Research Project B

Assessment Type 3: Evaluation

What influences the design of a roller coaster?

**Summary of the research question and outcome**

I have been interested in roller coasters ever since I travelled to America where I saw plenty of roller coasters that started my interest. Because of this I have wondered how they are designed and constructed.

Synthesis (S3)

The summary contributes to the assessment of S3. Although the language is generally clear the ideas are expressed in a basic, disjointed way. The heading indicates a question is not clear in the summary. The student identifies history and science as areas to pursue.

I researched the history of the roller coaster to get a basis of what I will need to search next. I did this using internet searches. Using different books I was able to learn about the effect that science has on roller coaster design, such things as kinetic energy, potential energy, friction and acceleration. I watched different video documentaries on different theme parks and their roller coasters.

My Research outcome is an essay that includes information that has helped in the solving of my research question.

**Evaluation**

Comment

This paragraph is very general and does not provide any evidence relevant to the performance standards being assessed in the evaluation. The paragraph makes only tenuous links to the question.

I have been able to develop and further my knowledge about roller coasters, such as they run using physics, but I did not know the detailed version of how it affects the roller coaster, how energy works and how it plays a big part in how a roller coaster travels along the track for example. It has been a great learning experience for me and was enjoyable learning about roller coasters. The research project has also opened my eyes into what new roller coaster technology we could expect to see in the future years. Rides will get bigger, faster and new roller coaster technology will be invented which could possibly make some of the world’s best coasters

There were research processes that I undertook for my research project. This started with me selecting things I wanted to learn about my topic, which is roller coasters, and that will be beneficial to my research outcome. To start I worked on a few different mind maps that would help me with coming up with points that I then searched about for my topic. I got worksheets and looked on-line about the research project about what key points I need to understand before I start researching and completing my work. To decide my topic question I used personal information on what I already knew about roller coasters and what I wanted to learn about them, and finally decide that my topic question would be ‘What influences the design of roller coasters?’. After working out my final question I started planning and deciding what research methods I would use before starting the research itself.

Comment

This paragraph discusses the process of initiating and planning the research project and choosing a question. This information is relevant to the performance standards being assessed in the evaluation.

I located the resources I was going to use from books and documentaries. The only books I was able to find on the subject of roller coasters were about the science behind them. The books about the science behind roller coasters I found informative about how they have to design roller coasters exactly right so that the forces will be able to carry it along the track without any rollbacks or stopping. *How to destroy the Universe and 34 other really interesting uses of physics* had a write up about the physics of roller coasters. The book as well as other books helped me understand how roller coasters work, because if the science was not calculated correctly the roller coaster could be very dangerous or not work as they envisioned. All the books said basically the same thing once I compared their information against each other. The books were limited as the only topic they were about was the science so I had to use different research methods.

Evaluation (E1)

Superficial description of the research processes used is evidence in the brief description of searching books and documentaries. There is no evaluation of the processes or record of the usefulness of the sources. The books were informative but this is not related back to the question. General statements are made without the use of examples to explain. Sources are confused with research processes.

A source I used was watching video documentaries which showed things from the construction, design and science etc. As I am more of a visual learner this was not only enjoyable to watch but was also informative and I was able to take the information in easier. Video documentaries such as *Building a thrill ride: Expedition Everest*, *The Incredible Hulk Coaster* and *Extreme Sea World-Orlando* showed a great insight into how they were created and designed. This was my favourite way of researching as it was relaxing for me compared to reading a book or looking at internet pages.

I had made good progress with answering my question but I did not get much information. Part of my challenge was that it was difficult to get more information. I did not use any survey or interviews. I know there are not many experts but I should have tried. I discovered that science plays a large part in the design of roller coasters but another aspect would also have to be appeal to the people like me who pay money to ride them.

Evaluation (E2)

Basic description of decisions made in response to challenges and/or opportunitiesspecific to the research processes used are evident in the opening sentence. No reference is made to the actions or initiatives taken. Explains what was not done rather than what was done.

Because I ran out of time I did not follow up about the money aspect. How much does it cost to make a rollercoaster as expense would probably be an influence on roller coaster design?

Before writing up my outcome I had to make sure all my pieces of information was referenced, as if you do not use references it is plagiarism. As I did not prepare and plan for this well, it really slowed me down as I had to go back and locate the reference lists for all my sources. One thing I should have improved on was the annotations I wrote for each section of information, as I believe it could have been improved. I have discovered throughout the research project that my time management needed to be improved as I was lazy about throughout my research. I should have used my time wisely so I would be able to acquire extra information on my topic.

Evaluation (E3)

Superficial evaluation of the quality of the research outcome is evident in this paragraph. There is no reference to the successes or weaknesses of the *outcome* apart from the personal value of the *project overall*.

I think the outcome of my research will teach people about this interesting subject. I will be able to teach people new things such as the themes of a ride, the design of one. My final outcome included all the main facts I have collected throughout the year that I believe hold great worth in answering my question. It has been a great learning experience for me and was enjoyable and I have not lost interest in roller coasters.

Word count: 858

Additional Comments

Assessment Type 3: Evaluation Grade: D+.

Stage 2 Research Project B Performance Standards

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Planning | Development | Synthesis | Evaluation |
|  | Assessment Type 1: Folio | | Assessment Type 2: Research Outcome  Assessment Type 3: Evaluation | |
| A | P1 Thorough consideration and refinement of a research question.  P2 Thorough planning of research processes that are highly appropriate to the research question. | D1 Thorough and highly resourceful development of the research.  D2 In-depth analysis of information and exploration of ideas to develop the research.  D3 Highly effective development of knowledge and skills specific to the research question.  D4 Thorough and informed understanding and development of one or more capabilities. | S1 Insightful synthesis of knowledge, skills, and ideas to produce a resolution to the research question.  S2 Insightful and thorough substantiation of key findings relevant to the research outcome.  S3 Clear and coherent expression of ideas. | E1 Insightful evaluation of the research processes used, specific to the research question.  E2 Critical evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.  E3 Insightful evaluation of the quality of the research outcome |
| B | P1 Consideration and some refinement of a research question.  P2 Considered planning of research processes that are appropriate to the research question. | D1 Considered and mostly resourceful development of the research.  D2 Some complexity in analysis of information and exploration of ideas to develop the research.  D3 Effective development of knowledge and skills specific to the research question.  D4 Informed understanding and development of one or more capabilities. | S1 Considered synthesis of knowledge, skills, and ideas to produce a resolution to the research question.  S2 Substantiation of most key findings relevant to the research outcome.  S3 Mostly clear and coherent expression of ideas. | E1 Considered evaluation of the research processes used, specific to the research question.  E2 Some complexity in evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.  E3 Considered evaluation of the quality of the research outcome |
| C | P1 Some consideration of a research question, but little evidence of refinement.  P2 Satisfactory planning of research processes that are appropriate to the research question. | D1 Satisfactory development of the research.  D2 Satisfactory analysis of information and exploration of ideas to develop the research.  D3 Satisfactory development of knowledge and skills specific to the research question.  D4 Satisfactory understanding and development of one or more capabilities. | S1 Satisfactory synthesis of knowledge, skills, and ideas to produce a resolution to the research question.  S2 Substantiation of some key findings relevant to the research outcome.  S3 Generally clear expression of ideas. | E1 Recount with some evaluation of the research processes used.  E2 Some evaluation, with mostly description of decisions made in response to challenges and/or opportunities specific to the research processes used.  E3 Satisfactory evaluation of the quality of the research outcome |
| D | P1 Basic consideration and identification of a broad research question.  P2 Partial planning of research processes that may be appropriate to the research question. | D1 Development of some aspects of the research.  D2 Collection rather than analysis of information, with some superficial description of an idea to develop the research.  D3 Superficial development of some knowledge and skills specific to the research question.  D4 Basic understanding and development of one or more capabilities | S1 Basic use of information and ideas to produce a resolution to the research question.  S2 Basic explanation of ideas related to the research outcome.  S3 Basic expression of ideas. | E1 Superficial description of the research processes used.  E2 Basic description of decisions made in response to challenges and/or opportunities specific to the research processes used.  E3 Superficial evaluation of the quality of the research outcome |
| E | P1 Attempted consideration and identification of an area for research.  P2 Attempted planning of an aspect of the research process. | D1 Attempted development of an aspect of the research.  D2 Attempted collection of basic information, with some partial description of an idea.  D3 Attempted development of one or more skills that may be related to the research question.  D4 Attempted understanding and development of one or more capabilities. | S1 Attempted use of an idea to produce a resolution to the research question.  S2 Limited explanation of an idea or an aspect of the research outcome.  S3 Attempted expression of ideas. | E1 Attempted description of the research process used.  E2 Attempted description of decisions made in response to a challenge and/or opportunity specific to the research processes used.  E3 Attempted evaluation of the quality of the research outcome |