Transfer of Prior Reasoning in Understanding Positron Emission Tomography (PET)*

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Overview

• Teaching activities for Positron Emission Tomography (PET)

• College students prior ideas and their applications

• Helping students activate appropriate ideas

Research Context

• Spring 2006 at Kansas State University

• Teaching interview* of PET learning activities
  - N=16
  - algebra based physics course

• Examine the role of physical models in learning physics of PET

  * Engelhardt et.al.(2004)

Positron Emission Tomography

http://en.wikipedia.org/wiki/Positron_emission_tomography

Physics of PET

Analogy Activity 1

Cart activity
Analogy Activity 2

Influence of Central Tendency

- The center of the circle the origin of light (14/16)
  …I am so used to think that if you are gonna have two points at the end on the circle then obviously their start point is the center…..
- The center of the line the origin of event (12/16)
  …kinda guess where the center is …I said the light source is at the center…I think the light source is at the middle of the line…

Challenging Central Tendency

Factors for Determining Event Location

- ‘Closer is brighter’ (7 out of 11 students)
- ‘Closer is quicker’ (2 out of 11 students)
- ‘Closer is brighter’ (2 out of 11 students)

Effect of Sequencing

- When light activity introduced before cart activity
  - ‘Closer is quicker’ used by (2/11) in light activity
- When cart activity introduced before light activity
  - ‘Closer is quicker’ used by (5/5) in light activity

Conclusion

- Students transfer ideas from prior experience to a new learning situation
- Such transfer may be inappropriate but sometimes very robust
- Students can be helped to trigger and transfer their appropriate prior ideas by using activities in the right order
Thank You!!!

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