

# NeXT

Network of excellence, Knowledge and Transformation



EDISI

MEI 2025

eISSN : 3093-6543

# CRYSTAL BUDDIES: INSPIRING STEM INTEREST THROUGH THE MAGIC OF CRYSTALS

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In recent years, Malaysia has faced a growing challenge a noticeable decline in the number of students pursuing STEM (Science, Technology, Engineering, and Mathematics) subjects in schools. This concerning trend was highlighted in the article “STEM-ming the decline” published by The Star on 18 June 2023, which pointed to declining interest and the perception that STEM subjects are difficult, overly technical, and unapproachable. Many students find STEM intimidating, fearing that they may not succeed in subjects that seem too complex or demanding. This perception creates a significant barrier to nurturing the next generation of scientists, engineers, and innovators. Tackling this issue requires creative and engaging strategies to reconnect students with the wonders of science in a relatable and inspiring way.

## **A Community-Driven Initiative**

As recipients of the CCDC Engagement Grant amounting to GBP 1,500 from the Cambridge Crystallographic Data Centre (CCDC), United Kingdom, our team (Figure 1) initiated a project titled “Crystal Buddies: Exploring the Magic of Crystals” — a science outreach initiative designed to spark curiosity and promote STEM awareness among students aged 7 to 17. By focusing on crystallography, a fascinating branch of chemistry that explores the structure of crystals. The project aims to transform how students perceive science, turning it from something intimidating into something magical and tangible. We selected crystallography for its visual appeal and strong connections to real-world applications from the salt in our kitchens to advanced electronics and natural minerals. By showing students how science exists all around them, we hoped to foster appreciation and excitement for STEM subjects.

## **Exhibitions in Malaysia and Indonesia**

To bring our vision to life, we organized two interactive exhibitions: one at Sekolah Menengah Kebangsaan Bandar Baru Seriting, Negeri Sembilan, Malaysia (4 July 2024), and another at SMA Laboratorium UM, Malang, Indonesia (28 August 2024). Both events received enthusiastic participation from students and educators (Figure 2 and Figure 3). The exhibitions included an explanation of how to prepare sugar crystal candy, displays of real crystal samples, and engaging activities that allowed students to explore crystal structures and understand their relevance in daily life. The international component of the project in Indonesia also provided an excellent platform for cross-cultural scientific exchange, fostering interest in STEM beyond national borders.

## **Digital Comic Book: Science in Stories**

To further enhance the learning experience, we created a digital comic book that presents the principles of crystallography through short, relatable stories. Each chapter highlights how crystallography connects to everyday experiences, such as the characteristics of crystals, the history of crystallography, and a simple introduction to the subject. The comic is designed to be visually engaging and easy to understand, making scientific concepts accessible even to young readers. The digital comic book (Figure 4) is available in two languages (English and Bahasa Malaysia) and can be accessed and downloaded worldwide from the official CCDC website at <https://www.ccdc.cam.ac.uk/community/education-and-outreach/outreach/community-projects/>.



## Looking Ahead

Through “Crystal Buddies,” we aim not only to make science fun and approachable but also to empower students to see themselves as future scientists, engineers, or innovators. By combining storytelling, visual learning, and hands-on experiences, the project offers a fresh and inclusive approach to STEM education. This initiative marks a meaningful step in addressing the STEM interest gap among young learners both locally and internationally. With continued collaboration and support, we hope to expand this project and inspire more young minds to explore the fascinating world of science. In addition, the project received a 3-star rating from Universiti Teknologi MARA (UiTM) as part of its University Social Responsibility (USR) initiative.



Figure 1: Siti Syaida Sirat and team including Ku Nurul Atiqah Ku Ahamad, Nur Nadia Dzulkifli, and Dzeelfa Zainal Abidin.



Figure 2: Exhibition at Sekolah Menengah Kebangsaan Bandar Baru Serting, Negeri Sembilan, on 4 July 2024



Figure 3: Exhibition at SMA Laboratorium UM, Malang, Indonesia, on 28 August 2024



Figure 4: The digital comic book can be accessed and downloaded worldwide from the official CCDC website