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# The Effects of Young Children's Video Monitoring on Young Children's Magnetic Force Concepts

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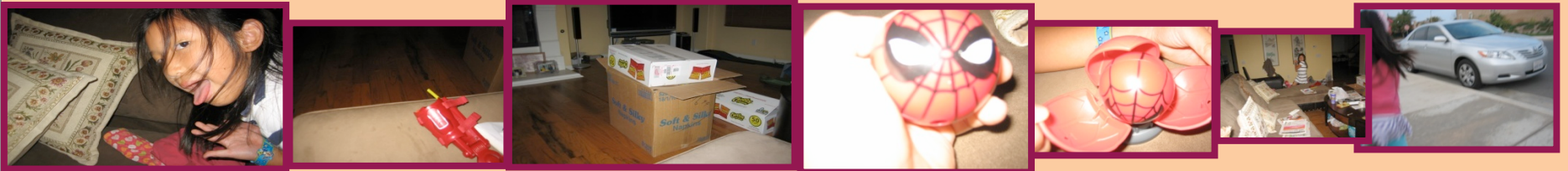
# Video Technology and Young Children

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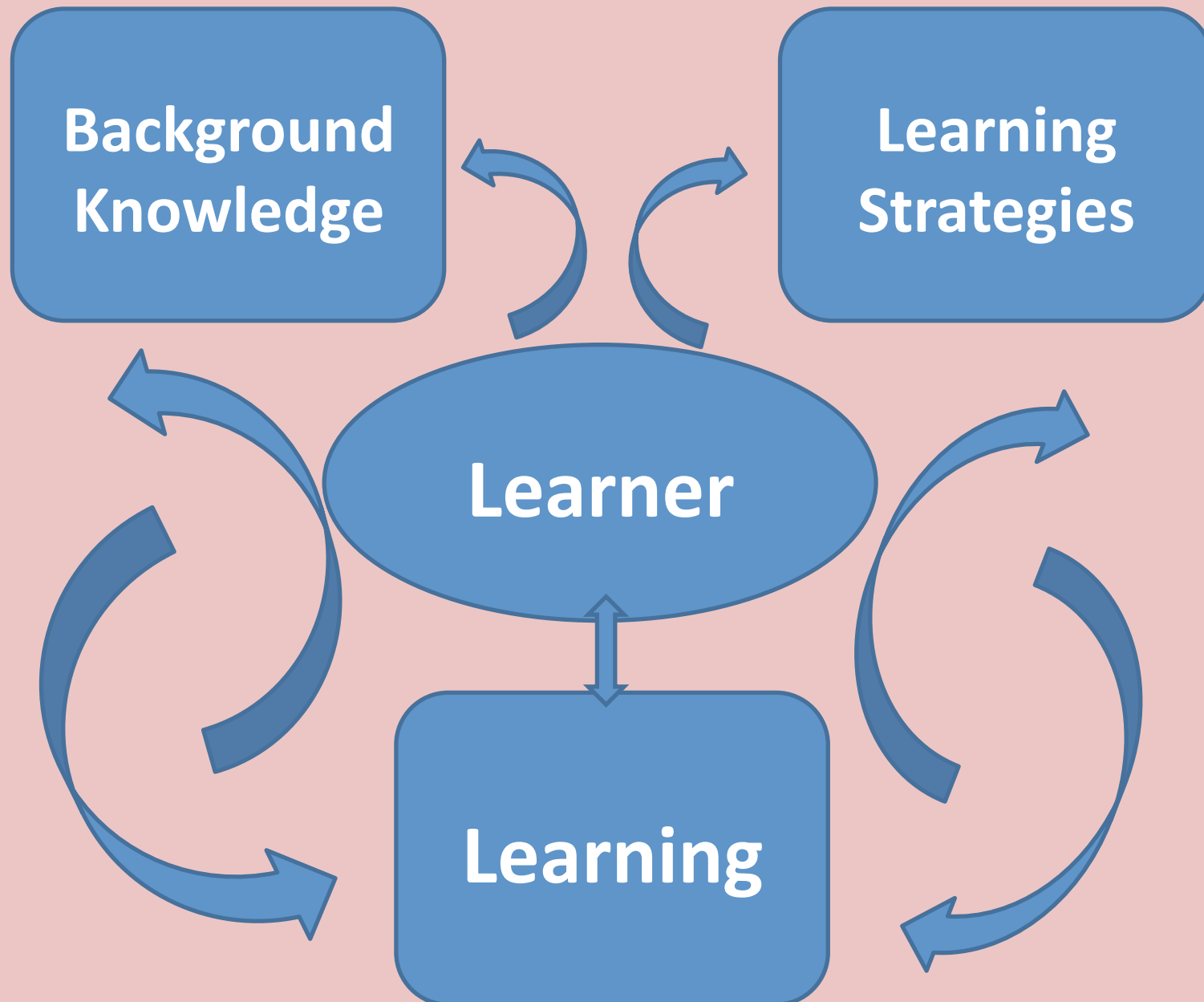
The Effects of Young Children's Video Monitoring  
on Young Children's magnetic force Concepts

Youn Jung Huh (Arizona State University)

Nara Yun (Indiana University, Bloomington)



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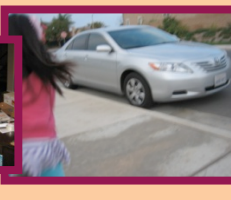
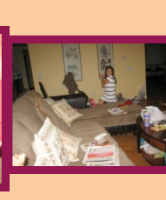
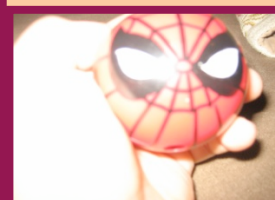
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# Video Technology and Young Children

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## Monitoring

- To find mistakes
- To find new ways
- To check the process



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## Video Technology and Young Children

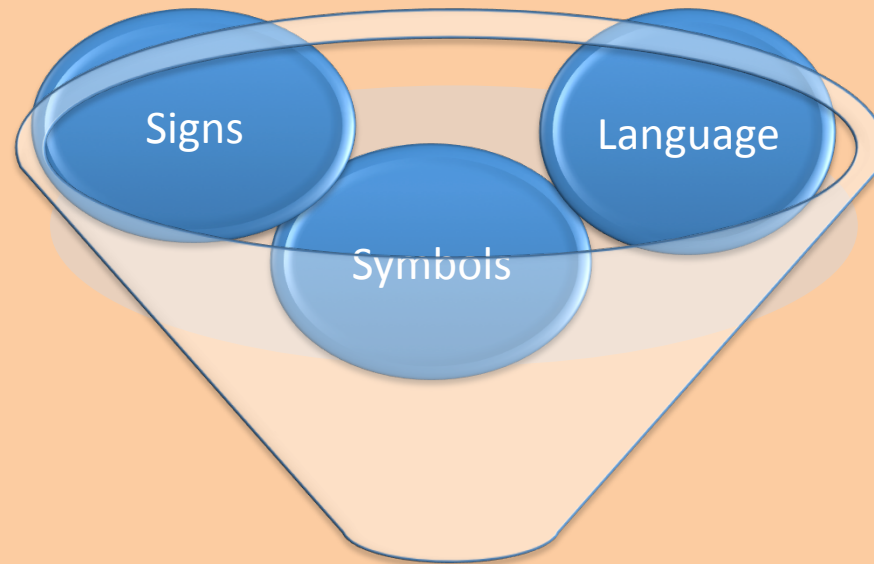
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“young children are quite limited in their knowledge and cognition about cognitive phenomena, or in their metacognition, and do relatively little monitoring of their own memory, comprehension, and other cognitive enterprises.”

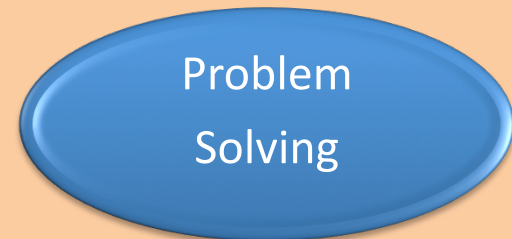
(as cited in Flavell, 1979, p. 906)♪

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Mediation tool




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Donato and McCormick (1994, p.453);

“for Vygotsky, the source of mediation was either a material tool (for example, tying a string around one's finger or using a computer); a system of symbols, notably language; or the behavior of another human being in social interaction.” 

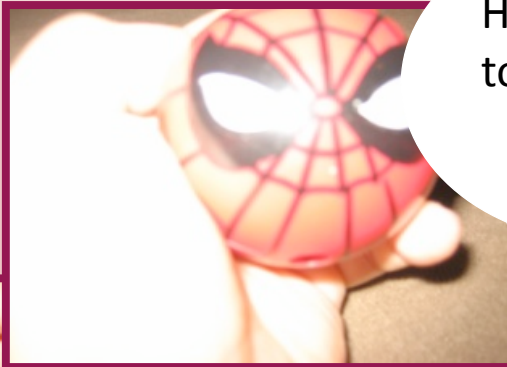


The images produced by a five-year-old boy♪

His older sister♪



His favorite toy♪



Explaining how to use it♪



## Video monitoring for young children

- Forman (1999);

Video revisiting is the strategy to help children to increase both the quantity and the quality of play by providing the moment causing their cognitive confliction

- Hong & Broderick(2003);

The video frames serve as "monitoring tools" for the children's construction of knowledge and their teacher's reflection of the children's learning

## The purpose of the Study

- To reveal the role of video monitoring to develop children's magnetic force concepts

## The purpose of the Study

1. Does video monitoring influence children's concepts of magnetic substance and nonmagnetic substance?
2. Does video monitoring influence children's concepts of magnetic force?
3. Does video monitoring influence children's concepts of magnetic permeability?

# Participants

Video  
monitoring  
group; 25

Comparison  
group; 25


Participants;  
50 four-  
year-olds

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graph TD; A[Video monitoring group; 25] --> C((Participants; 50 four-year-olds)); B[Comparison group; 25] --> C;
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# Materials

- Two bar magnets (one small size and one large size )
- A Magnetic Substance:  
a clip, nail, key, iron ring, iron pin, iron bottle cap.  
and iron tongs,
- Nonmagnetic Substance:  
a piece of aluminum foil, cloth, and paper,  
a coin, lego block, wooden block, acryl box,  
paper box

# Magnetic Force concepts Checklist (Shin & Kwon, 2006)

Session	Sub-Category	Test
Pre-	Magnetic, Nonmagnetic substance	Classifying into two groups -magnetic and nonmagnetic group.
		Reasoning about the classification of magnetic and nonmagnetic group
	Magnetic force (By applying to	Guessing about magnetic force -A researcher asks them if she/he drops a clip to a bar magnet, which part of the magnet the clip will stick to 

# Magnetic Force concepts Checklist

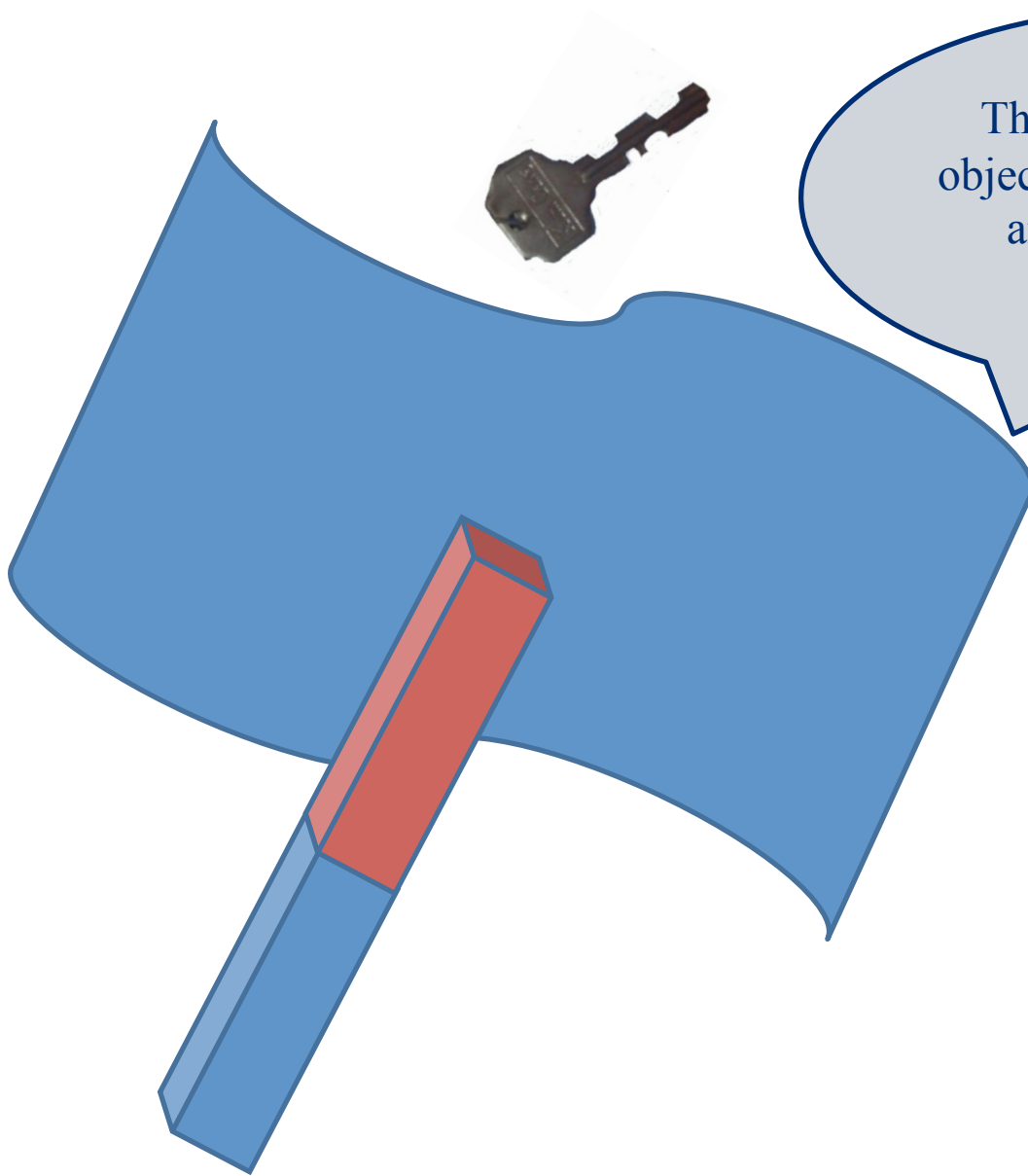
Post-	magnetic and nonmagnetic substance	A researcher suggests that young children classify into two groups -magnetic and nonmagnetic group. (Identical with pre- session)
	(After magnetic activity)	a A researcher asks them why the objects in the group are attached to the magnets or not.
	magnetic force	A researcher puts a key into a lucid PET bottle and then he/she asks them if they make the magnet to adhere to the key, how they apply the magnet to it.





# Magnetic Force concepts Checklist

Post-magnetic permeability (What materials		1. The test of The objects (Penetrated to magnetic power): A researcher let young children to attach a piece of cloth to a bar magnet without holding a piece of cloth. They can use the 15 objects which are used in magnetic and nonmagnetic substance test.
will magnetism pass through)		2. The test of The objects (Not penetrated to magnetic power): A researcher let young children to find how they make the key not to be attached to a bar magnet. They can use the 15 objects.



They can use the 15  
objects used in magnetic  
and nonmagnetic  
substance test.

# Procedures

Experiment group (Video monitoring)		Comparison group (Verbal recalling)	
Stage	Time (min)	Stage	Time (min)
<u>Planning the activity</u> before a magnetic activity	2	<u>Planning the activity</u> before a magnetic activity	2
<u>Exploring the 15 objects and two bar magnets</u>	5	<u>Exploring the 15 objects and two bar magnets</u>	5
<b>Video Monitoring</b>	8	<u>Verbal recalling (Reminding their exploration of the magnets with the objects)</u>	8
<b>Trying an experiment on a magnetic activity</b>	5	<b>Trying an experiment on a magnetic activity</b>	5
<b>Solving problems</b>	10	<b>Solving problems</b>	10
Total	30	Total	30

## RESULTS

The results indicate that the video monitoring had more positive effects than the verbal recalling on children's magnetic force concepts development.

# RESULTS

The findings of the study were as follows:

In the task of magnetic substance and nonmagnetic substance, there was statistically significant difference through video monitoring.

- The education group had a statistically significant higher ascending frequency than the comparison group ( $F(1,50)=38.76, p<.05$ ).
- Moreover, In the task of the scientific explanation about magnetic substance and nonmagnetic substance, the education group had a statistically significant higher ascending frequency than the comparison group ( $F(1, 50)=2.45, p<.05$ ).

In the magnetic force task,

there was statistically significant difference through video monitoring.

- The education group had a statistically significant higher ascending frequency than the comparison group ( $F(1, 50)=1.00, p<.05$ ).

In the magnetic permeability task,

there was statistically significant difference through video monitoring.

- The education group had a statistically significant higher ascending frequency than the comparison group ( $t(48)=4.38, p<.001$ ).

## Conclusion

**Vigotsky** argues that introducing and using instruments cause changes in developments; “It activates a whole series of new functions linked to the use and control of the instrument selected; it replaces and renders useless a considerable number of natural processes, the work of which is developed by the instrument” (as cited in Verillon, 2000, p.4).

**A video technology** is therefore seen one of learning instruments that lead children’s development in terms of providing visual images that stimulate children’s reflective

## Conclusion

**Piaget** (1974b) indicates that reflective thinking can be developed as a child consciously reviews the problem solving process by asking oneself why he/she can complete the task successfully or he/she fail to perform the task.

Video monitoring enables them to keep monitoring not only their external behavior but also their thinking process.



## Implication

This research can be a ground to develop new way of learning through video monitoring in early childhood curriculum.

However, since this research was conducted for short-term period, longitudinal studies are recommended to define how video monitoring affects children's whole developmental areas by analyzing children's discourse generated during video monitoring .

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