

To investigate
changes in bed load
and discharge along
the course of the river
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Aim: To investigate changes in bed load and discharge along the course of the river Shimna.

I expect that as you move from the source to the mouth the discharge of the river will increase. This is possibly due to tributaries coming together and the river channel becoming wider. Also as I move downstream I will expect the rivers bed load to decrease in size and to become more rounded due to erosion processes such as attrition .

Through my investigation I will either be able to prove or disprove the following hypothesis;

Hypothesis 1- the size and shape of river bed load will change from source to mouth, becoming smaller and more rounded due to the process of erosion.

Hypothesis 2- discharge will increase from source to mouth.

Planning: For this piece of coursework to be carried out successfully some time had to be allocated to planning the trip. Due to the nature of the fieldwork, i. e. the fact it was a river study, safety was an important issue. Firstly a relatively safe and manageable river had to be chosen. The river Shimna fulfilled this requirement and also was suitable as the centre could provide us with transport, weatherproof clothing and also someone with first aid skills in case of an emergency. This would be vital in case of unfavourable weather conditions on the day, and as we would have to be efficiently transported between sites in order to finish the investigation in one day.

Before the fieldwork could take place permission to use the centre and some private land had to be gained. In addition to these safety precautions all pupils understood that they would have to behave vigilantly to minimise the chance of an accident and to be careful not to wade into any part of the river that was greater than 50cm in depth. Furthermore a number of pupils would be equipped with a mobile phone, with which they could alert the emergency services quickly. We planned to stay in groups and for everyone to look out for each other. To enable the fieldwork investigation to be carried out accurately and efficiently suitable equipment would be needed. When investigating the bed load, callipers would be needed to accurately measure the stones dimensions. In addition to this a stone classification sheet and record sheet would be required. For the discharge investigation a bray stroke meter, metre sticks, tapes, waders with a safety rope and once again a record sheet would be needed.

Before embarking on the trip the type of sampling, which would be most effective in achieving each objective, had to be decided upon. Pragmatic sampling would be used to choose suitable sites for the bed load investigation. From these sites stones would be picked at random. We came to the conclusion that systemic sampling would be the most effective method to enable us to get an accurate overview of the rivers discharge in different areas. Measurements would be taken once every metre within the rivers channel.

Data collection: On the day of our field trip, which took place in November, the weather was very unfavourable, there was heavy rain in the Mourne, winds and the ground was saturated. These adverse weather conditions <https://assignbuster.com/to-investigate-changes-in-bed-load-and-discharge-along-the-course-of-the-river-shimna-essay-sample/>

made some of our planned investigation too dangerous to carry out and as a consequence we will have to rely on secondary data from other groups.

In order to determine the discharge the width of the river's channel was measured using a tape. This involved two people standing on opposite banks. A person waded out into the centre of the channel and measured the depth at 1-metre intervals using a bray stroke meter, which enabled us to calculate the speed of the river in m/s. These values were recorded over a 10 second period until the full width of the river was noted. Measurements started and finished at the river's edge. Discharge was then calculated by multiplying velocity by area.

The stones used random sampling, as it would have been too dangerous to venture into some parts of the river. The stones were selected at random and handed to a person who measured its A and B axis using a calliper. The group also had to judge the stone's shape using the stone classification sheet, which ranged from very angular to well rounded. These results were then recorded allowing us to prove or disprove our original hypothesis. We carefully kept to our plan, which enabled us to get the most accurate results possible on the day.