

**PRODUCT DESIGN & DEVELOPMENT – 20ME43P
FOR 4th SEMESTER MECHANICAL**

PDD ACTIVITY # 01

**Design of bicycles for Indian children focusing on Aesthetic
and Ergonomics**

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Design of bicycles for Indian children focusing on Aesthetic and Ergonomics by explaining :

- ☐ Market analysis
- ☐ User study
- ☐ Problem identification
- ☐ Product design and specification
- ☐ Concept generation
- ☐ Material and manufacturing processes
- ☐ Final concept selection



1. Market Analysis:

Key Aspects:

Demographics:

Age groups, preferences, and purchasing power of Indian families.

Competitor Analysis:

Evaluate existing children's bicycles in the market.

Trends:

Identify cultural and market trends influencing preferences.



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2. User Study:

Research Focus:

Demographic Considerations:

Age, height, weight, and gender.

Preferences and Habits:

Understanding what features children and parents value.

Challenges:

Identify common issues faced by children using bicycles in India.

Methods:

Surveys:

Gather quantitative data on preferences.

Interviews:

Gain qualitative insights into user needs.

Observations:

Understand real-world usage patterns.



3. Problem Identification:

Common Issues:

Uncomfortable Ergonomics:

Address discomfort or difficulty in using existing bicycles.

Safety Concerns:

Identify areas where safety features can be improved.

Cultural Relevance:

Ensure the design aligns with cultural expectations.



4. Product Design and Specification:

Design Goals:

Ergonomics:

- Develop sizing options for different age groups.
- Prioritize comfort in the seating and handlebar design.

Aesthetics:

- Incorporate vibrant colors and culturally relevant graphics.
- Allow for customization options.

Specifications:

Materials:

- Lightweight, durable, and weather-resistant.

Safety Features:

- Reflectors, lights, and sturdy frame construction.

Customization Options:

- Detachable accessories for personalization.



5. Concept Generation:

Creative Process:

Brainstorming Sessions:

Encourage a diverse range of ideas.

Sketches and Prototypes:

Visualize concepts through drawings and physical prototypes.

Incorporate Cultural Elements:

Integrate local art and design motifs.



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6. Material and Manufacturing Processes:

Material Selection:

Lightweight Materials:

Aluminum, alloy, or composite materials.

Sustainable Choices:

Consider eco-friendly and recyclable options.

Manufacturing Processes:

Efficient and Cost-Effective:

Explore mass production techniques.

Local Manufacturing:

Consider local production for cost efficiency.



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7. Final Concept Selection:

Evaluation Criteria:

User Feedback:

Gather input from potential users, especially children.

Feasibility:

Assess manufacturing feasibility and cost implications.

Alignment with Design Goals:

Ensure the chosen concept meets set design objectives.



8. Visual Representation - Final Design:

Showcase:

Renderings and 3D Models:

Illustrate the final design from different angles.

Key Features:

Emphasize aesthetic and ergonomic elements.



Basic bike parts

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9. Future Considerations:

Forward-Thinking Design:

Technology Integration:

Explore possibilities for tech-enhanced features.

Sustainability Initiatives:

Plan for ongoing improvements with a focus on sustainability.



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10. Conclusion:

Summarize Key Points:

Recap the design process and key considerations.

Highlight Cultural Sensitivity:

Emphasize the incorporation of cultural elements.

Engage with the Audience:

Invite questions and discussions.

Further Collaboration:

Open avenues for collaboration or partnerships.



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