

Teacher-student dialogue: What matters for student outcomes

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Teachers' styles of creating dialogue in the primary classroom is found to predict student outcomes on standard tests

Introduction

From classical Greece onwards, pedagogical texts have spotlighted the dialogue that occurs during classroom teaching, arguing that certain patterns are particularly conducive to positive student outcomes. Moreover, while full consensus about these patterns has never been achieved, contemporary texts display recurrent and widely accepted themes. These include the beliefs that positive outcomes can be promoted through open questions, elaboration of previous contributions, expression of doubt or disagreement, reasoned discussion around differences, linkage and coordination across contributions, meta-cognitive engagement with productive talk, and/or high levels of student participation. Yet despite having been the subject of hundreds of empirical studies, the value of these patterns remains unclear. The consequence, in the UK at least, has been dramatic and continuing shifts of educational policy: documents issued under the New Labour Government promoting many of the patterns, received what amount to health warnings under the subsequent Coalition Government. Confusion, and perhaps cynicism, amongst teachers would scarcely surprise.



Dialogues in Progress

The uncertainties are especially marked in relation to the predominant form of classroom dialogue, i.e. that which occurs between teachers and students: while there are convincing studies relating to small-group interaction amongst students, research into teacher-student dialogue remains inconclusive. One reason is that many studies *presume* patterns along the above lines to be productive and assess whether teacher-student dialogue is pattern-compliant rather than whether the presumption is warranted. A second reason is that relevant research often revolves around broad programmes that address task design and/or group work amongst students as well as teacher-student dialogue. Thus, even when encouraging results are obtained (not always the case), the contribution from such dialogue cannot be disentangled from extraneous influences. Moreover, even when these influences can be excluded, the research often suffers from small samples, a limited range of outcome measures, and uncertainties over whether all target patterns of dialogue are productive or only some.

Method

Recognizing the uncertainties around teacher-student dialogue along with the relevance of clarification for policy and practice, the ESRC recently funded a team at the University of Cambridge (myself, Sara Hennessy, Neil Mercer, Maria Vrikki, Lisa Wheatley) to address the issue. The result was the large-scale study that is [now published](#). In brief, the study revolved around 72 primary school classrooms, situated in London, the Home Counties, East Anglia, the Midlands and Yorkshire. The classrooms were all Year 6 (students aged 10-11 years), but encompassed urban and rural locations, and were socio-economically and ethnically diverse (0-100% of students eligible for free school meals; 0-96% from minority ethnic backgrounds). Lessons (averaging 65.4 minutes duration) were video-recorded, with analyses based on two lessons per classroom (covering any pair of literacy, mathematics or science). All dialogue involving teachers was included in the analyses, no matter whether this occurred with the whole class, small groups or individual students. Contributions from teachers and students were both examined. Using a scheme that proxied the supposedly productive patterns, individual turns in dialogue (identified via speaker switch) were coded and general trends across whole lessons were rated.



Scrutinising the Data

Variation in dialogue across classrooms was related to six indices of student outcome, jointly covering attainment and educationally relevant attitudes. Attainment measures included the Standard Assessment Tests (SATs) which, as statutorily required for Year 6 in England, were taken about two months after the final recording. SATs address mastery of prescribed curricula in: a) mathematics; b) grammar, punctuation and spelling (commonly known as SPAG); c) reading. Remembering the ambiguities within previous research, extraneous factors that could distort interpretation of dialogue-outcome relations were assessed and their effects controlled for within the analyses. These factors covered student demographics (e.g. socio-economic status, fluency in English), prior student attainment and attitudes, parental involvement in schooling, and a wide range of teacher practices. The latter included, of course, use of group work. The factors were assessed through start-of-year questionnaires to students or teachers, or from observations made during recorded lessons or during the subsequent coding and rating of dialogue.

Results

Two of the themes mentioned earlier could not adequately be addressed due to consistently low frequency of relevant dialogue, i.e. linkage and coordination, and meta-cognitive engagement. However, dialogue relevant to the other themes occurred with sufficient frequency and variation across classrooms for meaningful analysis, and the variation proved to be relevant for student outcome. In particular, SAT scores for SPAG and mathematics were strongly predicted by: a) the frequency of ‘elaborated dialogue’, i.e. dialogue that elaborates/builds on previous contributions or, via inherently open questions, invites elaboration; b) the frequency of ‘querying’, i.e. dialogue where doubt or disagreement is expressed; c) the levels of ‘student participation’, i.e. dialogue where multiple students express ideas and engage with the ideas of other students. Specifically, when student participation was high, high levels of elaborated dialogue and querying were positively associated with high scores for SPAG and mathematics. When participation was low the frequency of elaborated dialogue and querying was irrelevant, and when elaborated dialogue and querying were infrequent, there was no positive effect of participation. Equivalent relations were detected with SAT scores for reading, albeit to a weaker extent. In addition, elaborated dialogue was also associated with educationally relevant attitudes: high levels meant relatively positive attitudes to schooling and self-as-learner.

The results suggest therefore that the dialogue in the two extracts that follow is highly productive. The first extract is from a mathematics lesson where the task was to locate 300 grams on a number line from 0 to 1 kilogram. The second is from a literacy lesson around the insensitivity to indigenous cultures of those who brought railways to the American West. Both extracts are abridged from sequences recorded during the study, both are highly participative as defined above, and (in bold font) both contain instances of elaboration and querying:

Number line

Alana: I think here because I think halfway between 0 kilograms and 1 kilogram would be 500 grams, and I think that 300 is close to 500 grams.

Teacher: Would it be helpful to mark on halfway? Pop on halfway then. **How else could we be really specific about where 300 grams could go? [...]**

Andrew: **We could measure with a ruler.**

Teacher: We could measure with a ruler. I agree. I don't want to measure with a ruler. **I want to think about something else I could've recorded.**

Yvonne: **You could find one quarter of a kilogram, which is 250 grams.**

Teacher: And then where would I put the 300 after that?

Yvonne: Just slightly after. [...]

Karen: **I disagree with where Alana's put the 300 grams. I think it should be in between where she put it before and where she's putting it now.**

Western railway

[The text claims that, according to railway executives, 'the train shall capture the beautiful scenery of Mother Nature like an artist painting a picturesque scene'].

Teacher: it's almost arrogant isn't it?

Maria: **But they sound like it's like the train's making the scenery beautiful, not the businessmen making it beautiful.**

Janet: Er the very, they've made it so that, they've made it, the ... they've made it sound like they hate, because they said they're painting a picture, **and with them painting the picture of the train, they're actually thinking it's making the town better.** [...]

Maria: **Er, like they had put like in nature and then it comes, and saying how they're, they'll, it's the saviour, the Iron Horse.**

Teacher: Yeah, it's their saviour, **they worship nature, these things that they worship, that's not their true saviour, this will be their saviour, this will be their new God.**

Peter: When it said that, **that they can capture the beauty like an artist, it can be metaphorical and literal**

The spotlighting of elaboration and querying in contexts of high student participation carries a potentially encouraging message for teachers. The fact that only a small cluster of features is involved suggests that productive teacher-student dialogue should be readily achievable in classrooms. The suggestion is endorsed by the fact that, as the above extracts illustrate, some classrooms are already deploying such dialogue in their routine practice. At the same time, the association of the spotlighted dialogue with SATs, the highest-stake form of assessment in English primary schools, carries an important message for policy makers. Classroom dialogue does matter for student outcomes, and steps to optimize its productiveness would pay dividends. Hopefully, through this message, the repeated, confusing, and arbitrary shifts that have beset educational policy will become a thing of the past.

About the author

Christine Howe is Emeritus professor of Education at the University of Cambridge. Christine is a psychologist by training, whose academic work lies at the intersection of Education, Linguistics and Developmental Psychology. Her main research interests have been children's conceptual knowledge, particularly in the domains of science and mathematics; children's linguistic, communicative, and peer relational skills; and dialogue and learning during peer collaboration and teacher-led instruction. As well as resulting in numerous publications and research grants, Christine's research has attracted considerable media attention and has had significant impact on policy and practice.

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