

UNIVERSITI TEKNOLOGI MARA

**Man_EduG : MANUAL GEARBOX
TRANSMISSION FOR
EDUCATIONAL AIDS**

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ABSTRACT

This educational aid introduces Malaysian students to manual gearbox transmission, integrating STEM principles into their learning journey through hands-on exploration and problem-solving. Many Malaysian cars use manual transmissions, but students often lack understanding of the science behind them, leaving a gap in their STEM education. The manual aims to bridge this gap by explaining manual gearbox transmission in an easy-to-understand manner, incorporating STEM concepts. Through hands-on activities, students learn practical skills to diagnose and repair transmissions, preparing them for careers in automotive engineering. Project objectives include enhancing STEM learning, cultivating interest in automotive engineering, and preparing students for related careers. Methodologies encompass theoretical instruction, hands-on activities, real-world problem-solving, STEM integration, and assessment. Fabrication involves shaping materials for gearbox parts, assembly ensures functionality, and testing verifies correct operation. This educational tool sparks interest and readiness for automotive engineering careers.

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CHAPTER ONE INTRODUCTION

1.1 Background of Study

A manual gearbox transmission, commonly known as a manual transmission or "stick shift," is a type of vehicle transmission system that requires the driver to manually shift gears by engaging and disengaging a clutch pedal and moving a gear shift lever. In a manual transmission, the driver has direct control over gear selection, allowing them to choose the appropriate gear ratio for different driving conditions, such as accelerating, cruising, or climbing hills. This type of transmission is often preferred by driving enthusiasts for its greater sense of control and engagement with the vehicle[1].

Teaching Malaysian students about manual gearbox transmission faces a few hurdles. Many students are used to automatic cars, so learning how to drive a manual one might be tough at first[2]. Safety is a big concern because driving a manual requires doing a few things at once, like using the clutch and shifting gears[3]. Plus, lots of people prefer automatic cars nowadays, so some students might wonder why they need to learn manual. It's also tricky to find places to practice driving manuals, especially in busy areas, and getting access to the right cars for teaching can be tough too. To tackle these challenges, we need to create clear and hands-on lessons, prioritize safety, and adapt to the changing preferences in the car market, all while making sure students understand why learning manual is still important.

To help Malaysian students learn manual gearbox transmission, there's a plan in place. It includes detailed lessons covering both theory and practice[1]. Qualified instructors will guide students through hands-on training, focusing on safety[3]. Even though automatic cars are common, the importance of learning manual skills is highlighted. They're working on improving practice areas and getting manual cars for teaching[2]. Plus, they're adding manual transmission education to school programs so more students can learn. By doing all this, Malaysian students can become confident and safe manual car drivers.