

Learning Lessons

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Co-Construction: Learning in the hands of learners

Developments in the teaching of Physics and RE.

1. Year 10 GCSE Physics

Having enjoyed the process of teaching RE through co-construction, I wanted to explore the power of this process for learning a GCSE subject; the content is pre-determined by a comprehensive specification but with the introduction of linear IGCSEs, the path to follow from start to finish could be completely flexible which opened up many possibilities.

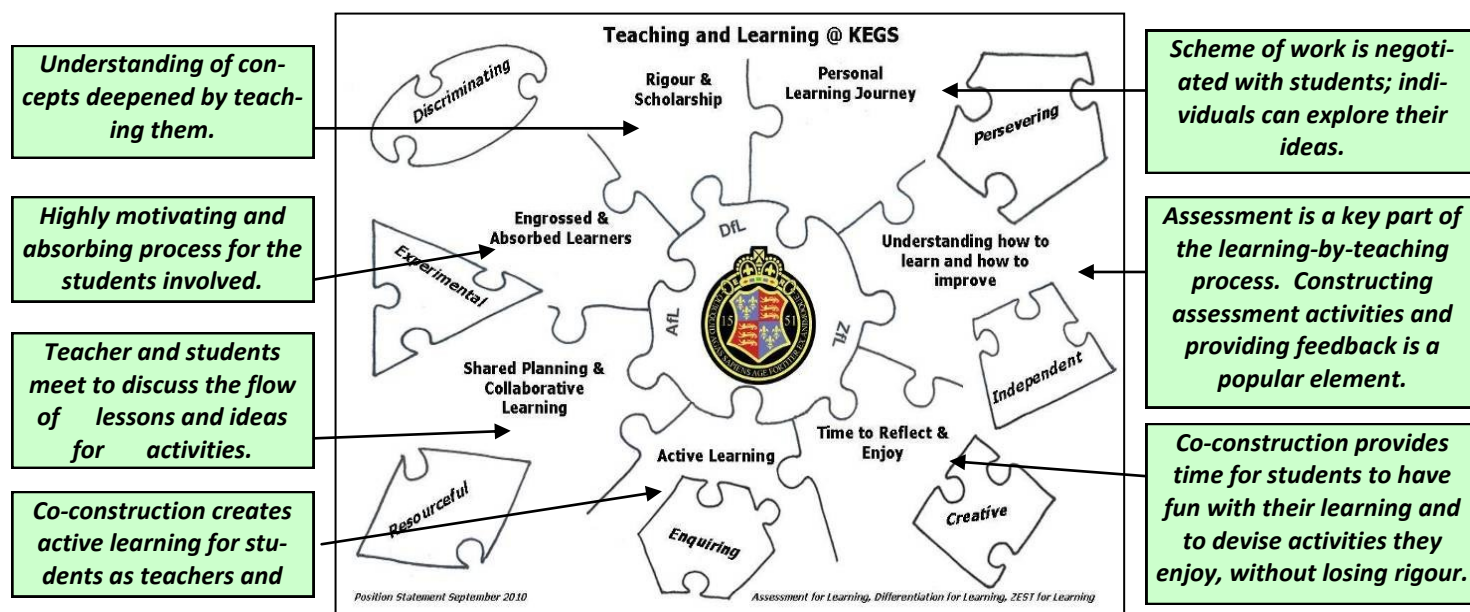
In the first week of Year 10, I issued the class with directions to the online specification and asked them to read it. We then spent a lesson exploring what they had previously learned in physics. The starting point for any learning episode should be this: **What do we know already?** The outcomes of this exercise allowed me to identify big gaps and areas of solid ground. The following lesson, with specification in hand, the question was simply this: **Where shall we start?** Using the overarching topic structure as a guide, we agreed that Energy would come first, then Forces, and after some



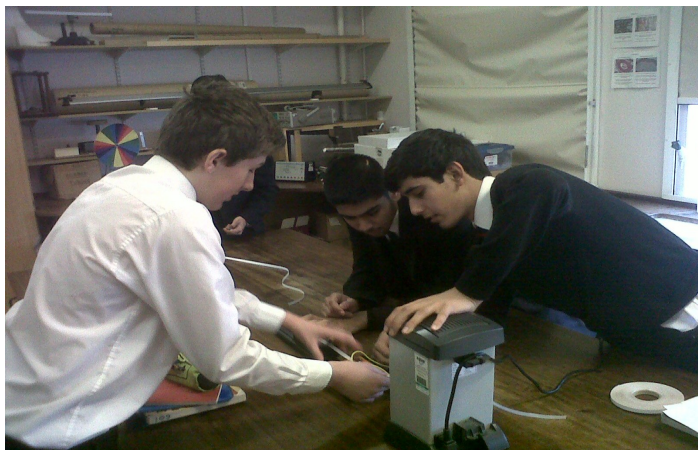
Joe and George, Y10, demonstrate the classic Ticker-Tape Timer.

debate we agreed to study Waves before Electricity, Electromagnetism and, finally, Nuclear Physics. As with all co-construction processes, I played my part in guiding the discussion, but the students led the way and made the decisions.

In order to allow students to engage in depth with the co-construction process, I have opted to enable students to engage in a series of activities, rather than one-off taught episodes. I have established teams of three or four students to work closely with me on each of the units. Now as we approach the end of the second term, I've had the pleasure of working alongside two superb teacher-teams. Along the way we have developed strategies that work well. The basic process that we follow is this: We arrange short break or lunchtime planning meetings (15 mins max). We need to keep it snappy because they are busy



The Zest for Learning Jigsaw: All elements are reinforced through co-construction. Students also develop all the learner characteristics.



Matthew, supports his peers in setting up their apparatus.

people (and so am I). Here we map out the key sub-topic areas that lie ahead. We then agree which lessons I will lead as teacher and which lesson the students will lead as teachers.

For the student-led lessons, the requirements are this:

- Do some preliminary research into the topic, following the specification.
- Plan a demonstration and prepare to explain any concepts or equations; give examples with minimum use of PowerPoint if any. (This can be dull, but has its place).
- Order all the equipment for class practicals or demonstrations from Mr. Strudwick, the (very patient) Physics Technician.
- Organise the class into groups as required and give instructions for practical work. (They are very good at this).
- Set classwork problems and questions for homework.
- Finally, collect the homework in, divide it up for marking and then give it back for feedback the next lesson.

Essentially, all the normal key teacher functions are devolved to the students. It was important early on to get across the idea of ownership and responsibility. This included having to abandon planned lessons because the students had not asked for the equipment. I have to keep reserve lessons in my back pocket in case of planning failures! During the lessons, the more of a back-seat I take, the more assertive the students become. They find it difficult to guide question and answer sessions at first but this skill develops after a few attempts. They are very good at explaining concepts and give superb feedback in their marking. A few elements of the process that make things work better include the following:

- Select topics that are fairly discrete: e.g. introducing a new concept such as 'specific heat capacity' or ' $F = ma$ '.



Students discuss their work with a student-teacher.



Matthew and Euan lead discussion on the acceleration equation.

- Spend a little time rehearsing the ideas with the student-teachers to give them confidence.
- Create the expectation that certain lessons are fully their responsibility to plan and deliver.
- Be ready to step in to re-direct questions, to manage discipline and challenge misconceptions at any time, without taking too much away from the students' sense of leading the lesson.
- Create a tight timeframe for setting and marking homework—and then use lesson time to highlight the feedback in class.
- Be flexible in planning the teacher-led lessons but agree precise dates when the lessons they lead will take place.

So far the results have been very encouraging. The whole approach feeds into a high challenge class spirit and I am optimistic that final GCSE results will be excellent. Time will tell! Along the way, the wider learning process will have had an impact far beyond the scope of a GCSE exam.

"As well as adding a fun, enthusiastic dimension to learning, co-construction also gives student teachers an insight into how to organise and prepare lessons, requiring both research and organisational skills to be developed and implemented."

Taran Sandhu Year 10

The students have enjoyed the experience so far and those students who have not yet run the lessons can't wait to have the opportunity later in the course.

Tom Sherrington



George helps explain his homework feedback.

2. Co-Construction in Year 7 RE

In a previous *Learning Lessons*, the early development of co-construction through RE was explored. Mark Barrow, Deputy Head, has since taken these ideas further and his students now tell the story of their experience:

**BY HENRY SAINSBURY, JOSEPH LANGWORTHY,
RIDWAN MAHMOOD AND ADNAN MANSOOR**

During Year 7, in RE Mr Barrow gradually introduced co-constructed learning. During the first Term (autumn), he taught the majority of the lessons himself but encouraged lots of class discussion. However, Mr Barrow and 7T (Current 8T) approached the Islam module differently. As a class, we performed what is called Co-Constructed Learning. The entire class went away and researched the topic, with only small amounts of assistance from the teacher, and then came back and gave a presentation to the entire class. During the third and final term, Mr Barrow gave the class even more leeway in the teaching of the module - Christianity - and set each group of 4 a subtopic to research. They then had to teach an entire lesson based on their subtopic including presentations, debates and worksheets.

HOW DID WE GO ABOUT THE PREPARATION?

We were given 8 weeks for the preparation of our Islam Presentation lesson. We spent the first half of the time researching and the second half preparing our lesson. We made sure we had evidence from the Quran to back up our research. Several groups



Henry and Joseph present their ideas at a KEGS conference.

WHAT TOPICS WERE WE GOING TO TALK ABOUT?

For the Islam Project, we included the following: The 5 pillars of Islam; Death in Islam; Key Characters in Islam; Marriage in Islam; Misconceptions; New-born Babies; Science and Islam; The Holy Quran; The Islamic Family; The Mosque.

HOW WERE THE LESSONS FORMATTED?

For our Islam project, we presented our Power Points (or websites) to the rest of the class. We explained the text on the screen, using information from our research prepared in our preparation time. After the presentation, other students were asked to evaluate the presentation and give comments on how it could be improved.

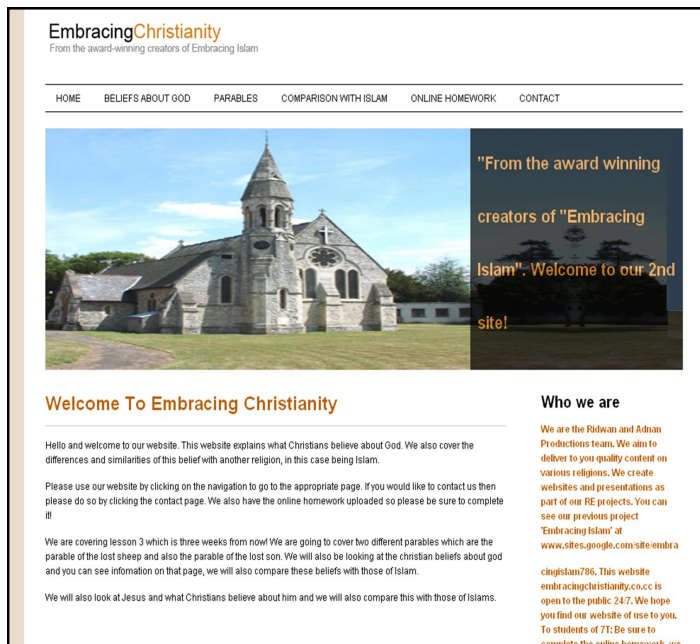
For our Christianity project, ***we worked in groups not just to lead a lesson, but to give and mark homework.*** Each lesson was about a different subject in Christianity, for example main beliefs, the layout of a church or beliefs about the Trinity. Many groups created and printed out worksheets for other students to complete in the lesson and some people even made crosswords or word searches to try and make the key words memorable. ***The lessons also included many unique activities, such as a debate about the creation of Earth and a game made on the computer program 'Scratch'.***

WHAT DO STUDENTS THINK ABOUT CO-CONSTRUCTION?

"Students are trapped in a sandbox, 5 days a week, 39 weeks a year. As students we see things from a single one-angled perspective, learning is black and white and not always a colourful vivid experience.

However co-constructed learning instils a strong sense of responsibility into the student teachers because they have to tackle deadlines, gather research and assemble them into a lesson instead of having it spoon-fed to them'. Also ***co-constructed learning allows students to teach in the way that they would prefer to be taught, a vital learning experience for the teacher as well as the student***, this also allows the teacher to gauge their own teaching – because ironically ***teachers get feedback from teachers instead of students!***

'To teach is to learn twice' – A famous saying that has definitely proved its worth with co-constructed learning. The knowledge



This website was created by Yr 7 students to help teach the class.

decided to include subjects about Islam that weren't compulsory and the class found these presentations all the more interesting. We were given slightly less time to research and prepare in the Christianity project. The reason behind this was that it was not necessary for the groups to research the entire module - just the part we were teaching. For example: one group looked at the Beliefs about God, another parables mentioned in the Bible and another incorporated the belief differences/similarities between Islam and Christianity into their lesson.

we have already gained through research is then solidified as the student teachers have to explain their own understanding of a topic to their fellow pupils.

Teachers engage students further by allowing them to prepare their own lessons, while developing and using their speaking, team-building and research skills. Students understand students better than teachers! We know what is boring, engaging and interesting! Co-constructed learning provides a platform for students to express this and ***allows the teacher to take a step back and see what works and what does not as well as providing students with a taste for teaching.*** Co-constructed learning is a simple concept from which great things can sprout. ***‘Great things come from small beginnings’.***

Ridwan Mahmood 8T talking about Yr 7 RE

To view the work we produced please visit sites.google.com/site/embracingislam786, produced by Adnan Mansoor and Ridwan Mahmood.

“I think it is useful to let students lead their own lessons, as it improves skills such as organisation and gives students more responsibility. It is easier for teachers to assess the students when they can simply observe the lesson and the lessons are generally more interesting for the students.”

Joseph Langworthy 8T

“In order to make our Islam Presentation more interesting, we decided to input home-made videos of ourselves, demonstrating some of the aspects of Islam, such as how to do Wudu, how to read from the Quran and how to perform Salah. I think this is something a teacher could not have done.”

Adnan Mansoor 8T

HOW HAS CO-CONSTRUCTION IN RE DEVELOPED?

The key development in the process has been to make the entire learning experience more rigorous. Early on, the key thrust was to invite students to create ideas for content and for lesson

Lesson Plan	Date: 20/02/12	Time: 13:35	Form: 7T	No. Students: 22
Duration: 50+ mins				
Subject: RE				
Delivered by:				
Kyran Edmonds				
Kumaran Balakumaran				
Ethan Wilmer-Anderson				
Owen Woodroff				
Abishai Tharmaraj				
Rafee Ahmed				
				Characteristics – Characters and Deities
Aims				
1. Know the meaning and state of Allah and what Muslims believe about him.				
2. Know about Muhammad's life in general and his prophet hood.				
3. Know how angels were created and an angel's life.				
4. Know the story of Shaitan and why he tempts people.				
Objectives				
At the end of the lesson students should be able to:				
1. Understand whether there is any difference between God in Islam and religion such as Christianity and Judaism.				
2. Describe at least some 3 states of Allah.				
3. Know who Muhammad is and understand his role in Islam and relation to.				
4. Describe at least 5 key events in Muhammad's life and explain how he dealt with everyday issues.				

activities mainly to make lessons more engaging and open ended. In this more recent development, the students are more explicitly focused on rigorous learning aims.

In Mark Barrow's lessons, as illustrated in the student lesson plan above, the students are introduced at an early stage to the key assessment questions for the unit. Once the students

have been allocated to a particular section of the unit, they then have to conduct their research with a firm focus on how a particular question might be answered. This is more focused and leads to deeper level responses.

The lesson plan samples here show that students have considered the following elements:

- Key learning aims—that will be assessed at a later stage.
- More specific objectives, breaking down the expected learning.
- Specific questions that need to be asked.
- How lessons need to be structured in order to manage the time well including the need for a conclusion and time to set homework.

What is always so fantastic is that students devise these things themselves; there isn't a template they are obliged to follow.

Sample lesson plan

Questions	
Mohammad	
1. Do you think you would make a good prophet? How?	
2. There would be no Islam without Muhammad. Do you agree?	
Allah	
1. What is the difference between Allah and different gods in different religions?	
2. What does the 99 names show of Allah? If you were Allah what name would you like to have?	
4 Angels	
1. Do you think there are angels surrounding you and protecting you? Why if no or yes?	
2. What type of Angel would you like to be? Why?	
Shaitan	
1. How does Shaitan (Devil) tempt you?	
2. How do you stop being tempted?	
Timing	
Introduction	<5mins
Teaching, questions videos and presentations	20mins
Worksheets, puzzles and other class work	15mins
Quiz	10mins
Conclusion, prize giving and setting homework	5mins

In order to enable students to plan lessons to this level of detail, they are given specific planning time within the unit, as the students describe earlier. This is time well spent, often in ICT rooms, but it does require additional planning. As with the Physics, the learning outcomes from the co-construction process in RE have been superb; the quality of thinking and writing that resulted from 7T's lessons was very high indeed and, again, they had learned a great deal more than the content of the RE KS3 Programme of Study.

Mark Barrow / Tom Sherrington



Taran leads a group discussion at co-construction training event.