepted terms they are defined in this work as follows:

Unscaffolded – a question with no guidance or scaffolding. E.g.
- How does continental drift occur?

Writing frame - a scaffolding method wherein the pupil's response is guided by a series of sentence starters to help generate a coherent answer. E.g.
- Magma is affected by the earth's core because…
- This causes hot magma to…
- In turn, the earth's crust…

Writing structure - a scaffolding method wherein the pupil's response is guided by a series of instructional prompts. E.g.
- Explain what effect the earth's core has on magma
- Explain how the magma responds
- Explain what effect this has on the earth's crust

Research methodology
To identify the impact of the different scaffolding techniques, identical questions were posed to pupils in three different ways:
- Unscaffolded
- Scaffolded with a writing frame
- Scaffolded with a writing structure

Pupils were grouped according to attainment to ensure that each set of pupils was a representative cross section of the class. The groups answered the questions in a different order to ensure that fatigue or loss of interest did not skew data. The results were analysed in terms of:

- Quality (against a marking scheme)
- Quantity (word count)
- Efficiency (words per mark awarded)

This research utilises a combination of qualitative and quantitative data. Quantitative data offers the opportunity to integrate the experiments' results into large-scale comparisons of data over wider geographical areas. The quantitative dataset is interpreted in line with the positivist paradigm, in that trends and correlations are considered objective evidence of underlying causalities. However, the empirical evidence has notable shortcomings, not least that the participants are individual people, each with their own unique characteristics and traits as students. The decision was therefore taken to incorporate an interpretivist element in conjunction with this empirical data to enable a contextualized analysis of the results, possibly revealing any unusual trends in culture or mind-frame specific to each dataset. It was through the philosophy of pragmatism that this approach was chosen (the approach evolved to fit the needs of the overall enquiry) rather than due to a loyalty to a positivist / interpretivist 'hybrid' research model (Oliver *et al.,* 2013, p190). This said, the hybrid model is increasingly prevalent in educational research and New Literacy Studies, but it is worth noting the criticism that combining

contrasting methodologies in this manner can sometimes result in rather convoluted data (Castellan, 2010, p3).

In line with the qualitative aspect of a hybrid approach, pupils were also asked to state their preferred scaffolding method and to explain their choice once they had completed the quantitative topic questions. These responses were used in conjunction with quantitative data to triangulate and assess the relative efficacy of the two scaffolding methods against unscaffolded questions and draw the conclusions of this research. Niglas (2004) supports this combination of data and cites them as complimentary paradigms rather than mutually exclusive approaches (p9). Creswell and Garrett (2008) support this, saying that combining these methods better equips contemporary education practitioners to study the increasingly complex problems encountered in the education sector (p321).

Ethical considerations
Conducting research in a working classroom should undoubtedly be undertaken with the utmost regard for pupil progress and welfare. In recognition of this the interventions described in this paper were aimed at accelerating learning rather than investigating how progress might be hindered. In this way, the ethical considerations of this study aimed to balance both 'morality and legality' (Esposito, 2012, p315). BERA guidelines (2011) state that all participants must fully understand the connotations of their participation, including the reason they are engaged and how information is to be used and reported (p5). With this in mind, both classes in this investigation were fully briefed prior to participating in the study and given the choice to opt out of the data collection phase. This work maintains confidentiality and is written in line with Bell's (2005) guidance that participants should not be presented in a way that enables their identification (p48).

Initial lesson observations suggested that males responded better to structure scaffolding, however despite this apparent preference the implementation of scaffolding methods across genders was kept even. This was to ensure that no preferential learning was taking place in the classroom and to adhere to the ethical guidance that research should be designed to avoid presenting potentially beneficial or detrimental conditions to one group of participants over another (BERA, 2011, p7).

In terms of ethical practice it is also noteworthy that this research prompted pupils to analyse their own preference of scaffolding methods and the impact of scaffolding on their learning. Winnie & Hadwin (1998, 2008) explain the value of learners' capacity to self-regulate their journey based on a set of 'metacognitive regulatory skills' needed to '…monitor their understanding and modify their plans, goals, strategies and effort in relation to contextual conditions (cognitive, motivational and task conditions)…' (in Azevedo *et al.,* 2007, p108). This self-reflection and enhanced self-regulation could arguably increase pupils' metacognitive facility across many of the facets of metacognition, as cited by Dawson *et al.* (2008) including 'metacognitive knowledge about tasks and strategies', 'identification of ill-structured problems' and perhaps most notably, 'effects of metacognitive experiences' (p4). In this sense it is conjectured that in terms of ethical practice, participation in this study was beneficial to pupils as they were not only continuing to learn about geography but also deepening their understanding of themselves as learners.

Participants
Data were collected from two different classes, one year 10 class and one year 9 class. The data collection for the year 10 group was undertaken first. Due to the nature and differing cultures in these classes the methodology was adapted slightly and as such they are discussed separately below.

Groups and coding
During observations for a previous investigation into the education of a boy who was an extremely reluctant writer several trends and behaviour patterns had come to light in classes. It appeared to be the case that sentence-starter writing frames presented to help him with his work more often than not caused him to give up entirely, whereas more direct instructional prompts did not. Noticing these reactions on a number of occasions, I became curious as to whether the method of scaffolding itself was in some way causal to his lack of compliance on writing tasks. This particular pupil was a low attaining boy, so the grouping in this experiment was designed to enable the isolation of two variables, namely gender and attainment. These elements were spread evenly amongst groups so they could be tracked within data to establish whether the impact of literacy scaffolding methods had any bearing on the reluctance of these groups to write.

- Pupils were grouped into three groups.
- Each group contained an equal mix of high, medium and low attaining pupils (H, M or L) to enable direct comparison of similarly attaining pupils for a given set of questions
- Each group contained an equal mix of boys (m) and girls (f) to enable gender-based analysis of results
- Each pupil was given a code to allow tracking of their grouping for data handling
- A pupils code comprises:
- Their attainment group (H, M or L)
- Their gender (m or f) NB – lower case.
- Their research group (A, B or C)
- So a pupil might have the code HfA (High attaining female from group A)
- These codes can be seen in the raw data in appendices 3 and 4

Y10 process
The year 10 class in this experiment were tested on a 'river processes and landforms' unit. The class contains 5 pupil premium students and one student with special educational needs (a physical disability). The class attainment levels at the time of this research ranged from A*-C with one pupil attaining D grade work and these levels represent a steady trajectory towards target grades. Each research group was given the same set of 3 questions, but each group was scaffolded using a different variation of unscaffolded questions, writing frames and writing structures. Questions were answered under 'open book' test conditions. The decision was taken to allow students to use their notes and textbooks as the experiment was designed to investigate efficacy of scaffolding methods rather than to test their knowledge and memory of a given topic.

Following the test, work was assessed for:
- Quality against a mark scheme
- Volume (by counting the words in each answer)
- Efficiency (by calculating the number of words written per mark awarded using the formula;
  - *Efficiency =   Words in answer*
  - *Marks awarded for answer*

Pupils were also asked for qualitative feedback. This feedback had two parts:
1. Pupils were asked to select their preferred method of scaffolding from the 3 questions
2. Pupils were asked to explain the rationale behind their preference

These preferences and responses were categorised and utilised as the charts seen in the 'analysis of results' in section 3.

Y9 process
The year 9 class in this experiment were tested on a 'climate change' unit. The class contains 19 pupils of which there are 11 pupil premium students and 16 students with special educational needs. The class attainment levels at the time of this research ranged from 3C-5B, with the majority of pupils making expected progress towards end of key stage three target grades. Data was collected from the year 9 group having already collected year 10's data. As the year 9 class was a known entity the decision was taken to adapt the data collection to better match the culture of the group. This is a relatively low-attaining group with much of the class having special educational needs. Many of the group are also extremely reluctant writers and although I had made big inroads into behaviour management, there was still a recurring element of low-level disruptions from three pupils in particular. With this in mind, I was concerned that unveiling a three-question writing task might demotivate the group to the point of rendering their input meaningless. To protect the integrity of the results the decision was taken to structure the data collection differently.

The class was split into just two groups, again evenly dividing genders and attainment levels. One group did the unscaffolded control question and a question scaffolded with a writing frame. The other group did the unscaffolded control question and a question scaffolded with a writing structure. This meant that each pupil was only answering two questions; arguably a more approachable and suitable volume of work for reluctant writers. The quantitative data collection was not detrimentally affected and meaningful results were still gathered. However, the qualitative data collection was undermined. This is discussed later in the 'Evaluation' section of this paper.

Analysis of Results
The results of this research open up discussion on many different points. However, to maintain a manageable basis for discussion, analysis will focus on the following headlines.
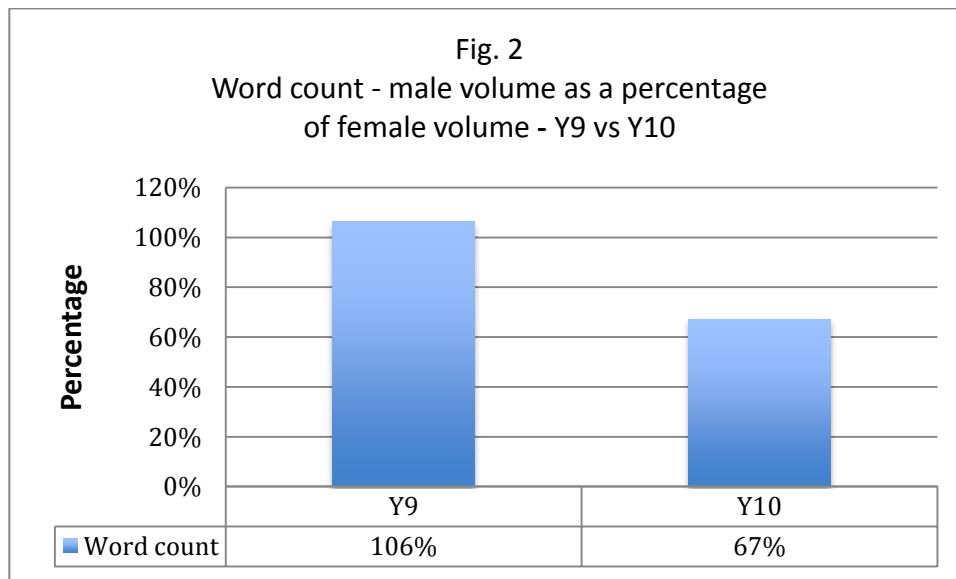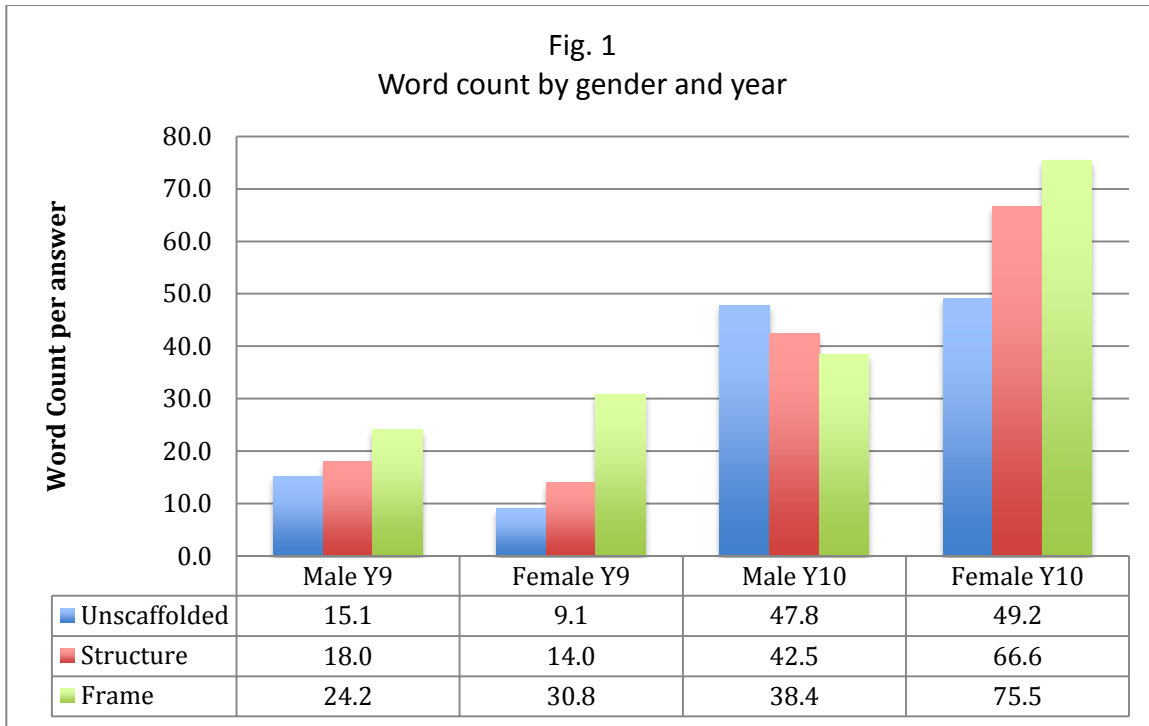
Headlines
1. Reluctance to write starts between Y9 and Y10
2. Boys prefer writing structures to frames
3. Boys prefer the scaffolding method that performs best for them
4. Boys show greater efficiency in writing than girls

Discussion
Reluctance to write starts between Y9 and Y10

Fig. 1
Word count by gender and year

	Male Y9	Female Y9	Male Y10	Female Y10
Unscaffolded	15.1	9.1	47.8	49.2
Structure	18.0	14.0	42.5	66.6
Frame	24.2	30.8	38.4	75.5

Fig. 2
Word count - male volume as a percentage of female volume - Y9 vs Y10

	Y9	Y10
Word count	106%	67%

Figures 1 and 2. reveal data noteworthy on two main points:

In Y9, male pupils wrote more than female pupils

1. Figures 1 and 2 show that year 9 pupils produced a similar volume of written work in the experiment with boys writing 6% more than girls. Literature on gender disparities in writing does not investigate nor account for this trend. However it is entirely possible that with a relatively small dataset the greater output by males shown here is coincidental. Perhaps research with a wider data capture element would refute this trend, but using the results from participants in this study a notable pattern is evident.

2. *By Y10 there had been a landslide reversal of the trend in point 1 – females write significantly more than males*

Figures 1 and 2 then show that the Y10 class the data was far more reflective of findings of the wider research on boys' writing in that boys were generating only 67% of the volume of their female classmates.

The fact that Hansen *et al.* (2001) identify apparent reluctance to write in Y11 is useful confirmation that this is an issue in gender-based literacy studies. However, it does nothing to confirm exactly when this reluctance is developed or adopted. It could be asserted that it is of critical importance to establish when this reluctance is engendered in boys, as this would enable educational practitioners to make timely and effective interventions.

Boys prefer writing structures to frames
The overwhelming majority of males had a preference for writing structure scaffolding over frames or unscaffolded questions in this experiment.
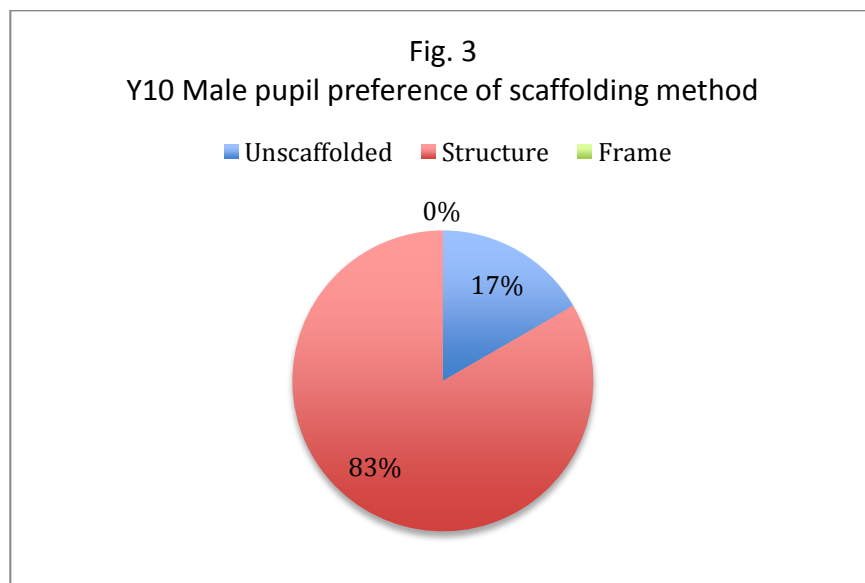

Fig. 3
Y10 Male pupil preference of scaffolding method

■ Unscaffolded   ■ Structure   ■ Frame

0%
17%
83%

Figure 3. shows this clearly, with 83% of males opting for structure support over frame support or unscaffolded questions. Interestingly, not one male preferred writing frames as a scaffolding method. In contrast figure 4 shows that 33% of females preferred writing frame scaffolding.

Fig. 4
Y10 Female pupil preference of scaffolding method

■ Unscaffolded　■ Structure　■ Frame

17%
33%
50%
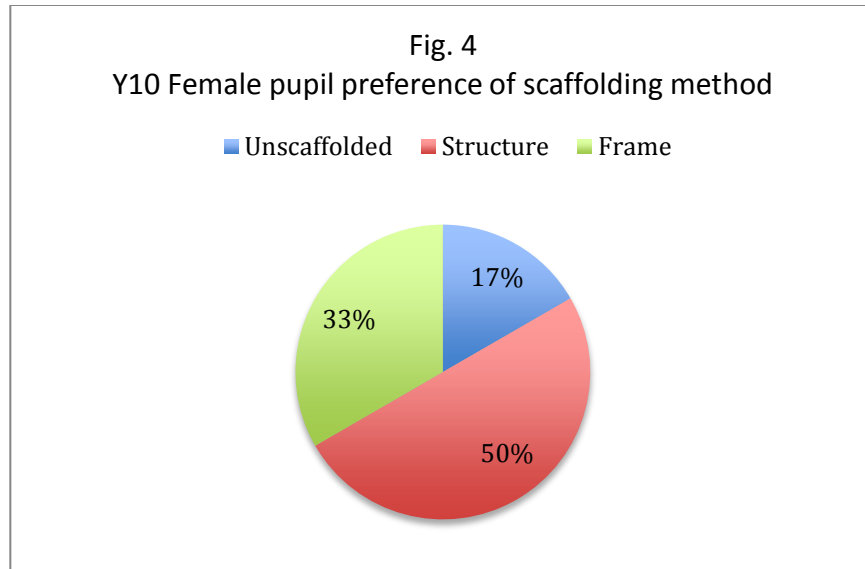
The percentage of participants who preferred unstructured questions was identical across genders. The male preference for writing structures and dislike of writing frames is echoed by Ofsted's (2003) research, which found that in schools where boys write well; 'There are opportunities for writers to exercise choice as to content and expression, even though the form or structure is tightly constrained' (p19). This point is salient on two levels. Firstly, it seems apparent that the 'sentence-starter' approach used in writing frames is in polar opposition to Ofsted's guidance of 'choice as to content and expression' as the expression and tone is pre-defined, having been written by the teacher in the teacher's 'voice' rather than that of the pupil. Arguably this places a precursory challenge on boys (translating another person's voice into their own) before they are able to actually answer the question. This is supported by feedback from a Y10 boy who said: 'I prefer (the writing structure) because (with the writing frame, it) was hard to find the words that fit into the sentence but (with the writing structure) you could put it in your own words' (Male pupil, Y10, 2015). Secondly, writing structures are aligned with Ofsted's (2003) findings; 'Almost all the boys, however, responded well to form and structure being imposed' as pupils using writing structure scaffolding are indeed writing within a 'tightly constrained' structure (p19)'

At present no literature investigates whether catering to these specific findings does actually reduce boys' reluctance to write, although the importance of such versatility is remarked upon (Purdie and Hattie, 2002, p28). Such gender specific planning seems a logical next step based on these recommendations, yet Ofsted's (2003) findings tell us that even in single-sex classrooms in high-performing schools gender ratios were not considered by the majority of teachers (p13). It is based on these factors that the recommendations are made in the 'suggested changes to practice' section of this research.

Boys prefer the scaffolding that performs best for them

Fig. 5
Does Y10 pupil preference align with highest scoring
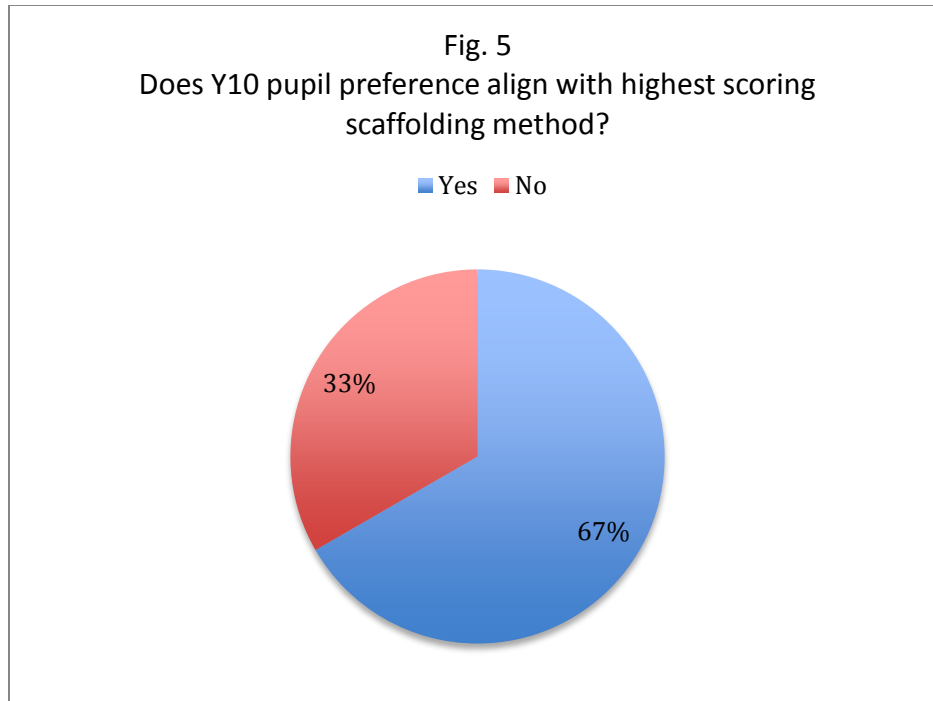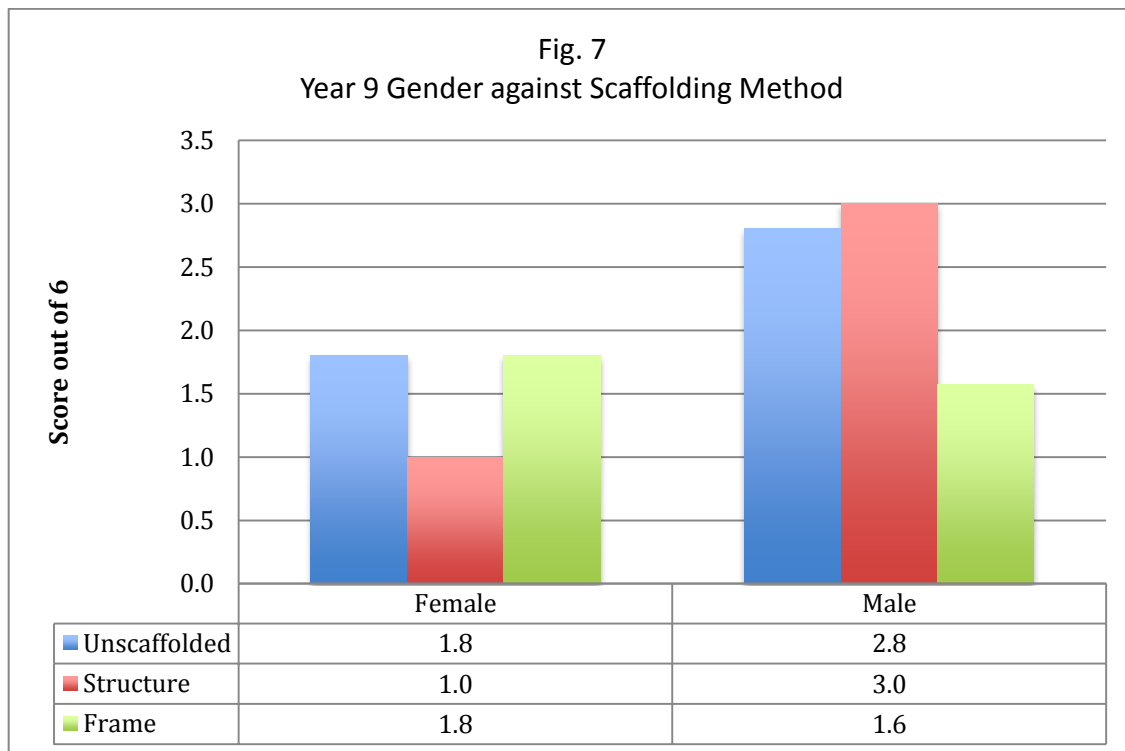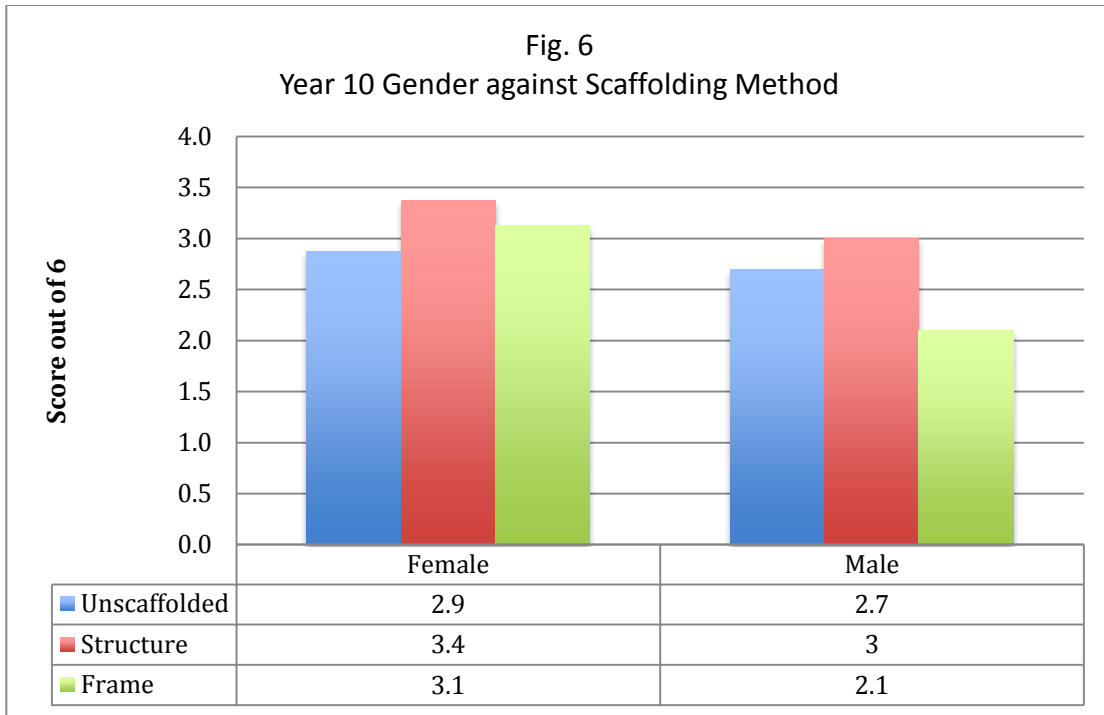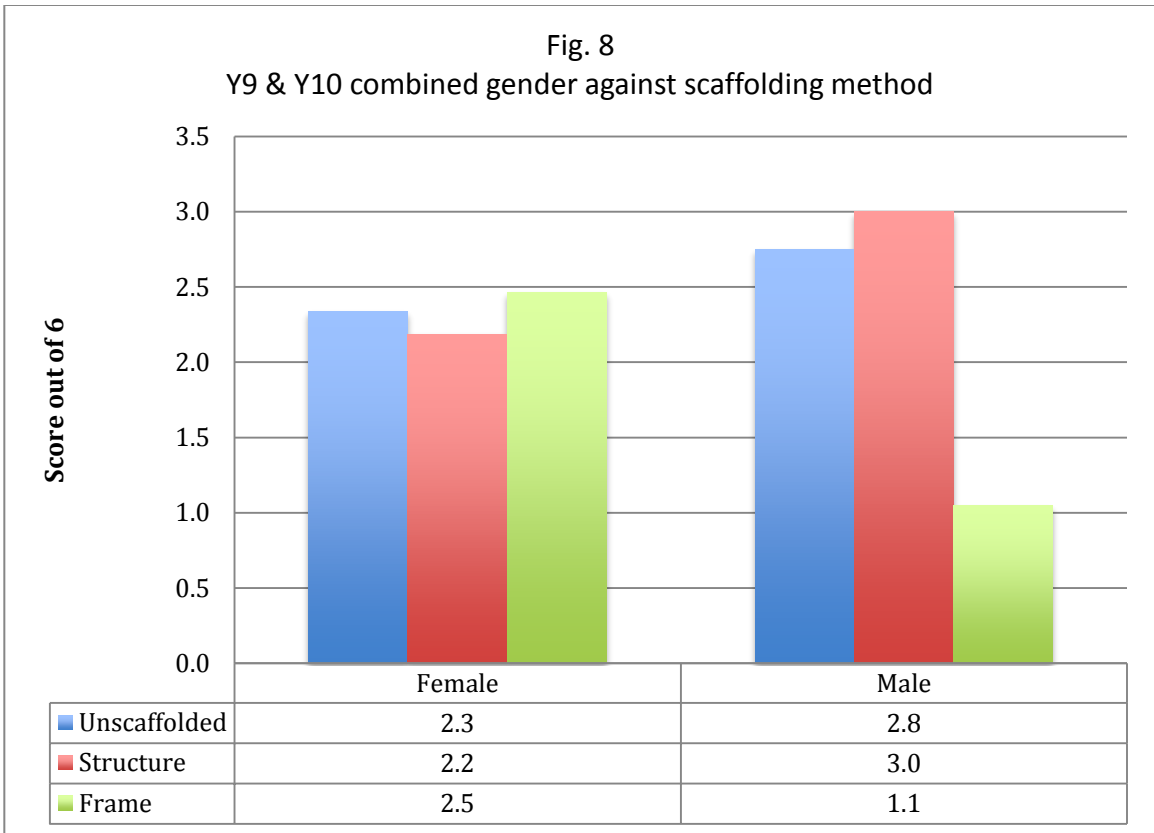scaffolding method?

■ Yes ■ No

Figure 4 shows that 67% of pupils prefer the method that elicits the highest scores in their own work. This data suggests that the pupils in this study are capable of effective metacognition, in that pupils are analysing their own cognitive preferences accurately. This lends credence to the evidence discussed in point 2 above (pupil preference for scaffolding methods) and also highlights the importance and validity of qualitative feedback in similar studies. In line with this Lau and Yeun's (2010) data led to their guidance that the preference of learners can relate to multiple facets of their learning including deadlines, topics, formats, nature of tasks and working environments (p1099). Conversely, the data also reveals that 33% of pupils preferred a scaffolding method that was not conducive to their learning. This demonstrates that pupil preferences alone cannot be relied upon to produce suitable lesson structures, and that statistically supported evidence should be considered in tandem with pupil preference-led learning.

Boys' dislike of writing frames is supported by the fact that in both year 9 and 10, writing frames actually hindered boys' performance in answering the question. Including the data from both these year groups, the overall impact of writing frames was to reduce boys' marks by 63% below the mean mark of pupils with no scaffolding (figure 8). For female pupils however writing frames either had no impact (year 9 – figure 7) or caused a marginal (7%) uplift (figure 6) against unscaffolded questions. This suggests that some literacy activities such as writing frames that are designed to support male pupils in closing the literacy gap might in fact be widening it.

Fig. 6
Year 10 Gender against Scaffolding Method

	Female	Male
Unscaffolded	2.9	2.7
Structure	3.4	3
Frame	3.1	2.1

Fig. 7
Year 9 Gender against Scaffolding Method

	Female	Male
Unscaffolded	1.8	2.8
Structure	1.0	3.0
Frame	1.8	1.6

Fig. 8
Y9 & Y10 combined gender against scaffolding method

	Female	Male
Unscaffolded	2.3	2.8
Structure	2.2	3.0
Frame	2.5	1.1

Boys show greater efficiency in writing than girls

Fig. 9
Mean words per mark by gender Y9 & Y10 combined

|	Female	Male
Unscaffolded	14.2	14.0
Structure	18.3	12.0
Frame	20.8	14.9
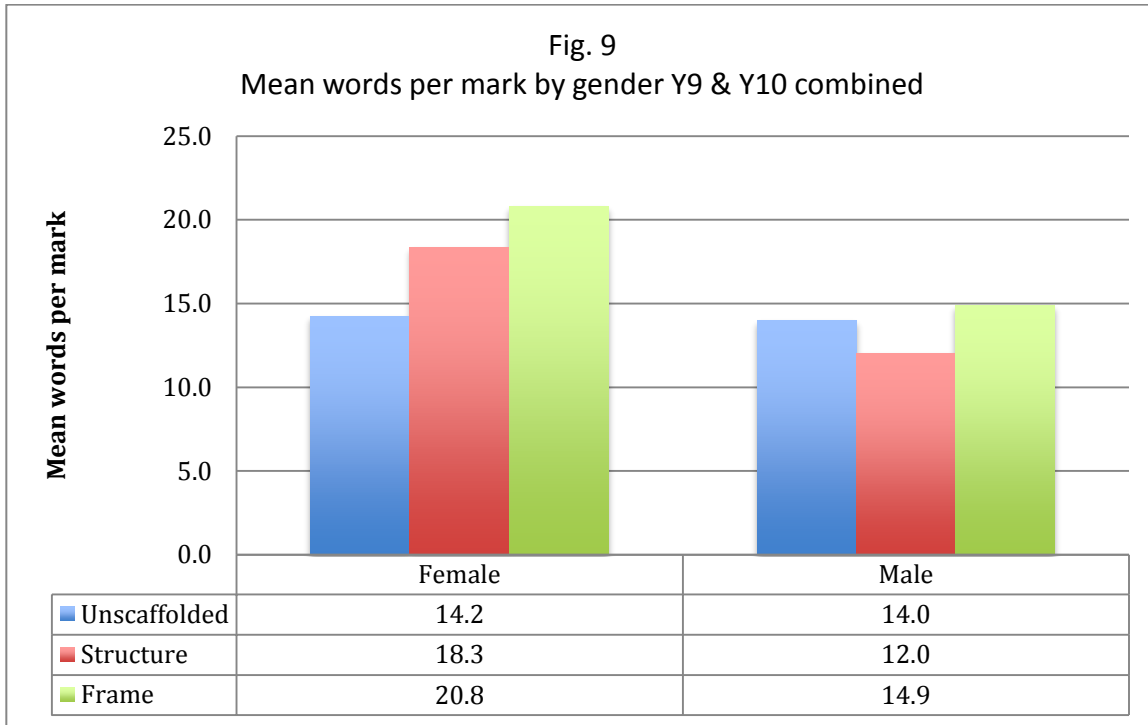
The results of this investigation reveal information on efficiency and concise writing, which is overlooked by the majority of gender-based studies on literacy. It is clear that in this research boys' writing often proved more concise as shown figure 9. However, Hansen (2001) finds that there are recognisable differences in the styles of boys' and girls' writing. Furthermore the writing style of girls is generally valued more highly than the writing style of their male peers and notably pupils are actually aware of the elevated value placed on the female style (p8). It could be argued that by intentionally shifting teachers' regard for wordy, creative writing styles towards concise writing, males would perhaps feel that their writing style was valued as highly as that of female pupils. Hansen (2001) recommends that teachers scrutinise male-specific trends and successes in order to increase awareness of boys' competencies (p15). This might help counteract the trend found in this research that boys almost unanimously found writing offered little appeal or reward (Hansen, 2001, p7). Ofsted's (2003) research holds similar anecdotal evidence, finding that in good schools; '…value is placed on diversity of style and approach, succinctness as much as elaboration, and logical thought as much as expressiveness' (p3). The multiplier effect of valuing a gender-specific style is evidenced in research from Nigeria where the work of boys was valued more highly than that of girls. This was the potential catalyst for; '…a Pygmalion Effect of self-fulfilling prophecies' in that the higher value and expectations of boys by teachers caused them to outperform their female classmates (Peterson, 2000, p255).

Further research has stated categorically that boys have fallen behind girls in every aspect language use at school (Gorman, White, Brooks, Maclure, & Kispal, 1988; Millard, 1997; Ofsted, 1993 from Sun *et al.,* 2010, p4). However, the data shown in figure 10 reveals that in this investigation there was at least one valuable element of literacy in which boys appear to excel over their female peers – that of being concise and efficient with words, or as Frater (1997) puts it, having 'economic form of written expression' (P19). This reveals that for the equivalent number of marks, girls wrote 131% of the volume

of their male peers (17.8 words per mark compared to boys 13.6 words per mark). Blum explains that the female brain has an increased 'cortical emphasis on verbal-emotive processing' and that girls' thinking is therefore more verbally inclined *(*Blum, 1997 from King and Gurion, 2006, p4). Interestingly figure 9 also shows that writing frames cause a reduction in efficiency across both genders.

Fig. 10
Mean words per mark overall Y9 & Y10 combined

	mean words per mark
Female	17.8
Male	13.6
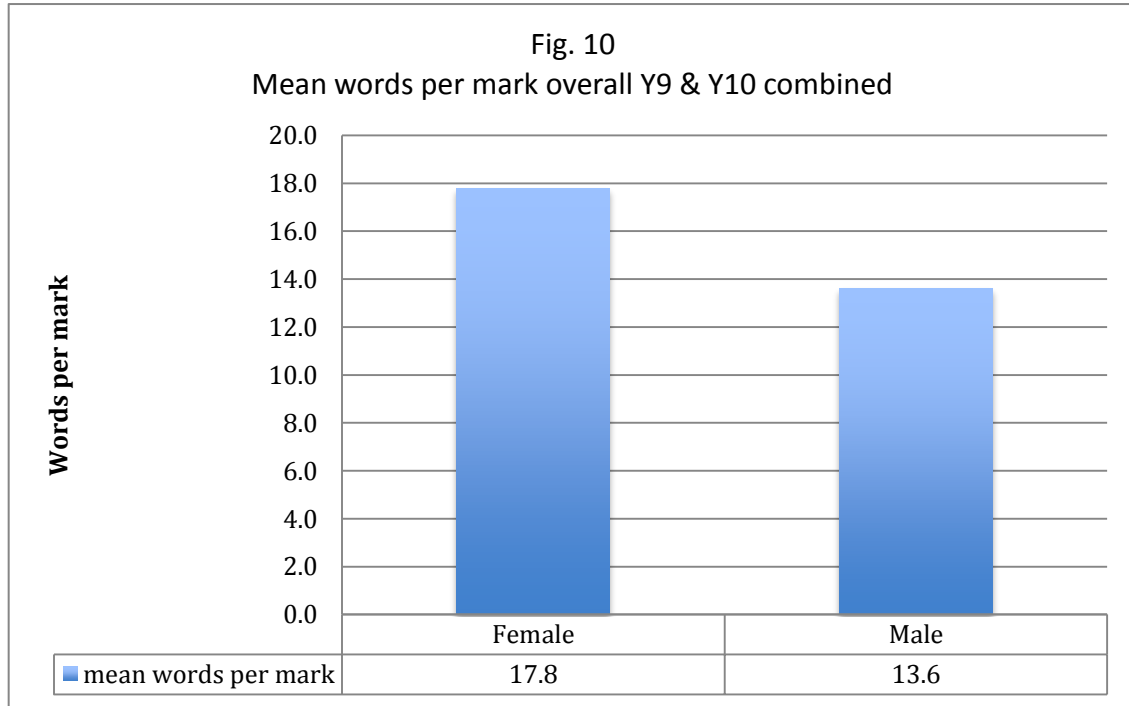
Overall the valuable and arguably more male trait of efficiency in writing seems a significant opportunity to address the troubling statement that: 'Girl behavior becomes the gold standard. Boys are treated like defective girls.' (McBride, B, 2009).

Correlation between scaffolding method and pupil attainment
As described in the methodology pupils were grouped based on their gender and attainment levels. This was due to earlier observations of a lower attaining male pupil responding differently to different types of scaffolding. The data collected in this research revealed no correlation between attainment and response to scaffolding method so it is deduced that in this dataset, gender is a far more influential factor in determining a pupil's response to scaffolding type.

Suggested changes to practice
The literature and data evaluated in this research suggests overwhelmingly that there are certain measures on offer to the practitioner whose aim is to reduce boys' reluctance to write. Ofsted (2003) note that there is no 'silver bullet' to this reluctance, but support the sentiment that certain guidelines can be implemented with a good degree of confidence (p4).

The data gathered in this research suggests strongly that within the umbrella category of literacy scaffolding, some methods are more beneficial to boys than others. With this in mind, writing structures (as defined in this report) should take precedence over writing frames in assisting boys to write and hence, in reducing their reluctance to put pen to paper. However, it would appear that the preliminary obstacle to implementing this on a school-wide, or even national scale is one of terminology. Studies and guidance on literacy scaffolding talk in rather general terms about writing frames (no fixed definition was found) but there seems to be no commonly accepted terminology for what this report terms 'writing structures'. Even Frater's (2004) seminal paper 'Writing to Learn' uses mixed terms such as 'prompts' or 'set of headings' to refer to writing structures and appears to consider them as interchangeable with frames; '…either a writing frame or a set of headings' (p21). When intricacies such as the difference between structures and frames appear to carry significance to gender-based literacy scaffolding, then arguably it is critical to clearly define and handle them as distinct and separate methodologies thus enhancing the 'pedagogical awareness' of educational practitioners (Andretta *et al.,* 2008, p48). Only with clearly defined nomenclature to represent the significant differences between these methods can they be implemented with confidence via remote recommendations. Once terminology is understood and universally adopted across the education sector, then Frater's (2004) recommendations of a whole school policy implemented via an advanced skills teacher (AST) or equivalent is supported as an efficient and sensible method of delivery.

Evaluation
Limitations
The findings and recommendations in this work should be read with an understanding that there were numerous limitations to the scope and integrity of the research. These are outlined in brief below.

A lack of understanding of the reason for reluctance to write
The validity of this research is hampered to a certain extent by the assumption that reluctance to write is due to students finding writing a task difficult. It is acknowledged however that might not be the case at all. Numerous other causal factors have been suggested to explain this apparent reluctance. Hansen's research (2001) suggests that girls place a higher value than boys on attainment in writing. Results showed not only that girls' and boys' writing was valued differently, but also that the pupils themselves were aware that girls' writing style was held in higher regard *(*p2) and it is conjectured that this caused the pupils themselves to alter the value placed on writing. Hansen (2001) goes on to offer the opinion that this gender divide with regard to the value of writing may be attributable to the fact that writing does not align with the archetypal concepts of masculinity, and as such literacy activities do not hold appeal to male pupils *(*p4).

A narrow understanding of the meaning of 'literacy'
Alloway and Gilbert (1997) note that the meaning of 'literacy' is transient; it must evolve within the constantly shifting landscape of technology and information (in Blair and Sanford, 2004, p452). The notion that literacy is a multifaceted concept is unarguable, but the nature and relative value of these 'multiple literacies' is considered beyond the scope of this research (Street, 2003, P77). Certainly

research suggests that males show a predisposition towards literacy in ICT (Ofsted, 2003) which again is not considered in this study. It is entirely plausible that boys' reluctance to write and engage with subject matter would be less evident (if at all) in a broader range of more male-centric literacy exercises than traditional construction of prose.

Limited focus on internal variation of writing structures
It is noteworthy that the internal makeup of a writing structure has also not been investigated at all in this work. Frater notes that key features of effective scaffolding for boys includes methods '…beginning with analytical tasks, before discussing feelings or empathy' (Frater, 1997, P29). In the geography classroom this guidance could be applied on a micro-level within the writing structure itself, beginning with analytical or factual points before moving on to social aspects of geography. Experimenting with the effect of the sequence of writing structure components would certainly warrant further gender-based research to establish its impact on boys' reluctance to write.

Uneven scaffolding distributions in the year 9 data capture exercise
As mentioned in the methodology year 9 pupils were only given two questions to answer; one unscaffolded question and either a frame or a structure, depending on which research group the pupil was allocated to. This was an attempt not to demotivate pupils with too much writing. However as pupils had not been scaffolded by both frames and structures as the Y10 group had, they were unable to compare the two methods and state which one they preferred and why. This was an oversight and was not considered until after the experiment had been conducted, as a result only Y10 qualitative data is used in this investigation.

A small dataset
Perhaps the most significant limiting factor is the scale of this experiment. For empirical data collection a total of only 99 questions were answered across all three questioning methods (19 pupils answering 3 questions in year 10, and 21 pupils answering 2 questions in year 9). For qualitative survey questioning, only 19 distinct feedback results were entered into results (due to the error in data experiment structure described for the year 9 qualitative dataset).

Overall validity
Despite the limitations discussed above, the male preference for particular scaffolding techniques over others as found in this research is not undermined in any way. In this sense, the data gathered in this research offers a dimension not taken into consideration by Hansen's work. It could be argued that boys' perception of the value of literacy could be redressed effectively with the male-centric scaffolding such as writing structures. This is acknowledged by Hansen's recommendation that further investigation into writing preferences should be undertaken (Hansen, 2001, p16). It is also conjectured that this research complies with to the two core objectives of educational research; quality assurance and professional development (Namaghi, 2010, p1504).

Conclusion
'The overwhelming message from research is that there are no simple explanations for the gender gap in performance nor any simple solutions' (Ofsted, 2003, p9). Despite the dearth of any 'simplistic' panacea, this study has suggested that small adaptations in practice may have the capacity to reduce the disparity in gender-based literacy attainment. In part, it addresses Blair and Sanford's (2004) statement that there is a need within the education system to increase our understanding of the impacts of literacy practices on boys (p454).

Key observations
In conclusion and bearing in consideration the limitations to this experiment discussed above, this research offers four key points on the use of scaffolding in mitigating boys' reluctance to write.

Writing structures are more effective than writing frames or unscaffolded questions
Writing structures not only prompted higher scoring answers from boys, but they engendered efficient writing, allowing boys to shine at one of the few literacy skills at which they excel over their female peers.

Boys actively prefer using writing structures, and recognise their suitability to scaffold their learning over frames and unscaffolded questions
Allowing boys to opt for a method they are more comfortable with may not only increase the quality and efficiency of work produced, but could also decrease reluctance to write through self-directed learning

Writing structures can be implemented in mixed-gender classrooms without having a significant detrimental effect on female pupils
Structures are the least gender-biased scaffolding method tested in this study. The use of structures over frames offers far greater gender-equality than writing frames both in terms of pupil preference and efficacy.

Writing frames can actually hinder boys' performance, suggesting their unsuitability as a scaffolding method for male pupils
In contrast writing frames helped female pupils, thus widening the apparent gap in literacy attainment and willingness / reluctance. This not only provides evidence that frames do not offer true gender equality as a scaffolding method, but it reveals that the 'literacy gap' is prone to artificial skewing by differences in classroom methodology.

Overall conclusion
Overall, this study suggests that writing structures represent a straightforward and easily implemented opportunity to help boys catch up in literacy whilst not being detrimental to the progress of female pupils. This has significant bearing on my own practice as a teacher. In future I will ensure that scaffolded literacy exercises take this into consideration. I will also ensure that wherever I scaffold written work with structures, I will also give pupils the option to use a similarly pitched writing frame in recognition of the cautionary notes of Rowan *et al.* (2002) that essentialist gender paradigms are rarely a failsafe strategy; the fact remains that a minority of pupils work more effectively with writing frames and so these should not be dismissed entirely (p108). It is fortunate that creating a writing structure is not an overly time consuming exercise, especially where an existing writing frame can be used as a template.

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