What was the conclusion to your investigation? How did you reach this conclusion and to what extent was it geographically sound? [20]

In my investigation I researched the question 'How and why does discharge vary downstream along the Cardingmill Valley River?' To answer this question I collected data from the river and analysed it to reach my conclusion.

My hypothesis was that I thought that discharge would increase downstream. After collecting my data and analysing it I discovered that discharge did increase downstream.

After deciding on my question I went to the Cardingmill River and collected my primary data using systematic sampling. This included velocity, width and depth.

To collect the velocity I used the dog biscuit method where I recorded the time it took for a dog biscuit to travel along the river. For width I used a tape measure then every 10cm across the river I took the depth using a ruler. I repeated the velocity reading to make it more accurate.I then took this data back to school and presented it using a located symbols and a choropleth.

To try and see if there was a relationship between discharge and distance downstream I drew a scattergraph. This showed that there was a positive relationship between them and I could begin to form my conclusion.

To make sure my conclusion was sound I then carried out a Spearman's Rank test. It also showed a positive relationship (+0.94) and I could say that my hypothesis was true. This meant that I could have the conclusion that discharge does increase downstream.

Overall my investigation went well. There are parts of it I could have improved. My conclusion was geographically sound as I collected accurate data at the site of the river. This then meant when I calculated discharge my figures would be correct and I would have a strong conclusion. Also, my result was significant meaning it wasn't due to chance.

Overall, I conducted a good investigation which reached a strong conclusion. My conclusion was that discharge did increased downstream. Because of the accurate data collection the conclusion is geographically sound and supports the existing geographical theory.

What was the conclusion to your investigation? How did you reach this conclusion and to what extent was it geographically sound? [20]

For my A level investigation I researched 'how and why does discharge vary downstream along the Cardingmill Valley River, Shropshire?' To gain a geographical sound conclusion I accurately carried out all stages of the investigation to reach my conclusion.

The hypothesis for my investigation was 'discharge would increase downstream along the Cardingmill Valley River'. To prove whether this was true or not I collected primary data then analysed it. After a thorough analysis I concluded that my hypothesis was true and that discharge did increase downstream. This supports the geographical theory of Bradshaw's model.

To reach this conclusion I first decided on a good question then I went to the Cardingmill Valley River to collect my primary data. To do this I used systematic sampling and collected data from 10 sites. This would make my data collection representative.

The first piece of data I collected was width using a tape measure. Then, using the tape measure to measure every 10cm, I recorded depth using a ruler. The same person collected each piece of data to avoid human error.

Velocity was measured using dog biscuits. After measuring 5m on the river I timed how long it took the biscuits to travel and calculated velocity. This was repeated 3 times to make the measurement more accurate.

When back at school this data was presented and then analysed. I used two types of data analysis: qualitative and quantitative.

For the qualitative analysis I described and explain the scattergraph which showed a positive correlation. To improve on this analysis I then used Spearman's Rank (a test for correlation) to prove the strength of the relationship.

The result for this was +0.94 which proved a strong positive correlation and meant that I could accept my hypothesis. This would form the basis of my conclusion. As my result was significant (correlation coefficient was greater than the critical value) it meant that my result was not due to chance.

My conclusion was very geographically sound as it supported Bradshaw's model which is a widely regarded geographical theory. This indicates that our conclusion was geographically sound. The data was also accurately collected and significant.

In conclusion, I reached a geographically sound conclusion (that discharge does increase downstream along the Cardingmill Valley River) as the data I collected was accurate and it supported geographical theory.

What was the conclusion to your investigation? How did you reach this conclusion and to what extent was it geographically sound? [20]

For my A-level investigation I attempted to answer the question 'how and why does discharge vary downstream along the Cardingmill Valley River?' The hypothesis for this question, which was based on Bradshaw's Model, was that discharge would increase downstream.

In order to answer this question thoroughly I carried out all stages of the investigation process. Of particular importance to the conclusion was the data collection and the data analysis.

For the primary data collection I visited 10 sites along the river, as this would provide us with enough data to analyse but could also be achieved within one day. I used systematic sampling as well meaning that the sites were evenly spaced along the river. It was important to get a representative view of the whole river as Bradshaw described discharge varying downstream.

Discharge is calculated by dividing cross-sectional area (width x depth) by the velocity. Therefore, I collected width, depth and velocity at each site.

Using a tape measure placed on the surface of the water I measured the width. Then I collected the depth using a ruler. To gain an accurate view of the depth of the river I took the mode to then help me calculate cross-sectional area (CSA) which in turn will help me calculate the discharge accurately.

Velocity was found using the dog biscuit method. A stretch of 5m was measured out on the river then a dog biscuit was dropped in and timed. We repeated this test three times in order to take the mean. This made the final figure more accurate. To also improve reliability of the data we made sure that the same person measured each piece of data to remove the problem of human error.

On returning to school I carried out qualitative and quantitative analysis. I drew a scattergraph to give a visual representation of the relationship between discharge and distance downstream. This indicated a positive relationship.

To test this relationship further we applied statistical analysis in the form of Spearman's Rank (a test for correlation). Once calculated, the coefficient (+0.94) indicated a strong positive relationship.

This was further confirmed by testing for significance. Our result was 99% significant (as the correlation coefficient was greater than the critical value) meaning we could accept our hypothesis and explain it with relation to geographical theory (Bradshaw's model).

As I have shown, various methods were used to ensure accuracy and reliability in my investigation. This would mean that the conclusion was also valid.

Our findings indicated that discharge did increase downstream on the Cardingmill Valley River. This supports Bradshaw's model who said, in general, a river's discharge should increase downstream. As this is a proven and widely regarded geographical theory we can confidently state that our conclusion is also geographically sound.

When evaluating my investigation I noted some improvements that could be made which would make the conclusion more geographically sound. For example, we visited the river on a hot day in June. The weather could have affected the discharge in the river and therefore the overall conclusion. I could improve this by visiting the site on a number of occasions throughout the year and take an average.

In conclusion, my investigation was accurate and reliable which led to a geographically sound conclusion. This conclusion supported Bradshaw's model which also indicates that our findings are geographically sound.

What was the conclusion to your investigation? How did you reach this conclusion and to what extent was it geographically sound? [20]

For my A-level investigation I attempted to answer the question 'how and why does discharge vary downstream along the Cardingmill Valley River?' As a good question is based on geographical theory I based my question on Bradshaw's model. This model stated that as distance increased downstream discharge would also increase. As a result we then hypothesised that at the Cardingmill Valley, discharge would increase downstream from the source.

In order to answer this question thoroughly I carried out all stages of the investigation process. Of particular importance to the conclusion was the data collection and the data analysis. I needed to ensure that I collected accurate and reliable data to make certain that I could complete a thorough analysis and have a geographically sound conclusion.

Discharge is calculated by dividing cross-sectional area (width x depth) by the velocity. Therefore, I collected width, depth and velocity at each site. To ensure that our data could be compared to Bradshaw's model we had to have a representative view of the river. This would give us data from the upper, middle and lower section and consequently be able to look at the variance along the river. I used systematic sampling to locate the site meaning that the sites were evenly spaced along the river. It was important to get a representative view of the whole river as Bradshaw described discharge varying downstream.

For the primary data collection I visited 10 sites along the river, as this would provide us with enough data to analyse but could also be achieved within one day. I wanted to make sure that we had enough time to collect our data accurately as if we had rushed our data collection our data might have been inaccurate which would result in a geographically unsound conclusion.

Using a tape measure placed on the surface of the water I measured the width. Then I collected the depth using a ruler. To gain an accurate view of the depth of the river I took the mode to then help me calculate cross-sectional area (CSA) which in turn will help me calculate the discharge accurately. When measuring the depth we made sure that we didn't push the ruler into the bed of the river as this would have affected the accuracy of our results.

Velocity was found using dog biscuits. A stretch of 5m was measured out on the river then a dog biscuit was dropped in and timed. We repeated this test three times in order to take the mean. This made the final figure more accurate. To also improve reliability of the data we made sure that the same person measured each piece of data to remove the problem of human error.

On returning to school I carried out qualitative and quantitative analysis. I drew a scattergraph to give a visual representation of the relationship between discharge and distance downstream. This indicated a positive relationship which would support our hypothesis that discharge would increase downstream which supports the theory of Bradshaw's Model. This would indicate the our investigation was geographically sound but as this was only qualitative analysis we decided to test this relationship further.

I applied quantitative analysis in the form of Spearman's Rank. This is a test for relationship. This is an appropriate statistical test for this hypothesis as Bradshaw describes a positive relationship between discharge and distance downstream. Therefore, if our conclusion is geographically sound, our Spearman's Rank coefficient should show us a positive relationship. Once calculated, the coefficient (+0.94) indicated a strong positive relationship.

However, it is possible that this result was due to chance and therefore it would not be geographically sound. To avoid this problem and ensure that our conclusion would be geographically sound I tested for significance. Our result was 99% significant (as the correlation coefficient was greater than the critical value) meaning we could accept our hypothesis and explain it with relation to geographical theory (Bradshaw's model).

Our findings indicated that discharge did increase downstream on the Cardingmill Valley River. This supports Bradshaw's model who said, in general, a river's discharge should increase downstream. As this is a proven and widely regarded geographical theory we can confidently state that our conclusion is also geographically sound.

When evaluating my investigation I noted some improvements that could be made which would make the conclusion more geographically sound. For example, we visited the river on a hot day in June. The weather could have affected the discharge in the river and therefore the overall conclusion. I could improve this by visiting the site on a number of occasions throughout the year and take an average. This could then strengthen reliability of the data and improve its geographical reliability.

In conclusion, my investigation was initially based on the geographical theory of Bradshaw's model. This meant that throughout my investigation I was always striving towards a geographically sound conclusion supporting geographical theory. To test a hypothesis the primary data is the basis to a conclusion so I ensured that the data I collected was accurate and reliable which led to a geographically sound conclusion..