Role of Peer Interaction in Scaffolding and Learning Transfer

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Overview

- Models of PET for teaching interview
- Excerpts on our prior study
- Group teaching interview
- Preliminary results

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Model 1

Cart activity

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Model 2

Light activity

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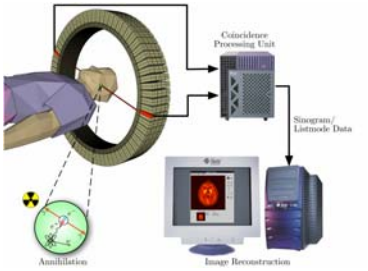
Example of Transfer Problem



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

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Prior Study

- Spring 2006 at Kansas State University
- Teaching interview* of PET learning activities
  - Participant n=16
  - Algebra based physics course
- Examine the role of physical models in learning physics of PET

* Engelhardt et.al.(2004)

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Some Results From the Prior Study

- The center of the circle the origin of light (14/16)

- The center of the line the origin of event (12/16)

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Factors for Determining Event Location

- 'Closer is brighter' (7 out of 11students)
- 'Closer is bigger' (2 out of 11students)
- 'Closer is quicker' (2 out of 11students)

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Current Study

- Fall 2006 at Kansas State University
- Group teaching interview of PET learning activities
  - ❑Group of two =6
  - ❑Group of three =3
  - ❑Algebra based physics course
- Examine the role of group interaction while learning using physical models in learning physics of PET

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Change in Central Tendency

- Center of the circle : the origin of objects
  - We used the term explosion in write up
  - Two of nine groups
- Center of the line : the origin of objects
  - We used the term bits travel in opposite direction
  - Eight of nine groups

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Scaffolding in Determining the Location in Cart Activity

- Individual
  - None -11 students
  - Qualitative -3 students
  - Quantitative -2 students
- Group
  - None-1 group(3 students)
  - Qualitative-3 groups(8students)
  - Quantitative-5groups(11 students)

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Scaffolding in Determining Number and Direction of Gamma Rays

- **Individually**
  - Number of gamma rays 0-1-2-4-6 (14 of15 students)
  - Classical particle collision
  - Took 15-20 minutes to complete the task
- **Group**
  - Number of gamma rays 2-3-4-5 (7 of 8 groups)
  - Classical particle collision
  - Took 2-3 minutes to complete the task

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Idea of Cart Activity in Light Activity

- Light intensity to determine location in light activity
  - 3 students in three different groups
  - 1 changed immediately referring to cart
  - 2 changed due to peer interaction
- Referring directly to cart activity to locate event in light
  - 5 groups immediately referred to cart
  - 4 groups discussed and referred to cart

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Change in Transfer of Learning

- Individual
  - Spontaneous- 4 students
  - Semi-spontaneous -6 students
  - Non-spontaneous -3 students
  - No-transfer -2 students
- Group
  - Spontaneous -7 group (15 students)
  - No- transfer -1group (3 students)

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Conclusion

- Students transfer ideas spontaneously more easily in group
- Qualitative reasoning is enhanced in peer interaction leading to quantitative process
- Peer scaffolding is facilitated by the immediate prior activity

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Thank You!!!

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