

## Core Skills Analysis

### Mechanical Engineering

- Understanding the function of various engine components, particularly the crankshaft.
- Gaining hands-on experience in disassembling and reassembling mechanical parts.
- Learning about torque specifications and the importance of proper fastening techniques.
- Developing problem-solving skills by troubleshooting issues during reassembly.

### Physics

- Applying concepts of force and motion when interacting with the bike's mechanics.
- Understanding energy transfer within the engine during operation.
- Studying the principles of balance and stability while working with an engine that requires precise alignment.
- Learning about friction and its effects on moving parts in the crankshaft.

### Safety and Tool Usage

- Learning proper safety protocols when using tools and handling mechanical components.
- Understanding the importance of using the appropriate tools for specific tasks.
- Encouraging responsibility and care in handling potentially dangerous machinery.
- Recognizing the importance of personal protective equipment (PPE) during mechanical work.

### Tips

This activity presents a wonderful opportunity for your son to delve deeper into mechanical engineering concepts. Encouraging him to engage with more complex mechanical systems or even explore related fields such as robotics or automotive technology can foster a deeper understanding and passion for engineering. Additionally, working on a project that involves design iterations, like building custom parts or upgrading his dirt bike with performance enhancements, would provide valuable hands-on experience and broaden his skillset.

### Book Recommendations

- [The Boy Who Harnessed the Wind](#) by William Kamkwamba: This inspiring story follows a young boy from Malawi who builds a windmill to bring electricity to his village, showcasing creativity in engineering.
- [How Cars Work](#) by Tom Newton: A comprehensive guide that breaks down the mechanics of cars, making it accessible and engaging for young readers interested in how engines function.
- [Robotics: Discover the Science and Technology of the Future](#) by Kathy Ceceri: This book introduces the basics of robotics, providing fun projects that can spark interest in engineering and mechanics.