EVALUATION OF THE ACCEPTABILITY OF CUT-AWAY AUTOMATIC TRANSMISSION TRAINER AS AN INSTRUCTIONAL TOOL

John Michael R. Cuajao[1], Emilio Jose B. Alesna[2], Kurt Christian B. Caballes[3], Jayrald L. Sogoc[4], Christian Dave S. Torres[5], Joe Vane N. Antifuesto[6]

College of Technology, University of Science and Technology of Southern Philippines,
C.M. Recto Ave., Lapasan, Cagayan de Oro City 9000
*Correspondence Tel.: +63 955 085 8857, *E-mail: [1]michaelcuajao27@gmail.com

ABSTRACT *- The Autotronics program is a new program implemented in 2018. This program is producing a numerous of instructional materials. This study focuses on the assessment of one of the developed instructional equipment through level of acceptability of cut-away automatic transmission regarding to functionality, aesthetics and safety. Using a descriptive methodology, the researchers assess the level of acceptability of the trainer that simulated real-life scenarios, enhancing students' understanding and skills. Evaluation results showed the trainer to be highly acceptable as for functionality, aesthetics, and safety, supplying useful resources available to teachers and learners in the Autotronics program in University of Science and Technology of Southern Philippines Cagayan de Oro Campus. These findings emphasize the usability of innovative instructional materials in overcoming traditional teaching limitations, with the Automatic Transmission Trainer demonstrating its potential to enhance learning and practical skills. Recommendation for future researcher is presented.*

Keywords: Cut Away Automatic, Automatic Transmission Trainer, Hands-On Learning, Internal Mechanism

INTRODUCTION

On the creation of Autotronics program, number of trainer equipment is unavailable for the program especially in automatic transmission laboratory course. Hence the Autotronics program develops a numerous instructional material, one of these are Cut-away Automatic Transmission. With that, the researcher focused on evaluating the cut away automatic transmission trainer as an instructional material for the Autotronics program. This evaluation has advantages to the students enrolled in the University of Science and Technology of the Southern Philippines. It is observed that automatic transmission trainer is lacking for the Autotronics program as course trainer for laboratory. The evaluation of cut away Automatic Transmission is a way to further enhance the learning of the students in University of Science and Technology of Southern Philippines in the course of Autotronics. With the lack of trainers, the knowledge gained by the students are insufficient and are unable to perform the necessary skills required and are incompetent in creating engaging and effective learning experiences that Assess expertise in the technology through training. Instructional materials have a high degree of interest for the learner, for they offer a reality of experience, which stimulates self-activity on the part of students [1]. Students are no longer engaged or given a fulfilling learning experience by the talk-chalk approach. Through hands-on demonstrations and instructional sessions, automotive professionals can enhance their understanding of transmission components, fluid dynamics, and torque transfer mechanisms, leading to improved diagnosis and maintenance practices. Moreover, consumers benefit from this transparent approach to automotive education, as it fosters trust and confidence in the reliability and performance of automatic transmission systems, ultimately influencing their purchasing decisions and overall satisfaction with their vehicles. It was necessary to present a learning tool represents an illustration of a transmission trainer that would provide students the opportunity to prove the theory and formulas obtained in the gear material in the Engine Element II subject [2]. There would be no disinterest or boredom among the students while they are studying. This cut-away is carefully sectioned for training purposes. Automatic transmission consists of the following parts: planetary gear set, torque converter, clutches and bands, and hydraulic and lubricating oil. Colors can help in recognizing objects more quickly when their colors reflect what the researcher see in the physical world [3]. Many parts have been chromium plated and galvanized for a longer life [4]. Chromium plating is generally considered more durable because of its stronger and more resilient nature against deterioration [5]. With the identified challenges and opportunities mentioned above, the researcher conducted Evaluate and Assessment of automatic transmission trainer to mitigate the need of instructional material in Autotronics program. The concept of cut-away automatic transmission has emerged as a valuable educational tool, allowing individuals to visually observe the internal components and mechanisms of an automatic transmission system.

The Evaluation of Educational Resource in Automotive

When it comes to the field of automotive education, the assessment of teaching resources is important. To get more effectively learning results and guarantee student safety, this method involves assessing the functionality, aesthetics, and safety of instructional materials [6]. By carefully examining these factors, instructors can enhance their methods of instruction, boost student participation, and encourage a safety-conscious culture in automotive education programs.

Functionality

By ensuring that learning materials effectively explain automotive principles, functionality evaluation maximizes teaching strategies, improves the learning process, and facilitates the development of skills and practical use through clear, interactive training [7]. Functionality is a technical issue and refers solely to the product and the goal of evaluation is to answer the question, “What does the product do?” , the usefulness of device features, maintainability, and reliability are some of the issues that could be addressed in such an evaluation [8].

Aesthetics

In evaluating the consistency and visual appeal of instructional materials, aesthetic assessments aim to increase student engagement and retention, which benefits the organization or institution. Aesthetics is the level to which the prototype and improvement share similarities is known as the intended product's physical characteristics, including its size, shape, color, and texture and base [9].

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Safety

In creating industry standards and promoting a safety culture, safety assessments in automotive courses ensure reliable knowledge and guidance on vehicle safety measures [10]. In contexts of safety, which are defined as circumstances where there could risk is frequently defined as a series of unplanned events repercussions and related uncertainties or probabilities [11].

Statement of the Problem

The University of Science and Technology of Southern Philippines has gaps in a specific amount of equipment required for its Autotronics program. Modern methods of instruction and learning aim to improve the standard of vocational education [12]. Students struggle to complete tasks and lack the abilities essential to design and participate in learning activities that help them become proficient in the technology they are trained in. The automatic transmission trainer is used to introduce or deepen students' understanding of how automatic transmissions operate while allowing them to engage in interactive learning. This dual challenge underscores the critical need to evaluate the acceptability and efficiency of cut-away automatic transmission units as educational tools, addressing the perspectives and needs of both trainers and students within automotive education programs. This study seeks to assess the acceptability of integrating cut-away automatic transmission units in automotive training curricula, aiming to determine their functionality, aesthetics and safety of equipment for laboratory activities in Autotronics program. And to enhancing learning outcomes and bridging the gap in hands-on training for students while supporting trainers in delivering more effective instruction.

METHODOLOGY

Research setting and respondents of the study

The study is being conducted out on the University of Science and Technology of Southern Philippines, College of Technology Department, Cagayan de Oro city campus. In the University of Science and Technology of the Southern Philippines has 23 Third-year Automotive students, 5 industry experts, and 5 academic experts, to participate in the surveys.

Research Instrument

The research instrument used in this study is composed of functionality, aesthetics and safety. Each item is evaluated in a 5-point Likert scale. A Likert scale allows respondents to convey how much they agree or disagree with a statement or question on a continuum, ranging from Highly Acceptable to Not Acceptable. Functionality, Aesthetic, Convenience, and Safety is used. According to the study of Barbosa, each element is evaluated using 5 points Likert Scale. Table 1 shows the Range of Values and Descriptive Equivalent for the Mean [13].

Table 1. Range of Values and Descriptive Equivalent basis for Data Analysis

Numerical Scale	Range of Values	Descriptive Equivalent
5	4.24-5.00	Highly Acceptable
4	3.43-4.23	Acceptable
3	2.62-3.42	Moderately Acceptable
2	1.81-2.61	Fairly Acceptable
1	1.00-1.80	Not Acceptable

Data collection

Conducting an automatic transmission technical values test System trainer is among the essential components of competence. During the data collection, the purposely selected students and the academic experts were given a formal invitation letter to participate and rate the Assessed trainer model. The experts were invited to the college of technology laboratory to physically manipulate and evaluate the trainer base on Technical Values such as functionality, aesthetics, and safety. After the expert evaluate the trainer using the Technical Values instrument, the instrument was collected by the researcher to prepare for data analysis.

Data Analysis

In this study, the collected data underwent a thorough analysis employing statistical measures including the Mean and Standard Deviation, widely recognized techniques in quantitative research. Using the sample mean and standard deviation, suggest a few fresh estimating techniques to enhance the body of current literature [14].

Assessment and Evaluation Phase

In the study conducted at University of Science and Technology in Cagayan de Oro, Southern Philippines, participants in the interview and consultation process included industry experts, College of Technology teachers, and students enrolled in the Autotronics course. Primary data about the necessary specifications, methods, capabilities, performance, and potential real-world applications of the device were obtained through these encounters. The thorough comprehension of the device's features and its possible practical ramifications was secured by a collaborative method combining academic professionals, students, and industry specialists. This approach enhanced the validity and depth of the data acquired. The researcher presented the Assessed trainer to the respondents involved in the study for their evaluation and recommendation for any improvement or modification of the trainer [15]. The trainer will be evaluated based on its acceptability in terms of Technical Values as an instructional trainer. The benefit that an organization gets by applying the underlying knowledge is known as technical value. incorporated into an innovation to inspire and produce more innovations [16].

Table 2. Data Results of the Overall Mean of the Technical Values Assessment

Indicator	Question Items	Mean	SD	Verbal Description
Functionality	Design ensures functionality.	4.80	4.30	Highly Acceptable
Aesthetics	Design enhances aesthetics.	4.87	4.36	Highly Acceptable
Safety	Design boosts safety	4.27	3.79	Highly Acceptable
	Overall	4.64	4.15	Highly Acceptable

RESULTS OF THE DATA ANALYSIS

Evaluation on Acceptability of the trainer

In determining acceptability of the trainer, the respondents evaluated the instructional trainers design based on its technical values such as functionality, safety, and aesthetics are all evaluated technically. The summary result and the findings of the data analysis are presented in the Table 2 where the Assessed trainer is evaluated with a rating of Excellent regarding Functionality *(M=4.80, SD=4.300).* Meanwhile, the Assessed trainer was evaluated with a perfect rating of Excellent in terms of Aesthetics *(M=4.87, SD=4.357)*, and Safety Features *(M=4.27, SD=3.793)*. Overall results revealed an excellent level of acceptability as indicated by the overall mean of 4.64 and standard deviation of 4.150.

CONCLUSION

The study presents the innovative instructional tool or material to be utilized in teaching Autotronics program. Trainer was found to be an extremely functional and well-designed instructional tool for teaching students [17]. The uniqueness of instructional tool is that, it mimics the actual functionality and operations of vehicles Automatic Transmission Trainer for the laboratory activities of the students. It allows the student to safely do self-pacing during the course of laboratory activities. The instructional tool has unique features that let the student experience real-life automatic transmission system servicing. Educators and trainers can incorporate these methods and learning tools into their current curriculum and instructional designs to improve overall learning outcomes and training efficiency [18]. Furthermore, the design of the trainer model highly provides full functionality according to known criteria. The designed trainer model contributes significantly to a total aesthetics of the device and is significant increases the safety use of the device. The efficiency of the mock trainer model in improving students' performance in Inspection and repair and it is been instrumental in improving student's scores, this is because the trainer serves as the medium of instruction to help enhance the learning of the students and understanding such basic principles to enable the students to be self-reliant, more confident of themselves [19].

RECOMMENDATION

In order to guarantee the trainer's effectiveness and appropriateness for its intended use, a thorough evaluation of its functional aspects must be carried out even in cases when it receives a high degree of approval. A thorough analysis of the trainer's functionality is one of evaluation process's many steps. To improve the trainer's performance and efficacy in this situation, specialists have suggested a number of changes. These suggestions include optimizing the Functional Gear Selector mechanism to offer a smooth and realistic user experience; making sure Original Automatic Transmission Sensors are installed to maintain accuracy and reliability in simulating real-world scenarios; and improving the Torque Converter to improve its functionality and responsiveness. It is possible to improve the trainer and better match it with the changing requirements of automotive education and industry standards by concentrating on these particular areas for innovation.

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