

**CONCEPTIONS IN CIRCULAR MOTION AMONG  
FORM SIX PHYSICS STUDENTS IN  
KUCHING, SARAWAK**

**BY  
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# **Konsepsi Tentang Gerakan Membulat Di Kalangan Pelajar Fizik Tingkatan Enam Di Kuching, Sarawak**

## **Abstrak**

Tujuan kajian ini ialah untuk mengkaji konsepsi pelajar fizik tingkatan enam atas tentang gerakan membulat. Kajian ini juga bertujuan untuk menentukan hubungan antara kefahaman konsep dalam gerakan membulat dengan jantina dan kebolehan penaakulan formal pelajar. Sejumlah 89 pelajar (39 lelaki and 50 perempuan) dari Kuching, Sarawak terlibat dalam kajian ini. Dua instrumen, Ujian Pemikiran Mantik (TOLT) dan Ujian Kefahaman Konsep Gerakan Membulat (UCCMT) telah digunakan untuk mengumpul data. TOLT digunakan untuk mengkategorikan kebolehan penaakulan formal pelajar. UCCMT digunakan untuk mengkaji kefahaman pelajar tentang konsep dalam gerakan membulat and menyiasat salah konsepsi yang berulang dan yang biasa dijumpai. Keputusan kajian menunjukkan bahawa:

- (1) Pelajar yang mempunyai penaakulan formal yang tinggi mendapat pencapaian lebih baik dalam kefahaman konsep tentang gerakan membulat berbanding dengan pelajar yang mempunyai penaakulan formal yang sederhana.
- (2) Pelajar lelaki mendapat pencapaian lebih baik dalam kefahaman konsep tentang gerakan membulat berbanding dengan pelajar perempuan.
- (3) Antara enam salah konsepsi yang berulang tentang gerakan membulat ialah:
  - (a) Menganggap objek akan terus bergerak dalam lintasan lengkung walaupun tidak wujud daya memusat; (b) Menganggap daya memusat dan daya paduan yang bertindak pada sesuatu objek sebagai daya yang berlainan; (c)

Menganggap suatu daya motif bertindak pada jasad dalam gerakan; (d)

Menganggap suatu daya yang berhala ke luar bertindak pada jasad dalam gerakan.

- (4) Sejumlah tiga belas salah konsepsi yang biasa dijumpai telah dikesan dari respons pelajar dalam UCCMT.

Implikasi daripada dapatan kajian ini dibincang dan cadangan yang spesifik bagi kajian lanjut juga disyorkan.

## ABSTRACT

This study examined upper six physics students' conceptions in circular motion. It also sought to establish the relationships between students' understanding of concepts in circular motion and their gender and formal reasoning ability. Participants consisted of 89 students (39 males and 50 females) from two schools in Kuching, Sarawak. Two data gathering instruments, Test of Logical Thinking (TOLT) and Understanding of Concepts in Circular Motion Test (UCCMT) were used. The TOLT was used to categorize the formal reasoning ability of the students. The UCCMT was used to assess the students' understanding of the concepts in circular motion and to probe their recurring and common misconceptions. The findings showed that:

- (1) The high formal reasoning ability students performed significantly better than the medium formal reasoning ability students in their understanding of concepts in circular motion.
- (2) The male students performed significantly better than the female students in their understanding the concepts of circular motion.
- (3) Among the six recurring misconceptions in circular motion identified were: (a) Perceived an object would continue to travel in curvilinear path in the absence of centripetal force; (b) Regarded centripetal force and resultant force acting on an object as two different forces; (c) Perceived a motive force acting on a body in motion; (d) Perceived an outward force acting on a body in motion.

- (4) A total of thirteen common misconceptions were identified from the students' responses in UCCMT.

Implications arising from the findings were discussed and specific recommendations were also suggested for future studies.

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