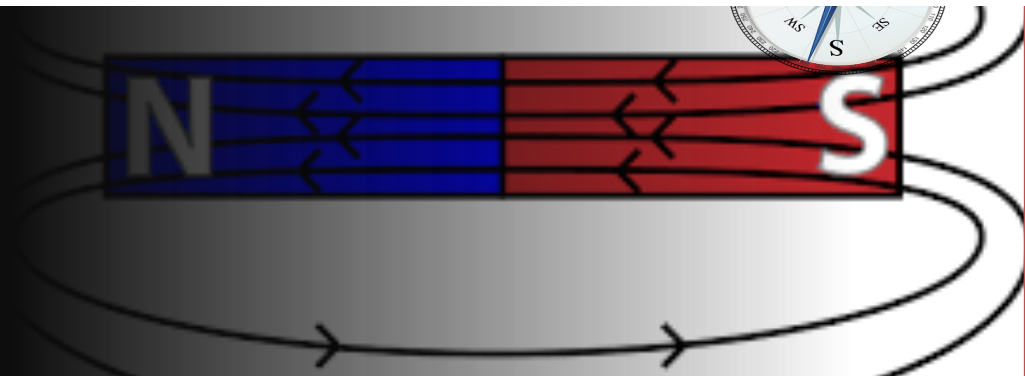




Magnets: Forces & Motion



Engage students in scientific thinking and discovery by experimenting with magnets, forces and motion!



by

Dr. Theresa Vadala



**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

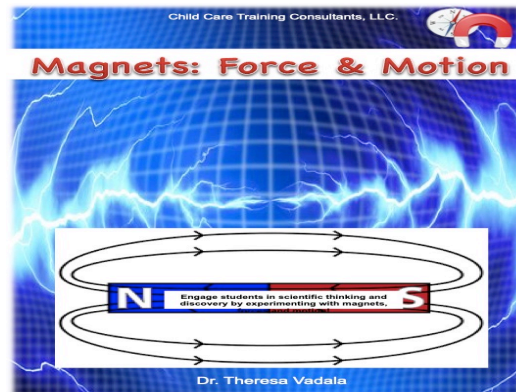
Magnets: Forces & Motion

by

Theresa Vadala, Ed. D

Child Care Training Consultants, LLC

Las Vegas, Nevada 89139



All rights reserved. No part of this manual may be photocopied or reproduced in any form without written permission from the publisher. Moreover, no part of this publication can be stored in a retrieval system, transmitted by any means, recorded or otherwise, without written permission from the publisher.

Limits of Liability and Disclaimer of Warranty

The contents of this training “**Magnets: Forces & Motion**” is for Educational Purposes Only. While every precaution has been taken in preparing this manual, including research, development, and testing, the Author assumes no responsibility for errors or omissions. No liability is assumed by the Author for damages resulting in the use of this information.



**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

<p>CKA4: Environment and Curriculum Title: NV CKA 4.16 Magnets: Forces and Motion</p>	<p>1 Hour</p>	<p>0.1 CEU</p>
--	----------------------	-----------------------



Dr. Theresa Vadala
(Instructor & Curriculum Designer)





**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

**Thank you for choosing
Child Care Training Consultants, LLC.,
for your CDA Training Needs!**

Learning Assessment

Read the material provided, take the 5-10 quiz questions and
complete the training evaluation at the end of the course.

Participants must receive 100% on individual courses to obtain a certificate of completion.

Questions?

We are happy to help.

Support Services:

Please contact us 24/7 at

childcaretrainingconsultants1@gmail.com

Business # 702.837.2434



**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

Child Care Training Consultants LLC., Goal

The goal is to empower educators as they take Child Development Associate (CDA) courses to make a powerful difference in the lives of young children!

Mission Statement

“Child Care Training Consultants, LLC’s is committed to provide research-based professional growth and development training courses primarily focused on the Child Development Associate. The CDA is the nation’s premier credential that is transferable, valid, competency-based and nationally recognized in all 50 states, territories, the District of Columbia, community colleges and the United State Military.

Vision

Child Care Training Consultants, LLC’s vision is to provide the early childhood community with courses based on CDA competency standards to obtain their CDA Credential and assist in reaching their goal as an exceptional early childhood educator to ultimately achieve higher child outcomes.



**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

About the Instructor

Theresa has over 30 years experience in the field of Early Childhood Education. During that time, she served as a Preschool Teacher, Disabilities Coordinator, Program Facilitator, and Director of an Early Childcare Program. She has a Doctoral Degree in Educational Leadership with Specialization in Curriculum and Instructional Design. Theresa is a Professional Growth & Development Trainer and Curriculum Designer and offers web-based courses internationally. She is the Executive Director/Owner of of the training organization Child Care Training Consultants, LLC., (CCTC).



Business Description

Child Care Training Consultants, LLC. (CCTC) is an accredited provider (AP) with the International Association for Continuing Education and Training (IACET) that provides Continuing Education Units (CEU) for adult education nationally. The business is also a recognized training organization with the Council for Professional Recognition, Child Development Associate Council (CDA), National Credentialing Program.



Research

Research studies explores that by examining how lessons that provided Pre-kindergarten students with a range of experiences helped the students develop a functional conception of magnetism—mainly how magnets interact with each other and how they interact with steel objects. The lessons were based on a conceptual model of a magnet as an arrow that is directed from the south pole to the north pole of the magnet.



Needs Analysis



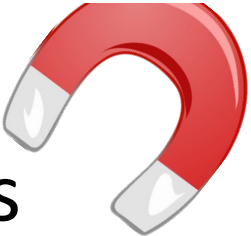
Needs Analysis

Young children enjoy solving problems and exploring the world through science, technology, engineering, and math (STEM). STEM learning can support children's early math development and many other important skills. Students may have been exposed to basic concepts in math and science, but they did not develop a level of mastery necessary to progress to higher levels needed for school readiness.

<https://stem.unm.edu/common/pdfs/stem-gateway-needs-analysis.pdf>



Goal

The goal of this 
training is to provide
educators with STEM
based activities to
incorporate into daily
teaching practices.



Goal

What are STEM based activities?

STEM is an approach to learning and development that integrates the areas of science, technology, engineering and mathematics.

Through STEM, students develop key skills including problem solving.





Purpose



The purpose of this training is to provide educators with ideas for STEM based activities to prepare students for kindergarten readiness. Research shows that incorporating STEM education at a young age can increase academic achievement, persistence and critical thinking (Mader, 2020).



Purpose



The purpose of this training is to provide educators with ideas for STEM based activities to prepare students for kindergarten readiness.



Learning Outcomes

What is a learning outcome?



Learning outcomes are statements that describe the knowledge or skills students should acquire by the end of a particular assignment, class, course, or program, and help students understand why that knowledge and those skills will be useful to them.

Learning outcomes focus on the context and potential applications of knowledge and skills, help students connect learning in various contexts, and help guide assessment and evaluation.



Learning Outcomes



The learning outcomes for participants are to learn STEM-based teaching activities on magnets to implement during daily teaching practices.



Agenda



Agenda

- Part 1: Magnetic Fields
Review
- Part 2: Forces and Motion
Review
- Part 3: Magnet Activities
Review
- Transfer of Learning
Quiz
- Learning Event Evaluation



Objective 1

**Participants will
be able to:**

**Identify North and
South Poles and
Magnetic Fields.**



Part 1: Magnetic Fields



Part 1: Magnetic Field

- What does magnet play teach students?
- Poles: North and South
- Magnetic Fields
- Magnetic & Non-Magnetic Materials Activity
- Review



What does Magnet Play Teach Children?



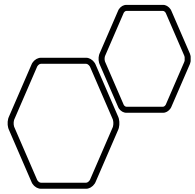
Magnet play increases children's language skills by teaching them new magnet-related vocabulary words, names, and shapes. Magnet play can also help children develop their coordination skills, increase their fine motor skills, and a variety of problem-solving skills.



Vocabulary Words

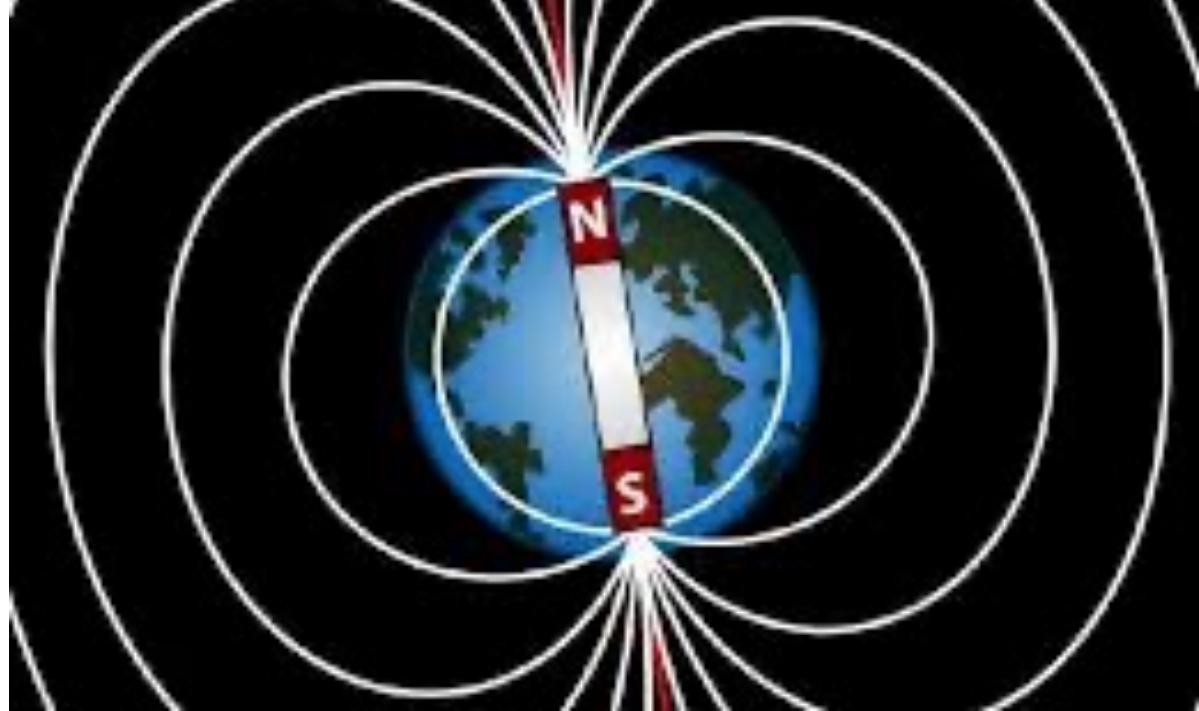


- Compass
- Electrical Charges
- Electromagnet
- Magnetic Force
- Magnetic Poles
- Sequence

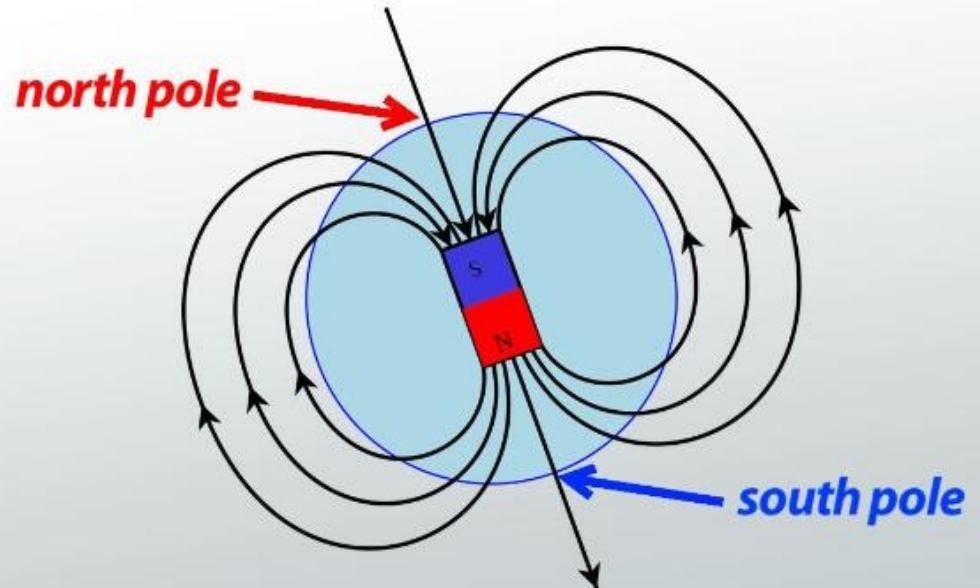


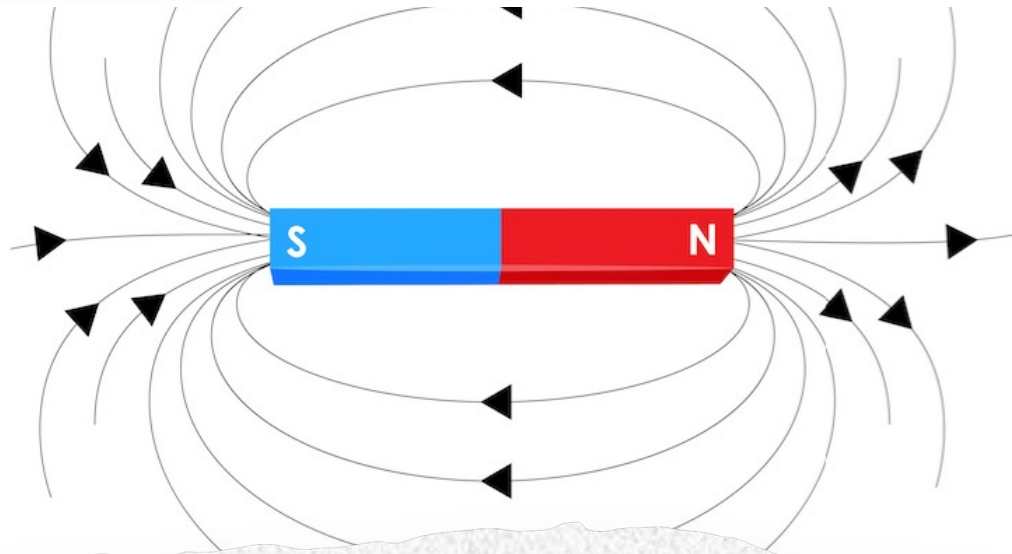
Poles: North and South

Hold up a magnet and tell students that the magnets have two poles – one that attracts and one that repels iron objects. Use the magnet and your objects to demonstrate these forces. Ask your students to define the vocabulary words based on your demonstration.



WHAT ARE MAGNETIC POLES?





Magnetic Fields

The magnetic field is the area around a magnet in which there is magnetic force. Moving electric charges can make magnetic fields.

Experiment with how the magnets interact with each other. Explain that a magnet has two sides, called positive and negative, and that opposites pull together.



Magnetic & Non-Magnetic Materials Activity

The materials which get attracted towards a magnet are magnetic – for example, iron, nickel or cobalt. The materials which are not attracted toward a magnet are non-magnetic materials. Examples of non-magnetic materials include rubber, coins, feather and leather.

Why use an inquiry chart? It fosters critical thinking and strengthens reading skills. It teaches younger students to generate meaningful questions about a topic and learn to organize their writing. Students build upon prior knowledge or thoughts about the topic by sharing interesting facts.



Part 1: Magnetic Field Review



- What does magnet play teach students?
- What are the two magnetic poles called?
- What are two examples of magnetic objects? Non-Magnetic?

Magnet play increases children's language skills by teaching them new magnet-related vocabulary words, names, and shapes. Magnet play can also help children develop their coordination skills, increase their fine motor skills, and a variety of problem-solving skills.



Objective 2
**Participants will
be able to:**



Experiment with
students with
forces and
motion using
magnets.



Part 2: Forces and Motion



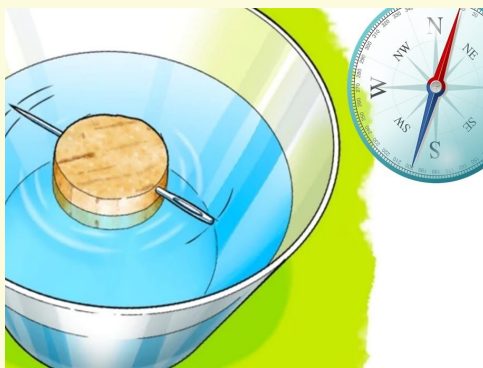
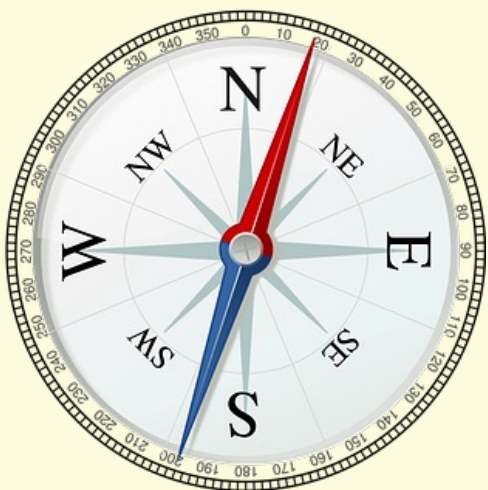
Part 2: Forces and Motion

What Children Learn:

- Make a Compass Activity
- Magnetic & Non-Magnetic Activities
- Electromagnetism Activity
- Review



Make a Compass Activity

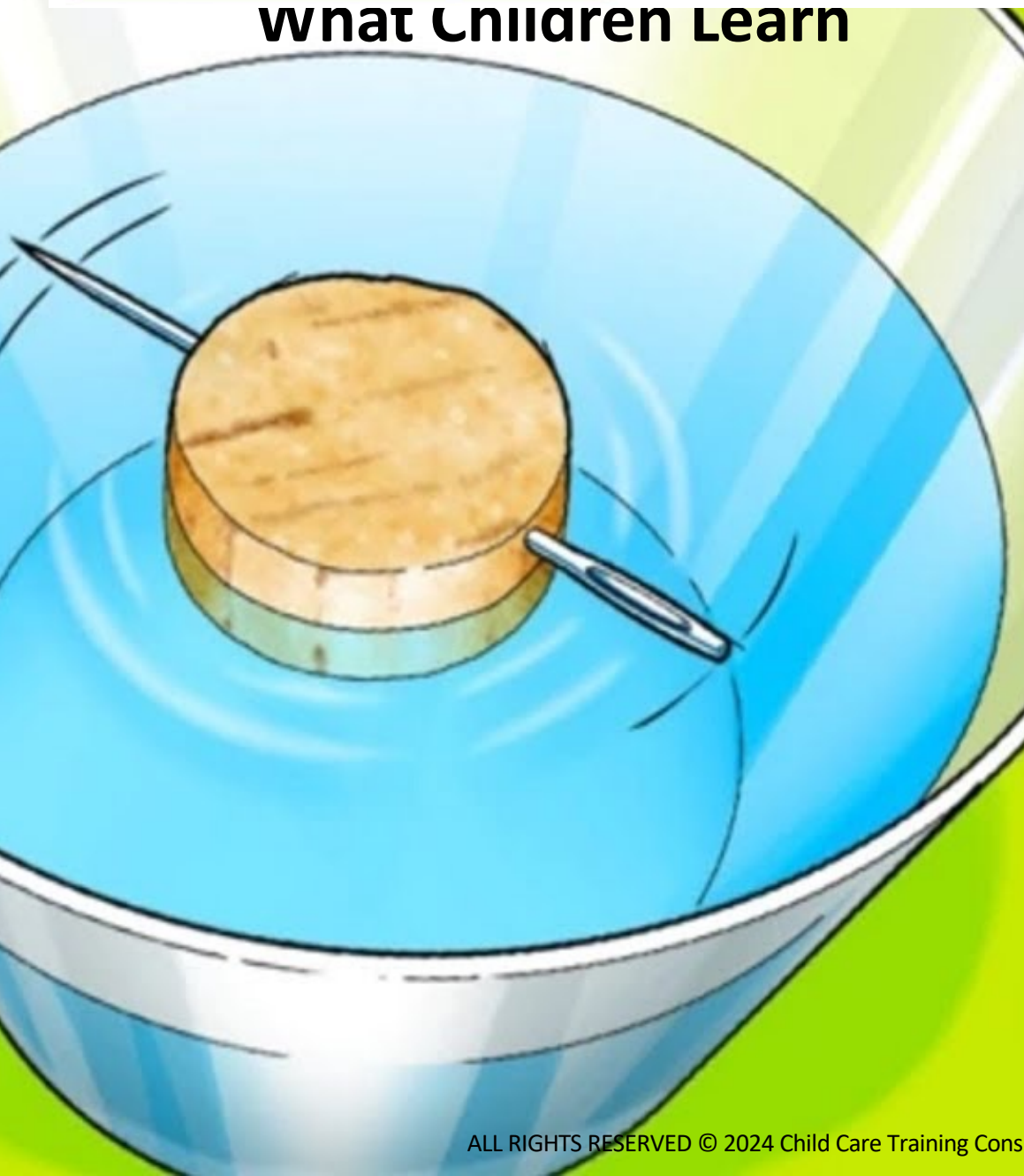


Every magnet has a north and south pole. A compass is small magnet that aligns itself with the north and south poles of the Earth's magnetic field. As the needle is rubbed across the magnet, it becomes magnetized because the electrons within the needle straighten up and align themselves with the magnet. Then the magnetized needle aligns itself with the Earth's magnetic field, when it is placed on top of the water.

Link to Video: <https://youtu.be/yNrpxAv8SHQ>



What Children Learn



Learning how to use a compass helps students navigate on a hike or even while they are on a car trip. Children can learn the basics of maps and the four cardinal directions as you show them how a compass works. Keep it simple. Use a map to show the four cardinal directions. Go outdoors and point to where the compass shows north. Teach students North, South, East, and West.

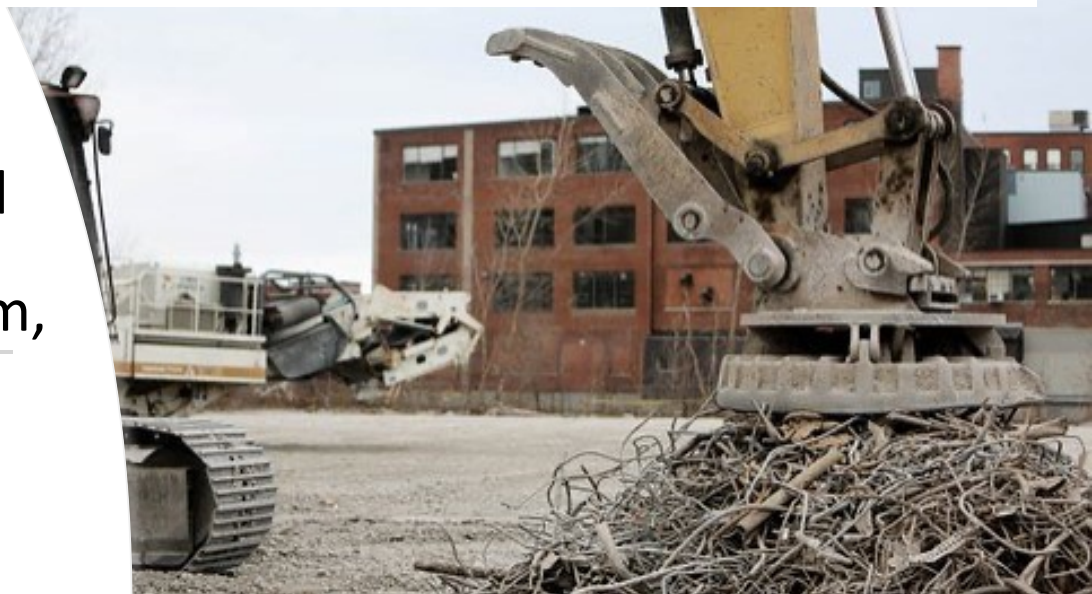


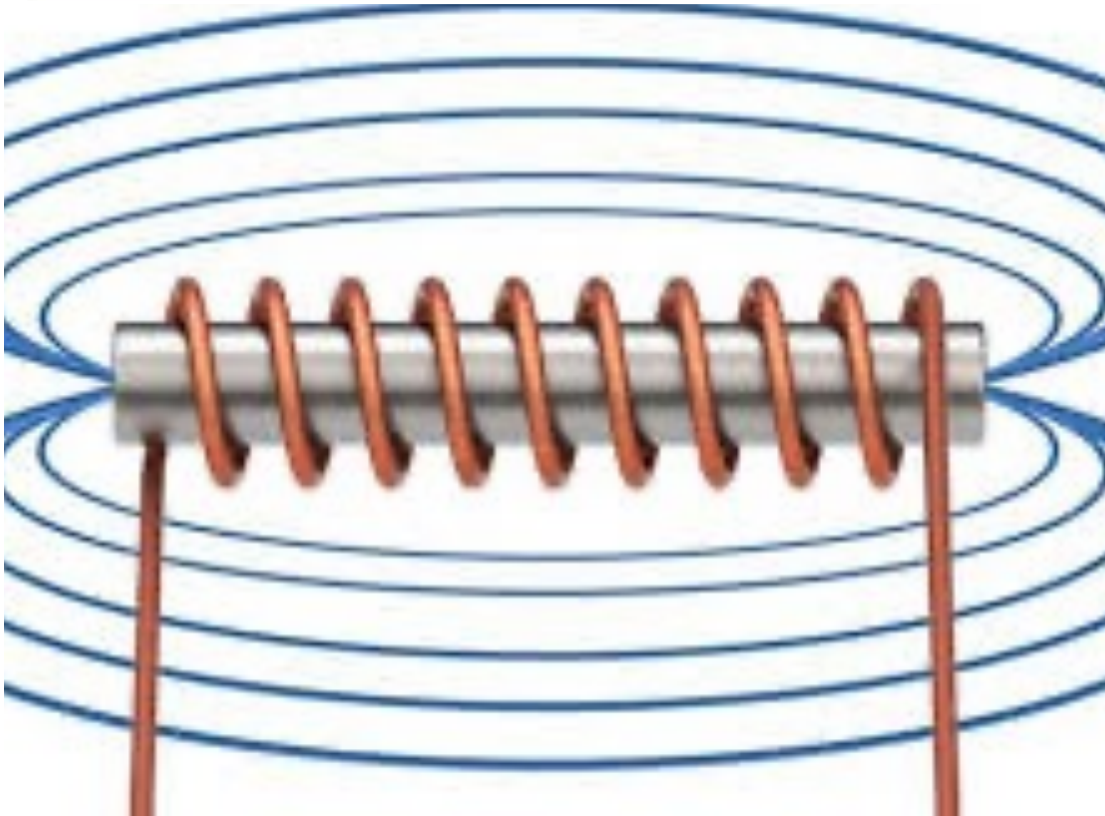
Electromagnet

Watch the video of a junkyard crane lifting cars, moving them, and dropping them in a new location. After the video, students will discuss how they think this works.

Link to Video:

<https://youtu.be/ISmuqLtmuwg>





Electromagnet

Facilitate a discussion and guide the students to realize that the crane is a magnet that is being turned on and off. Watch the video to see how an electromagnet is made.

Link to the video:

<https://youtu.be/cxELqN7wjS0>



Part 2: Forces and Motion Review

What are the four cardinal directions?

What do students learn from using an inquiry chart?

How does an electromagnet work?



Objectives 3

Participants will be able to:

- Engage students in making magnetic activities to use in everyday teaching practices.



Part 3: Magnet Activities



Part 3: Magnet Activities

What Children Learn:

- Race Car Maze Activity
- Paper Plate Maze Activity
- Magnet Discovery Bottles Activity
- Button Sequencing Magnets Activity
- Magnets & Math Activity
- Magnetic I SPY Game
- Review

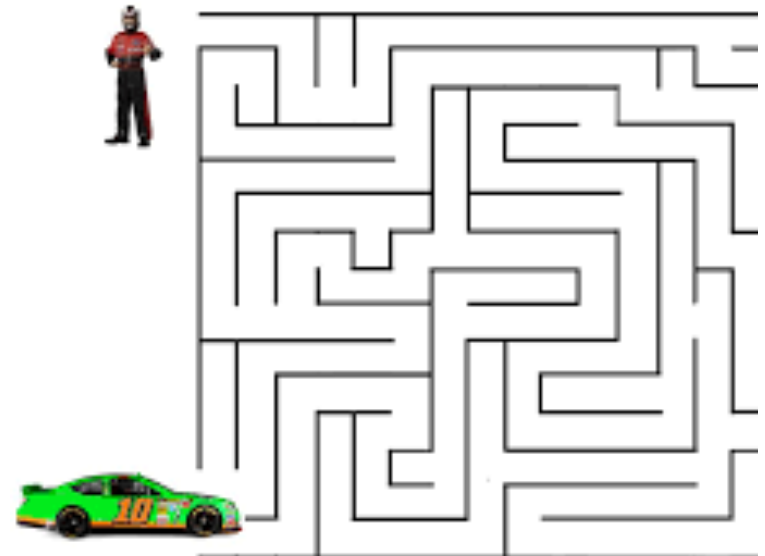


Race Car Maze Magnet Activity

Draw a maze on a thin piece of cardboard such as a cereal box.

Place a small metal car on the maze. Use a magnet on the opposite side of the cardboard and move the car through the maze with the magnetic force.

(Any metal object can be used such as a paper clip)



Magnetic Bottles Activity

Sensory or discovery bottles are a perfect activity for students to observe and record their observations in a journal.

Ask questions and talk about observations with students. Help students learn to think like a scientist and ask them open ended questions to encourage their observation and thinking skills.



Magnetic Color Matching & Sequencing Activity



Sequence structures help students of varying abilities organize information and ideas efficiently. Sequencing is also an important component of problem-solving across the curriculum, including science and social studies. **Activity:** Use buttons with magnets and place on metal cookie sheet. Sort or sequence buttons.





Magnets & Math Activity



Counting is important because the meaning attached to counting is the key conceptual idea on which all other number concepts are based. Students often learn the counting sequence as a rote procedure. They need to learn the meaning of counting by using counting skills in a variety of meaningful situations. **Activity:** Use popsicle sticks or strips of cardboard and add a sticky back magnetic strip. Add numbers. Use paper clips for counting!

Magnetic I SPY Activity

In I SPY, students search for the different objects. This helps build their working memory by remembering what they spied first, second, or third, etc. Make a list of items students find for reference. Then recall.

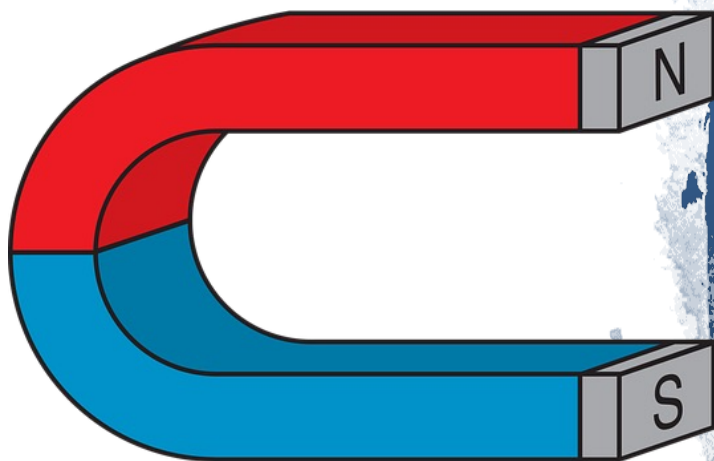
Add magnets to the objects and place on a cookie sheet.





Part 3:

Magnet Review



What do children learn from sensory bottles?

Why is sequencing important for children to learn at a young age?

Why are counting activities important for children to engage in as opposed to only rote procedure?



References



Explain the Stuff (2018). Retrieved from (<https://www.explainthatstuff.com/magnetism.html>)

NAEYC (2018) Retrieved from <https://www.naeyc.org/resources/blog/promoting-childrens-science-learning>

Sciencing (2017). Retrieved from <https://sciencing.com/explain-magnets-work-preschool-children-12118500.html>

Journal of Elementary Science Education, Vol. 19, No. 2 (Fall 2007), pp. 45-58.

©2007 Department of Curriculum and Instruction, College of Education and Human Services, Western Illinois University.



Transfer of Learning

What is Transfer of Learning?



Transfer of learning is an indicator of training effectiveness because it measures the extent to which learning during training is applied on the job.

Successful learning that occurs during a training session does not automatically translate into successful performance in the work environment. If training is successful, then the trainee will perform better in transferring knowledge and skills in the workplace.



Transfer of Learning

Transfer of Learning



Research has shown that what happens before and after training predicts transfer. The effect of activities before training such as supervisor involvement, during training (training feedback and rewards) and after training (supervisor support) on learning transfer were examined. They found that pre-training and post-training activities were more strongly related to the transfer of learning than were activities during training.



Transfer of Learning

How will you transfer learning into your work environment?

Think about strategies or activities that you found of interests.



- How will you use them in the classroom?
- How will you differentiate activities to meet students' needs?
- If you were observed in the classroom, would your supervisor see the connection between the training content and your interactions with students?



**Applying New Knowledge:
Learning & Transfer**

Child Care Training Consultants, LLC

Accredited by International Association for Continuing Education and Training (IACET)

Evaluation



**Thank you for choosing
Child Care Training Consultants, LLC.,
for your Training Needs!**

Learning Assessment:

Learners will be assessed by answering 5-10 questions on a quiz and the evaluation.

Learners must complete the quiz and receive 100% to obtain a certificate of completion with NV Registry Hours and IACET CEUs.

Support Services:

Please contact us 24/7 at
childcaretrainingconsultants1@gmail.com.

Questions? Need Help?
We are happy to help.