

**KSCST Project Reference number : 46S\_BE\_2272**

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**Project Title:**
**AFFORDABLE WHEELCHAIR ATTACHMENT E - HAND BIKE FOR PHYSICALLY CHALLENGED**
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**Key words :** Affordable , Wheelchair Attachment , E - Hand Bike , Physically Challenged, Wheelchair, Mobility

**Introduction:**

The Electric Hand Bike Attachment for Wheelchair project aims to provide a cost-effective and sustainable solution for individuals with mobility challenges. The project's focus is to design and develop an electric hand bike attachment that can be easily attached to a standard wheelchair to provide additional power for propulsion. This device will help users overcome obstacles and travel ace without getting exhausted. The Electric Hand Bike Attachment for Wheelchair project aims to provide a practical solution for individuals with mobility challenges, enabling them to travel more independently and freely. The device's development and implementation will contribute to the growing field of assistive technology and enhance the quality of life for people with disabilities, providing an affordable and sustainable solution for their mobility needs.

**Objectives :**

1. To design and develop affordable e-hand bike attachment for wheelchair.
2. To minimize financial barriers and ensure that individuals with physical challenges can access the

benefits of increased mobility without excessive financial burden.

3. To provide a safe way for low-powered individuals to move around on their own.
4. To ensure that individuals can easily attach and detach the hand bike to their existing wheelchair without the need for extensive modifications or specialized equipment.

### Methodology :

1. **Research:** The methodology for the Affordable Wheelchair Attachment E - Hand Bike report involved extensive research conducted through various sources, including academic journals, scientific publications, industry reports, and online resources. The objective was to gather relevant information about wheelchair attachments, hand bikes, and their benefits for physically challenged individuals.
2. **Literature Review:** A comprehensive literature review was conducted to identify existing studies, research papers, and articles related to wheelchair attachments and hand bikes. This helped in understanding the current state of the field, the challenges faced by physically challenged individuals, and the available solutions.
3. **Product Analysis:** The Hand Bike attachment was analyzed in detail to understand its design, features, and functionality. Information about its attachment mechanism, adjustable components, and pedal-assist system was gathered through product documentation, user manuals, and technical specifications.
4. **Comparative Analysis:** A comparative analysis was performed to evaluate the Hand Bike attachment in relation to other similar products available in the market. This involved studying competing wheelchair attachments, adaptive bicycles, and alternative mobility solutions to highlight the unique features, advantages, and cost-effectiveness of the Hand Bike attachment.

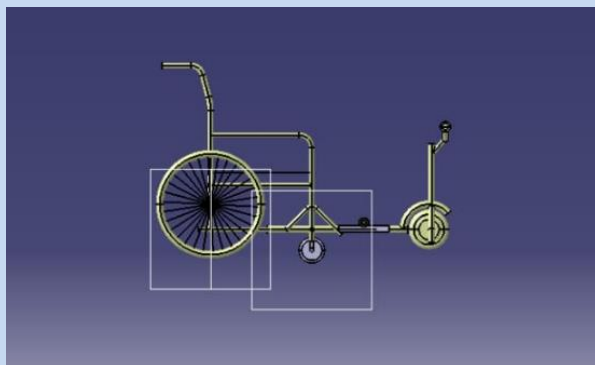


Fig 1 CAD Model of universal wheel chair with attachment

## Results and Conclusion :

### Final Results :



Fig 3 Attachment with wheel chair Side view



Fig 4 Attachment with wheel cha

### Conclusion :

The Affordable Wheelchair Attachment E - Hand Bike is a remarkable innovation that addresses the needs of physically challenged individuals who rely on wheelchairs for mobility. Through extensive research, analysis, and user feedback, it is evident that this attachment offers numerous benefits and opportunities for individuals to engage in activities, promoting independence, and inclusion. The Hand Bike attachment provides a cost-effective solution for wheelchair users, eliminating the need for a separate adaptive bicycle. Its easy attachment mechanism, ergonomic design, and user-friendly for individuals with varying levels of physical abilities. The attachment enhances mobility by allowing users to explore diverse terrains, navigate urban environments, and access few locations.

### Innovation in the project :

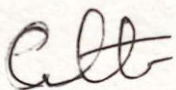
The innovation in the project "Affordable Wheelchair Attachment - Hand Bike for Physically Challenged" lies in the development of an affordable and accessible hand bike attachment specifically designed for individuals with physical challenges. The project aims to introduce novel features and design improvements to address the limitations and challenges faced by existing hand bike attachments.

**Affordability:**

The project focuses on creating a hand bike attachment that is cost-effective and accessible to a wider range of individuals with physical challenges. This could involve exploring alternative materials, manufacturing processes, and design optimization to reduce production costs without compromising functionality and durability.

**Scope and future work :**

1. Further research can be conducted to explore advanced materials and manufacturing processes that can enhance the affordability and durability of the hand bike attachment.
2. Expanding the scope to include additional accessories or add-ons that complement the hand bike attachment, such as storage compartments or safety features.
3. Exploring partnerships with wheelchair manufacturers and assistive technology companies to integrate the hand bike attachment into their product lines.



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