Talk Factory Generic: Empowering secondary school pupils to construct and explore dialogic space during pupil-led whole-class discussions

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A B S T R A C T

This paper investigates how the application Talk Factory Generic (TF-G) can be used on an interactive whiteboard to empower 11–13 year old pupils to construct and explore dialogic space during pupil-led whole-class discussions. Findings suggest that use of TF-G needs to be orchestrated by teachers but that pupils can take responsibility for the exploration of dialogic space because they can use the dynamically unfolding representations in TF-G to monitor and guide their own progress. It is concluded that use of TF-G can enhance pupil participation, increase their confidence and help them to understand the value of exploring difference during science, mathematics and geography lessons. Future research includes investigating use of the TF-G app on mobile devices during outdoor learning activities.

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1. Introduction

Wegerif (2007) argues that when pupils are engaged in effective classroom discussions, they are doing more than making meaning; they are engaged in the construction of difference and, in so doing, are identifying with the space of dialogue itself. He argues that, by doing this, pupils are developing their intellectual freedom, which he defines as "a capacity to question and to be able to think for themselves" (Wegerif, 2010, p. 340). However, previous research (e.g. Kuhn, 1991) suggests that pupils need to be taught how to do this effectively. Indeed, the National Curriculum in England (2014) includes a requirement that pupils' are supported by their teachers to develop their spoken language skills across all subject areas and states that:

> Pupils should be taught to speak clearly and convey ideas confidently using standard English. They should learn to justify ideas with reasons; ask questions to check understanding; develop vocabulary and build knowledge; negotiate; evaluate and build on the ideas of others; and select the appropriate register for effective communication. They should be taught to give well-structured descriptions and explanations and develop their understanding through speculating, hypothesising and exploring ideas. This will enable them to clarify their thinking as well as organise their ideas for writing (no page number).

This paper investigates whether and how Talk Factory Generic (TF-G) (educational software co-developed by the author) can be used to mediate pupils' identification with dialogic space during three pupil-led whole-class discussions across three subject areas and two age-groups in one English secondary school.

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2. Conceptual framework

In recent years, increased attention has been paid to the role of dialogue in teaching and learning (e.g. Alexander, 2004; Littleton & Howe, 2010; Wells, 1999). It has been argued effectively that individuals can use language as a tool to make ideas available for public scrutiny and to create new meanings together (Littleton & Mercer, 2013).

However, Wegerif (2007) draws on Bakhtin's (1986) notion of dialogism – the juxtapositioning of incompatible perspectives of equal value – to take the above argument one step further. He argues that, by participating in discussions, learners are doing more than engaging in reasoning; they are actively engaged in the situated construction of dialogic space. He describes dialogic space as a shared meaning space "of uncertainty, multiplicity and potential" (Wegerif, 2010, p. 312) that is created by difference – dialogic space is constituted in and through the tensions that exist between participants' different perspectives. This difference is pregnant with possibilities that can be explored further and which will give rise to yet more difference. It is the creation and exploration of difference that can give rise to new understandings and, importantly, to awareness that new understandings are always open to infinite exploration and change.

The creation of difference is achieved by engaging in particular types of talk that keep the potential for difference, in the shared meaning space, alive. However, it has become evident that pupils need to be taught the necessary skills to enable them to do this (e.g. Kuhn, 1991). There are several types of talk that can be employed to create and explore difference (e.g. see Teo, 2013) and the current paper focuses on just one: 'exploratory talk'. Mercer (2000) defines exploratory talk as that in which:

> . . . partners engage critically but constructively with each other's ideas. Relevant information is offered for joint consideration. Proposals may be challenged and counter-challenged, but if so reasons are given and alternative statements and suggestions are sought, offered for joint consideration, and may be challenged and counter-challenged, but challenges are justified and alternatives are offered. (p. 153).

Mercer and colleagues have illustrated the value of ground rules for supporting exploratory talk during *group work* in schools (e.g. Mercer & Sams, 2006; Wegerif, Perez, Rojas-Drummond, Mercer, & Velez, 2005). The ground rules represent a shared understanding of how language can be used to support group reasoning and the rules include: respecting the opinions of others, sharing all information with others, giving reasons for your views, challenging others' opinions, and providing a rationale for a challenge. When pupils create more difference by exploring new viewpoints and perspectives, dialogic space can be widened (Wegerif, 2010). Similarly, dialogic space can be deepened through increased reflection on ideas, or by deconstructing ideas and, finally, by reflecting on the process of dialogue itself (ibid.). Ultimately, by achieving a widening and deepening of dialogic space, pupils are identifying with 'difference', or the space of dialogue itself (Wegerif, 2007) – they are actively contributing to the creation of dialogic space and can monitor the creative effectiveness of their own, and others', utterances. Lesson plans have been developed (e.g. Dawes, Mercer, & Wegerif, 2004) to support the teaching of ground rules in the classroom with a view to enhancing the discussions that take place when pupils are asked to work in small groups.

However, due to the fact that one teacher cannot attend to each small group of pupils all of the time during a discussion activity, each pupil is responsible for ensuring that they remember the ground rules, use the ground rules to guide the content of each utterance they make, monitor how the ground rules are used by themselves and other group members, and evaluate the quality of their ongoing discussion in terms of the definition of exploratory talk provided above. It is argued here that this is a lot of responsibility for pupils who have only a basic understanding of discussion skills, particularly as they will need to demonstrate and monitor not only that they can use the ground rules per se but that they can use them effectively to enhance their learning of the subject matter being discussed. Talk Factory was designed in an attempt to address this issue; the application mobilises the affordances of digital technology to display, on an interactive whiteboard, the ground rules and generate dynamically evolving graphical representations of pupils' use of them during *whole class* discussions in real time. In this way, both the teacher and all of the pupils are assisted in monitoring every pupils' contribution to the discussion all of the time to ensure that they all contribute to the construction and exploration of dialogic space.

Previous research (e.g. see Hennessey, 2011) has focused on how teachers and learners can use interactive whiteboards to mediate their co-construction of dialogic space in and through their evolving annotation of digital artefacts such as texts, photographs and drawings. Hennessey argues that, in this way, dialogic space is constituted by more than talk alone as the annotated digital artefacts themselves embody ideas in progress. The current study does not use the interactive whiteboard in this way but it is concerned with how Talk Factory can be used to embody, or graphically represent, pupils' evolving engagement in the rules of exploratory talk. The way in which the software can be used to support this is discussed in Section 4.2.

3. Background to the current study

Talk Factory was designed initially to support pupils' engagement in exploratory talk during whole-class discussions concerned with the design and implementation of fair tests in primary school science lessons (Kerawalla, Petrou & Scanlon, 2013). This version, now known as Talk Factory Primary Science (TF-PS), consists of a 'core' set of features that support whole class discussion (for full details please see Section 4.2). These core features are embedded also in a range of other screens. For