

COMPUTER BASED FOUR TIER PHYSICS CLINIC DIAGNOSTIC TEST (CBDT PHYSICS CLINIC) FOR INCREASING THE SUCCESS OF LEARNING PHYSICS

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ABSTRACT

The results of learning the basic concept of the glasses of class X students were relatively low, encouraging the assistance of scientific conceptions of physics. The effective Four tier diagnostic test (FTD) instrument for categorizing conceptual understanding is currently still limited to the Paper and Pencil Test (PPT), encouraging the development of technology-based FTD to generate fast feedback. Physical development needs to be developed to increase the success of learning physics. This study aims to 1) develop a Four Tier Diagnostic in the form of a Paper Based Test (FTDT-PBT) in the first year, 2) develop a Four Tier Diagnostic in the form of a Computer Based Test (FTDT-CBT) and 3) develop a CBDT Physics Clinic in the second year, and 4) testing the effectiveness and disseminating CBDT Physics Clinic services. This eyewear clinic is a service model based on the results of a diagnostic test that was developed to find out the weaknesses of students' physical challenges, which they then provide suggestions for achieving success in learning physics. This eyewear clinic is based on a Computer Based Test (CBT) which is very suitable for learning technology in the industrial revolution 4.0 era. The test instrument in CBT is in the form of FTD, which is then called CBDT. Therefore, the CBDT-based physical clinic software is called CBDT-Based Phycis Clinic, hereinafter referred to as CBDT Physics Clinic. This product is equipped with a confidence rating on the reasons for answers so that it can measure students' understanding of the concept of glasses in five categories, namely: Scientific Conception/Lack of Knowledge/False Positive/False Negative/Misconception. In addition, being able to identify the causes of misconceptions into five categories, namely preconception (P); Intuition (I); False Reasoning (W); Humanistic Thought (HT); Associative Thinking (AT) and demonstrate students' conceptual understanding. This product is equipped with student report cards as the final output so that it can become the basis for teachers to carry out remediation learning towards successful physics learning. Therefore, this product is able to identify students' conceptual understanding quickly according to the needs of education in the 4.0 era. This product is later expected to be an effective solution that supports the success of learning physics in high school.

The CBDT Physics Clinic was developed using the Thiagarajan 4-D model which includes Define, Design, Development, Dissemination. The development steps began with developing a Paper Based Test (FTDT-PBT) in the first year, developing a Four Tier Diagnostic in the form of a Computer Based Test (FTDT-CBT) in the second year and developing a CBDT Physics Clinic in the third year. The FTDT-PBT trial subjects totaled 700 students, 500 students for the FTDT-CBT and 1000 students for the CBDT Physics Clinic. The trial results were analyzed to test the feasibility and effectiveness of the CBDT Physics Clinic service, which was then distributed to the service products. The output of the CBDT Physics Clinic consists of mandatory and additional outputs. Mandatory outputs are HKI certified FTDT-PBT instrument books in the first year, FTD-CBT development books and HKI certified four tier diagnostic test software in the second year, as well as a physics clinic program and guidelines for its use in the third year. While additional outputs are indexed national journal articles and international seminar proceedings in the first year, international journal articles, indexed national journals and international seminar proceedings in the second year, as well as international journal articles and international seminar proceedings in the third year. The CBDT-Based Phycis Clinic Technology Readiness Level (TKT) towards scale 6 can be developed. This is because the use of CBT as a technology base has begun to be developed in Indonesia

Kata Kunci: *clinic Physics, compter based , CBDT*