



UNIVERSITI SAINS ISLAM MALAYSIA  
 ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA



KEMENTERIAN PENDIDIKAN TINGGI



MAJLIS DEKAN-PENGARAH ASASI  
 UNIVERSITI AWAM



# e-**BUKU** **PIITRAM** **2024**



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 Mohamad Hazwan Abdul Rahman

<p>4 QUALITY EDUCATION</p> 	<p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> 
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# *e*-BUKU PIITRAM 2024

## **e-BUKU PIITRAM 2024**

**PERTANDINGAN INOVASI INTER-ASASI MATRIKULASI 2024, UNIVERSITI SAINS ISLAM MALAYSIA ( 21, 23 & 24 FEBRUARI 2024 )**

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## **C0028 - MRK-v-ii (MICROCOPY REVISION KIT) as EMPOWERING TOOL for MASTERING MICROSCOPY SKILLS**

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Nor Sa'adah Mohd Nasohah<sup>3</sup>, Nazira Zubir<sup>4</sup>, Shafiyah Solehah Zahari<sup>5</sup>

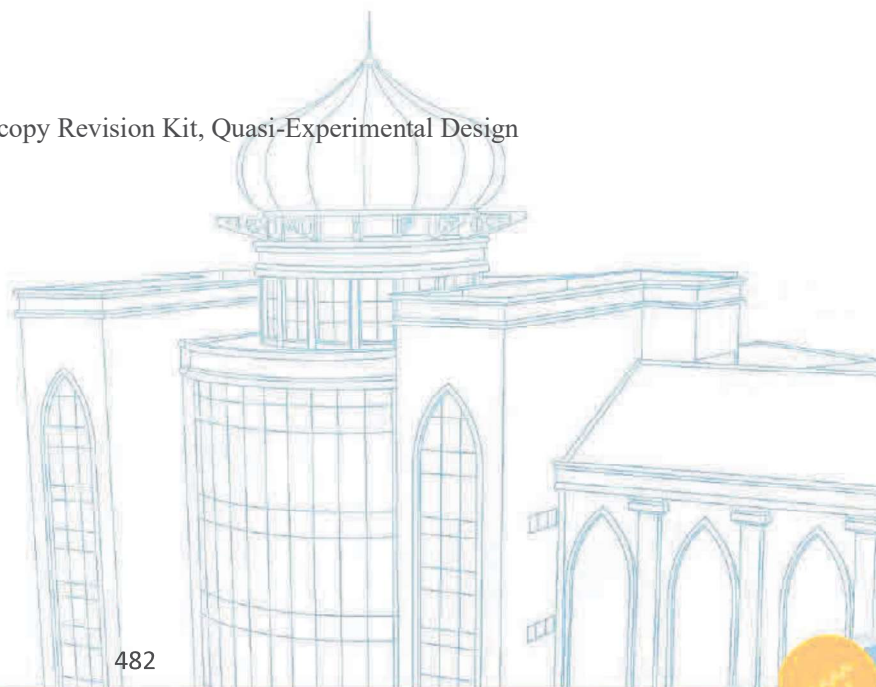
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### **ABSTRACT**

Abstract. Proficiency in microscopy is vital in various biological science domains and even in selected career fields. It is imperative that foundation students acquire the fundamental skills of microscopy confidently because they will apply them during their undergraduate studies. Hence, to serve as a platform for empowering tools, MRK-v-ii (Microscopy Revision Kit version 2) was designed to allow students to self-practice using the compound light microscope. MRK-v-ii is the updated version of the previous MRK, where the audio instruction on image focusing is transformed into video narrated form. Similar to the previous version, the MRK-v-ii comprises a step-by-step image-focusing procedure and is accessible online. MRK-v-ii also includes a series of interactive questions. MRK-v-ii is designed according to ADDIE model (Analyze, Design, Develop, Implement, and Evaluate). MRK-v-ii enables the students to watch the video and manipulate the microscope at the same time. The kit is similar to hands-on instruction in lab sessions but in the absence of a teacher. MRK-v-ii has a commercial potential when it is suitable for the usage of students from various levels such as schools, colleges, and universities who want to learn the basic steps of image focusing using a microscope. This quasi-experimental study aimed to determine the effectiveness of the MRK-v-ii and the effect of the kit on the student's ability and skills in handling compound microscopes. In conclusion, the pre-test to post-test results concluded that the MRK-v-ii has served as an effective tool or remedial instruction to facilitate students in the proper handling of a compound microscope with confidence and thus mastering microscopy skills.

**Keywords:** Microscopy Skills, Microscopy Revision Kit, Quasi-Experimental Design



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**MRK-v-ii (MICROSCOPY REVISION KIT)**  
as EMPOWERING TOOL for MASTERING MICROSCOPY SKILLS

C 0028

**INTRODUCTION**

Among the laboratory skills that biological science foundation students need to acquire is microscopy skills. Microscopy skills include the skills of image focusing and correct procedure in manipulating the microscopes. Gaining proficiency in the skills will have a major impact on foundation students' confidence levels when they use the microscope. Additionally, competency in microscopy skills is essential to be applied during their undergraduate studies. Hence, to serve as a platform for empowering tools, MRK-v-ii (Microscopy Revision Kit version 2) was designed to allow foundation students to self-practice using the compound light microscope. MRK-v-ii is the updated version of the previous version of MRK, where the audio instruction on image focusing is transformed into a video-narrated form. MRK-v-ii is designed according to ADDIE model. A quasi-experimental pre-test/post-test design was adopted for biological sciences foundation students.

**Keywords:** Microscopy Skills, Microscopy Revision Kit, Quasi-Experimental Design

**OBJECTIVE**

- ❖ To determine the effectiveness of the MRK-v-ii and the effect of the kit on the foundation student's ability and skills in handling compound microscopes

**PRACTICALITY & SUSTAINABILITY**

- ❖ MRK-v-ii is user-friendly. It allows students to use the kit and microscope in tandem.
- ❖ Students only need a handphone and internet connection to access and use MRK-v-ii.
- ❖ MRK-v-ii enhances learning by doing (experiential learning).
- ❖ Students can learn and revise using the microscope without the presence of an instructor.

**INNOVATIVENESS**

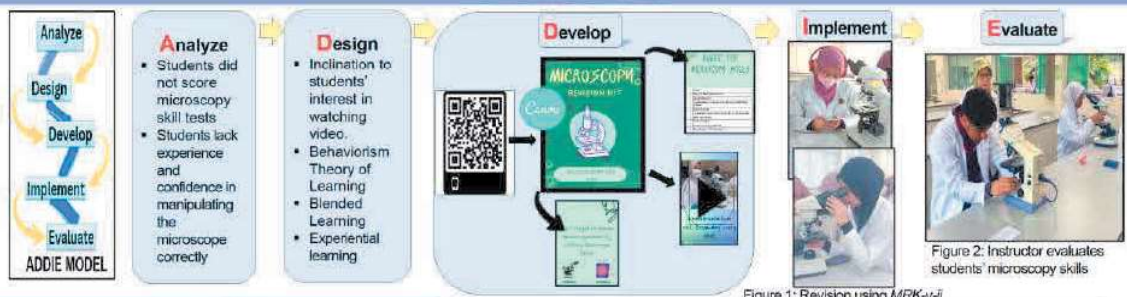


Figure 1: Revision using MRK-v-ii

**IMPACT**

- ❖ Effectively improve student microscopy skills.
- ❖ Improved student's score during Microscopy skill test.
- ❖ Encourage independent learning.

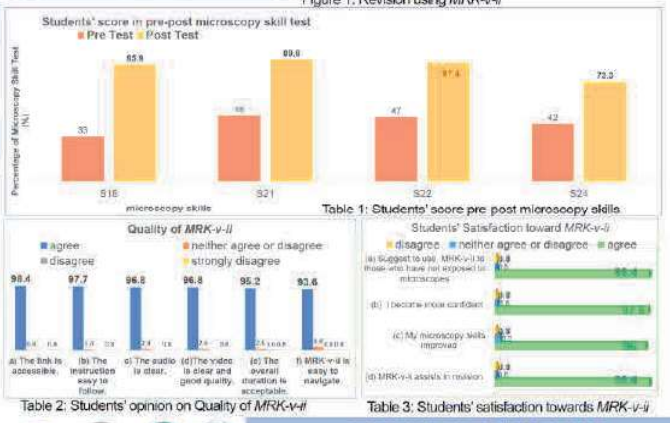
**POTENTIAL & COMMERCIALIZATION**

- ❖ MRK-v-ii is suitable for the usage of students from various background and levels such as schools, colleges, and universities who want to learn the basic steps of image focusing using a microscope.
- ❖ Low-cost: canva, phone stand, earphones

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