

Enabling peer teaching

LSIS Research



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Background

Hattie (2008) has shown how peer teaching has a large positive effect (0.5) on learning. In my experience, students automatically seek help from their peers. Overhearing snippets of their conversations during my A level mathematics lessons (such as 'How do you do that? Did you get the answer?') made me realise just how much informal peer teaching usually occurs and that it could be beneficial to formalise the process by putting the students into pairs and asking them to teach each other. The obvious dilemma was 'how can you teach what you don't already

know?' To help overcome this problem I aimed to develop a set of targeted resources for each of the major topics for the A level mathematics course. This resulted in me producing a set of 'You teach – You do' resources that contained fully annotated solutions which the students could use to teach each other, along with questions for the students to solve. The solutions not only provided answers, but also encapsulated all of what I would normally say when going through such questions. They in effect created a set of thought bubbles or internal dialogue about the workings of solutions to problems.

Starting point

A literature review and search of the internet turned up surprisingly few resources explicitly designed for peer learning in mathematics. There were many activities that involved pair/group work, but what I was really interested in was finding resources that targeted giving a student the ability to "teach" another student. As I couldn't find any ready made resources I decided to create my own.

I considered the style of my 'You teach – You do' resources very carefully. I felt they should:

- be hand written because

this was how they would be going about the task themselves

- provide thorough solutions in order to support weaker students in assisting more able students
- offer helpful prompting (so coloured coded comments that might typically be used by a teacher when teaching that topic were built into the exemplar solutions, such as 'Check answer by differentiating in head using chain rule' and 'Get method marks for substituting in upper and lower bounds, then use calculator'), and
- prompt students to articulate their understanding through extension questions and ideas that encouraged students to have a conversation on the topic.

Examples of these 'You teach – You do' resources are available at the end of the full report. (A link is provided in the contact section at the end of this summary).

Teaching and learning processes

As Hattie (2008) also highlighted how effective whole class teaching is 'one of the most successful teaching methods we have', I decided that I would spend the first

30 minutes of the lesson in whole class teaching, then I would hand over to the class to teach each other the details and nuances of the topic, guided by the 'You teach – You do' resources I had produced. The resources provided complementary pairs of handwritten sheets – a 'You teach' sheet and a 'You do' sheet. The 'You teach' sheet contained annotated solutions to the questions on the 'You do' sheet'. The students were put into pairs and given the pair of sheets. Student A was instructed to work on question 1 whilst student B prompted as required. The students were instructed not to show the solution sheet to their partner to ensure that the information was transferred orally – i.e. articulated by the student. Students had to "teach" the method to enable their partner to complete their question. After each question, the students reversed roles.

Impact

The key benefits of the peer tutoring approach using the 'You teach – You do' resources were that:

- students had maximum exposure to good mathematical grammar
- the exposure to hand written exemplar solutions helped them to inhabit

a way of thinking about mathematical problems demonstrated by the teacher

- students had the opportunity to articulate complex mathematical concepts to each other, and
- weaker students felt empowered because the 'You teach' sheets allowed them to assist more able students in the classroom.

The 'You teach – You do' resources were generally welcomed by the students, as these comments show:

- "Great, I love these 'You teach' resources." (Comment by student A to student J in stats class whilst I was handing out the 'You teach – You do' resources).
- "These are really useful; I get to do harder questions by myself." (Comment made to me).

I never hear one complaint from students using these resources, although when explicitly questioned, a minority stated that although they had found the task useful they had not necessarily enjoyed doing it. When I asked what they would prefer as an activity they generally referred to a 'solo' type activity. So there may be some measure of reluctance for group work being measured here.

Further reading

Hattie, J. (2008) Visible learning: A synthesis of over 800 meta-analyses relating to achievement. London: Routledge

Topping, K. (2005) The effectiveness of peer tutoring in higher and further education: A typology and review of the literature:
www.londonmet.ac.uk/deliberations/seda-publications/topping.cfm

Contact

This study was carried out by David Herring at Farnborough Sixth Form College. If you have any questions or comments, please email dherring@farnborough.ac.uk or visit the college website to read the full report: <http://actionresearch.farnborough.ac.uk/Home/Index>

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