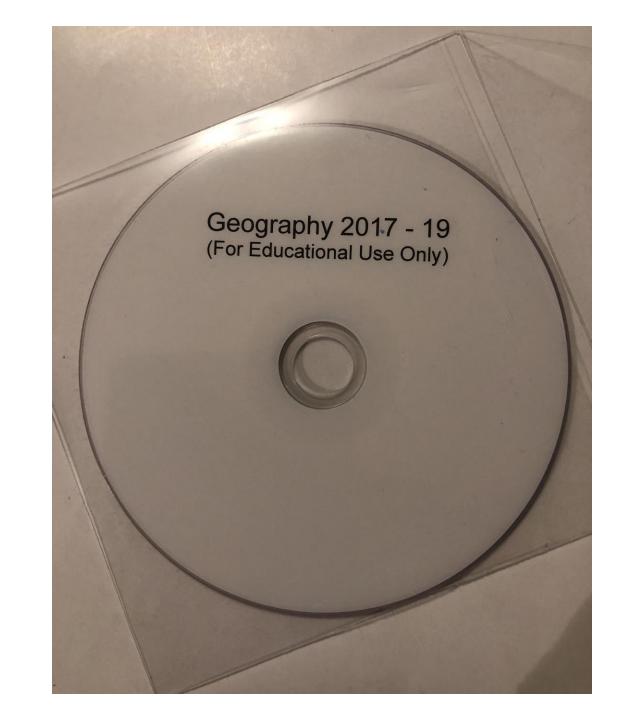


A Tribute to

Tony Dunne

Geography Methodologist
UCD School of Education
1999 - 2018

















































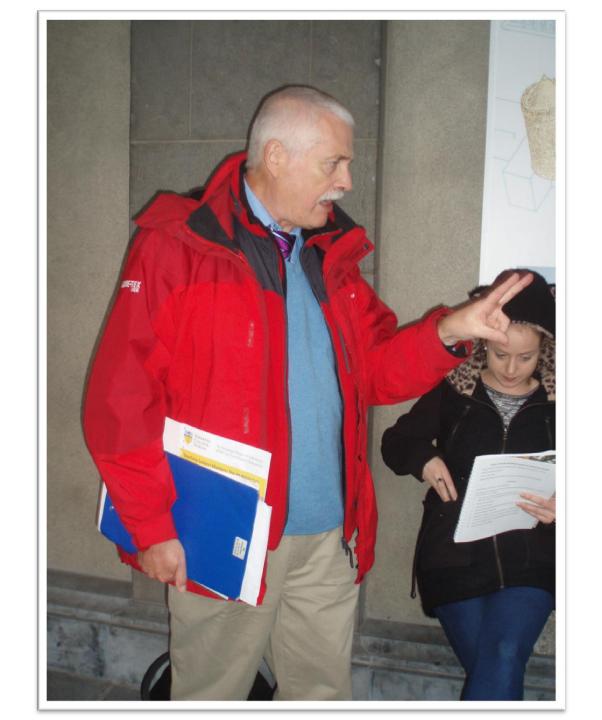




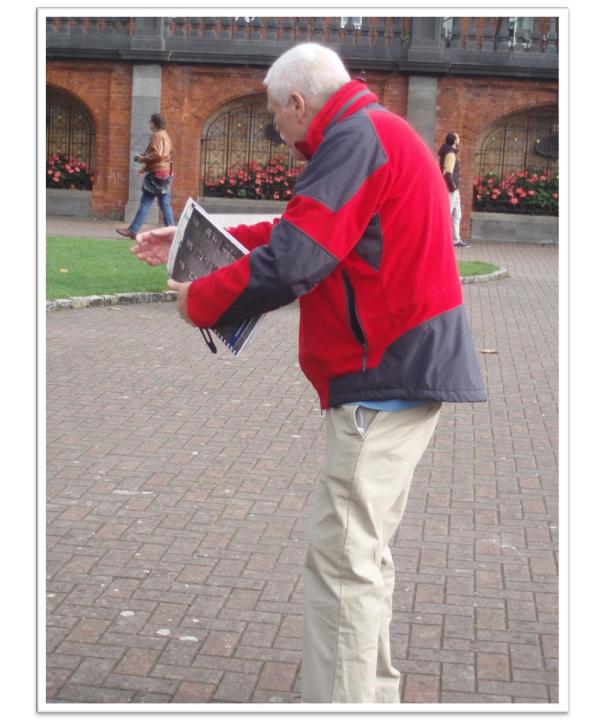




















### AN ACTIVE APPROACH TO PLATE TECTONICS

### TONY DUNNE

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Abstract: The article outlines an introduction to plate tectonics for younger students. It highlights a number of active methodologies such as visualisation, practical classroom demonstrations and mapwork, which can be used to teach in an interesting way ideas which are often considered to be difficult for them to understand.

#### INTRODUCTION

Plate tectonics is an amalgam of complex concepts and processes which students of all ages and levels often find difficult to understand. I believe the reasons for this are many and varied, but I feel the amount of difficult jargon and the need to be able to imagine and visualise the three dimensional movement of plates is asking too much of students who often have not yet fully grasped the concept of a continent never mind the possibility that they can move. I would argue that plate tectonics is not a suitable topic for most first years but it is often the first topic dealt with in second level geography courses. To compound the difficulty student teachers are frequently given first year geography classes with which they are expected to cover this topic and often as the first topic they have to cover. It is in this context and in the context of the average or special needs student that I hope some or all of the approach outlined below may be of use.

### STAGE 1: INTRODUCING PLATE TECTONICS

Since the concept of plate tectonics is quite a difficult one for students to understand, it is probably a good thing that its meaning is seldom explained clearly in text books at the start of the work. It is much better left until the students have some knowledge of the theory. The suggested introduction to this topic would be to look at the very obvious effects of plate movements such as earthquakes, volcanoes and fold mountains and only to introduce the term 'plate tectonics' when students understand these.

#### 1. Earthquakes

Instruct students to listen carefully and possibly even to close their eyes. The following account should then be read as dramatically as possible.

"Suddenly there was a rumbling sound. First I thought it was a passing truck then it was all

around me. The glasses in the press began to tinkle. Very quickly the whole room and everything in it was quaking or shaking. I saw the glass in the window bending in and out, then it shattered sending pieces of glass everywhere. The kitchen table came sliding across the room at me and I had to jump quickly out of the way. I was stuck to the floor with fright. Then I heard Mary shouting: 'Get into the doorway, it's the safest place'."

The passage might be read a second time (or a few times even, if necessary). Then students should be asked a variety of questions based on it. These should be structured to lead from recall and comprehension to questions which involve students reasoning about the causes of the events. The students should always have to justify their answers with evidence from the passage. Examples of introductory questions might be:

- · What room was the person in?
- · What tinkled?
- · What had the person to move quickly to avoid?
- · Why might the doorway be the safest place?

With some classes it might be possible to simulate an earthquake by getting half the class to stand up on their chairs while the other half stands on the floor. On the command 'go' the students on the chairs jump with all their might onto the floor to make the earth "quake" beneath their feet. If conditions are right, the other students will feel the vibrations running through the floor and maybe something will rattle in the press or a piece of furniture will move. Needless to say, it is very important that this activity is well supervised.

Another way to simulate an earthquake is for the students to stand around the teacher's table with both their hands resting on the table then let a heavy book such as a telephone directory fall on the middle of the table. The students around the table will all feel the vibrations.





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