



International Teaching Aid
Competition 2023

Reconnoitering Innovative Ideas in Postnormal Times

iTAC

2023

iTAC 2023
INTERNATIONAL TEACHING AID COMPETITION
E-PROCEEDINGS

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PREFACE

iTAC or International Teaching Aid Competition 2023 was a venue for academicians, researchers, industries, junior and young inventors to showcase their innovative ideas not only in the teaching and learning sphere but also in other numerous disciplines of study. This competition was organised by the Special Interest Group, Public Interest Centre of Excellence (SIG PICE) UiTM Kedah Branch, Malaysia. Its main aim was to promote the production of innovative ideas among academicians, students and also the public at large.

In accordance with the theme "Reconnoitering Innovative Ideas in Post-normal Times", the development of novel ideas from the perspectives of interdisciplinary innovations is more compelling today, especially in the post-covid 19 times. Post-pandemic initiatives are the most relevant in the current world to adapt to new ways of doing things and all these surely require networking and collaboration. Rising to the occasion, iTAC 2023 has managed to attract more than 267 participations for all categories. The staggering number of submissions has proven the relevance of this competition to the academic world and beyond in urging the culture of innovating ideas.

iTAC 2023 committee would like to thank all creative participants for showcasing their innovative ideas with us. As expected in any competition, there will be those who win and those who lose. Congratulations to all the award recipients (Diamond, Gold, Silver and Bronze) for their winning entries. Those who did not make the cut this year can always improve and join us again later.

It is hoped that iTAC 2023 has been a worthy platform for all participating innovators who have shown ingenious efforts in their products and ideas. This compilation of extended abstracts published as iTAC 2023 E-Proceedings contains insights into what current researchers, both experienced and novice, find important and relevant in the post-normal times.

Best regards,

iTAC 2023 Committee
Special Interest Group, Public Interest Centre of Excellence (SIG PICE)
UiTM Kedah Branch
Malaysia

RAPIDSPIN: ACCELERATING LEARNING THROUGH CENTRIFUGATION TECHNIQUES

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ABSTRACT

Teaching aids are essential tools in modern education, enhancing the learning experience by providing hands-on and interactive opportunities for students. The innovation of RapidSpin as a teaching aid offers a unique and effective approach to teaching the principles and applications of centrifugation techniques. RapidSpin is a comprehensive educational tool designed to accelerate the learning and understanding of centrifugation. By combining visual representation, hands-on experimentation, and interactive modules, RapidSpin enables students to grasp the fundamental concepts of centrifugation and its wide range of applications across various scientific disciplines. Through the use of RapidSpin, educators can create engaging lessons that explore the basic principles of centrifugation, including sedimentation, separation, and particle analysis. Students can actively participate in assembling and operating a simplified centrifuge model, allowing them to witness firsthand the effects of centrifugal force on different types of samples and materials. Moreover, RapidSpin facilitates the exploration of advanced centrifugation techniques such as density gradient centrifugation and differential centrifugation. Students can analyze the separation of complex mixtures, study the

properties of biomolecules, and investigate the isolation of specific cell types, thereby gaining insights into cutting-edge research methods. The incorporation of interactive modules within RapidSpin further enhances the learning experience. Students can access videos, quizzes, and puzzles, enabling them to practice their skills and enhance their understanding. In conclusion, the innovation of RapidSpin as a teaching aid revolutionizes the way centrifugation techniques are taught in the classroom. By providing a comprehensive and interactive learning experience, RapidSpin accelerates students' understanding of centrifugation principles and equips them with the knowledge and skills necessary for future scientific endeavors.

Keywords: Biotechnology, Biomolecules, Centrifugation, Effective teaching aid, Supportive educational environment

INTRODUCTION

Centrifugation techniques are used in a variety of scientific fields such as cell biology, and environmental analysis. They are essential in scientific research and laboratory work because they allow for separation, purification and analysis of various substances based on their density and sedimentation properties. Researchers must understand and apply centrifugation techniques correctly in order to achieve accurate and reliable outcomes in their research. Sedimentation, centrifugal force, and separation mechanisms are some of the complex concepts related to centrifugation. For learners, particularly those without a strong background in physics and chemistry, understanding these concepts and their application in various scenarios can be difficult and overwhelming.

To overcome these challenges, it is important to develop accessible teaching aids. Teaching aids are important tools in modern education because they enhance the learning experience by providing students with hands-on and interactive opportunities. The use of technology as a learning medium is one of the innovative steps to improve the quality of education in Indonesia, so it can compete at the global level (Dewi et al., 2020). Imagine having a powerful learning tool that combines the convenience of interactive notes, the engaging experience of a flipbook design, and the effectiveness of quizzes and exercises.

The Flipbook application is software that can convert files in PDF format (McBeth & Volk, 2009). The interactive flip book, RapidSpin, is a groundbreaking teaching aid designed to accelerate learning and enhance understanding of centrifugation techniques in the field of science education. This manuscript presents a comprehensive overview of the RapidSpin flip book, detailing its purpose, content, and impact on student learning outcomes. By combining captivating visuals, interactive elements, and concise explanations, RapidSpin provides an engaging and effective learning experience for students exploring the principles and applications of centrifugation.

OVERVIEW OF RAPIDSPIN

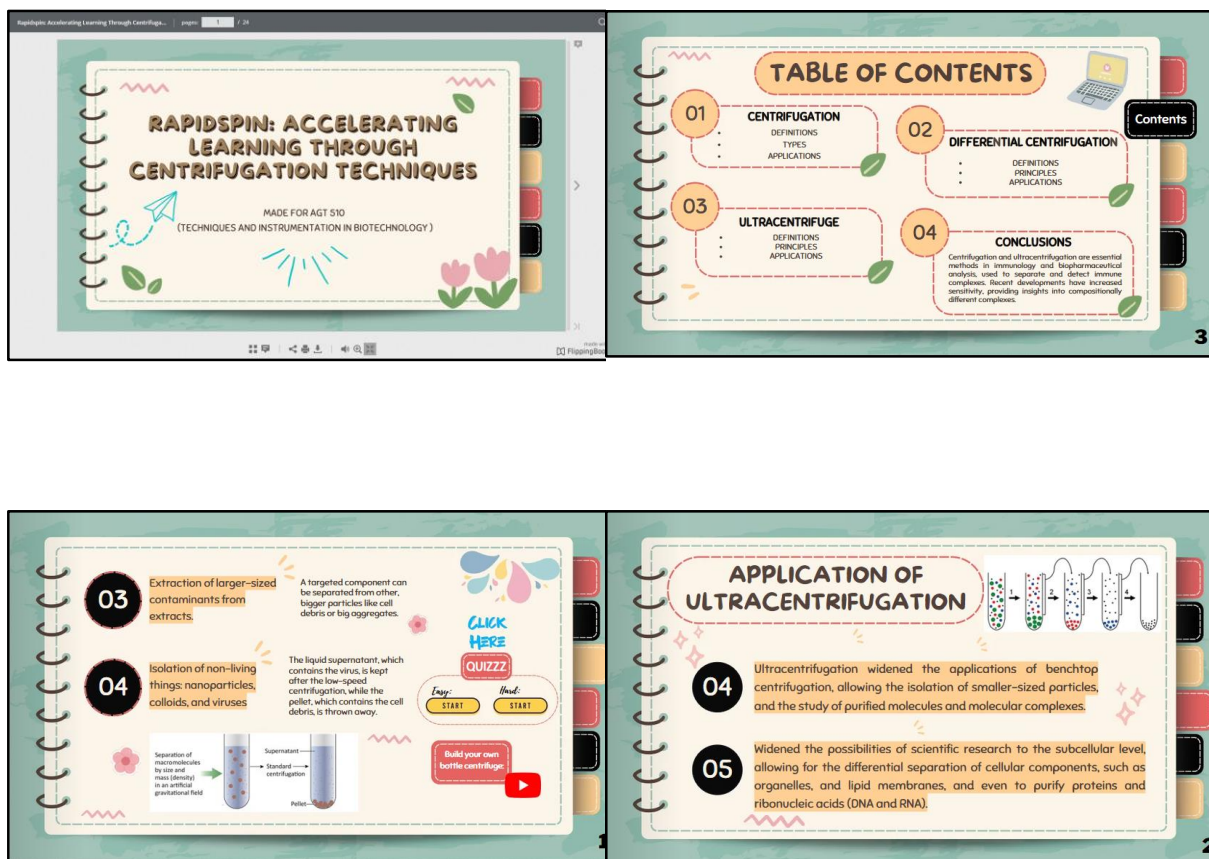


Figure 1. Summary content of RapidSpin Flip Book

The purpose and objectives of RapidSpin in promoting accelerated learning are RapidSpin accelerates students' understanding of centrifugation principles and equips them with the knowledge and skills necessary for future scientific endeavors.

DESIGN AND FEATURES OF RAPIDSPIN

RapidSpin has a unique design where the visual is appealing to attract learners' interest. This interactive flipbook consists of engaging learning tools with comprehensive keywords and

notes with key information, extensive coverage and organized structure. The visual elements consist of vibrant illustrations, diagrams and photographs to clearly depict the centrifugation technique in real life. Interactive self-assessment quizzes and exercises are also available in this flipbook to stimulate active learning, reinforce understanding and test the knowledge of the learners.

INTEGRATION INTO SCIENCE EDUCATION

This interactive flip book offers multiple advantages to the learners which include engaging learning experiences, portability and accessibility, and interactive and multimedia integration. educators can create engaging lessons that explore the basic principles of centrifugation, including sedimentation, separation, and particle analysis. Students can actively participate in assembling and operating a simplified centrifuge model, allowing them to witness firsthand the effects of centrifugal force on different types of samples and materials. Moreover, RapidSpin facilitates the exploration of advanced centrifugation techniques such as density gradient centrifugation and differential centrifugation. Students can analyze the separation of complex mixtures, study the properties of biomolecules, and investigate the isolation of specific cell types, thereby gaining insights into cutting-edge research methods. This computer-based learning such as interactive flipbooks emerged as a new paradigm in modern education (Kapenieks, 2013). The advancement of computer-based technology produces many variations in assessment tests that have an impact on student satisfaction in learning (Pen, 2008). The advantages of Flip Book as contextual learning can be a source of independent learning for students to develop their knowledge. Stages of contextual learning in this Flip Book can help students in the thought process (Dewi et al., 2020).

The active learning facilitated by interactive elements of RapidSpin has been proven to encourage students' engagement and participation in the learning process. Besides, it enhances comprehension and retention of centrifugation principles by having practical understanding through hands-on activities and experiments. The incorporation of RapidSpin into classroom instruction and curriculum offers potential practices for independent study, group work, and remote learning environments. However, the teacher's role in guiding and facilitating student engagement with RapidSpin is highly anticipated to ensure a whole learning experience.

EVALUATION AND IMPACT

To prove that this RapidSpin is helping students and learners to understand more on the centrifugation techniques topic, a preliminary evaluation and feedback from educators and

students has been obtained.

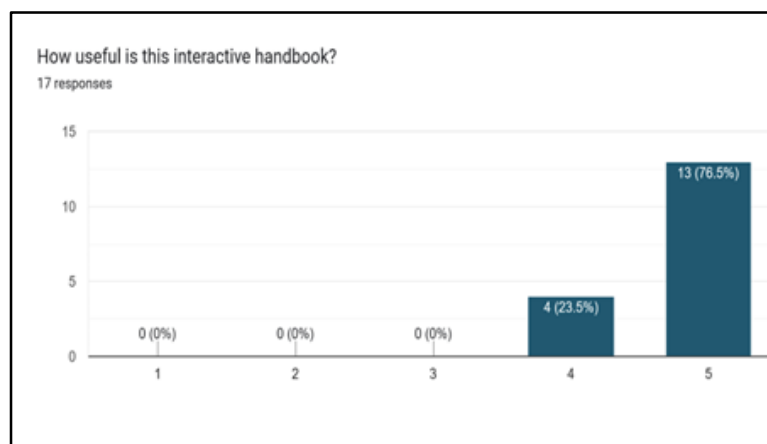


Figure 2. Bar graph showing the usefulness of RapidSpin flip book

Figure 2 showed that this RapidSpin flip book had successfully been beneficial to the learning of students to understand the centrifugation techniques in biotechnology. This assessment showed that it helped to increase enthusiasm, understanding, and knowledge retention while giving a long-term impact on student learning outcomes and scientific literacy. This result is in agreement with previous finding stated that multimedia development which uses technology such as flipbook can help to improve student's geometry basic skill. It is because the printed book cannot balance with flipbook's ability in integrating sound, graph, picture, animation, and movie presentation. Technology integration in education has demonstrated that using computers in the classroom benefits students learning in mathematics (Isiksal & Aşkar, 2005; Olkun, Altun, & Smith, 2005).

CONCLUSION

The RapidSpin interactive flip book represents a transformative teaching aid that accelerates learning and promotes a deeper understanding of centrifugation techniques. By presenting complex concepts in an interactive and visually stimulating manner, RapidSpin engages students and fosters active learning. With its comprehensive content and user-friendly design, RapidSpin has the potential to revolutionize science education, inspire the next generation of scientists, and contribute to advancements in scientific research and applications of centrifugation techniques. The RapidSpin interactive flip book represents a transformative teaching aid that accelerates learning and promotes a deeper understanding of centrifugation techniques. By presenting complex concepts in an interactive and visually stimulating manner, RapidSpin engages students and fosters active learning. With its comprehensive content and

user-friendly design, RapidSpin has the potential to revolutionize science education, inspire the next generation of scientists, and contribute to advancements in scientific research and applications of centrifugation techniques.

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REFERENCES

- Dewi Maynastiti, Vina Serevina & Iwan Sugihartono. (2020). The development of flip book contextual teaching and learning-based to enhance students' physics problem solving skill. *Journal of Physics: Conference Series*, 1481.
- Isiksal, M., & Askar, P. (2005). The effect of spreadsheet and dynamic geometry software on the achievement and self-efficacy of 7th-grade students. *Educational Research*, 47(3). 333-350.
- Janis Kapenieks. (2013). User-friendly e-learning Environment for Educational Action Research. *Procedia Computer Science*, (26). 121-142.
- Olkun, S., Altun, A., & Smith, G. (2005). Computers and 2D geometric learning of Turkish fourth and fifth graders. *British Journal of Educational Technology*, 36(2). 317-326.
- Pei-Chen Sun, Ray J. Tsai, Glenn Finger, Yueh-Yang Chen & Dowming Yeh. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50 (4). 1183-1202.
- William McBeth & Trudi L. Volk. (2009). The National Environmental Literacy Project: A Baseline Study of Middle Grade Students in the United States. *The Journal of Environmental Education*, 41(1). 55-67.



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