Science Concept Planner

Reference materials are used to identify/inform the topic.

Use marshmallows and toothpicks to build a structure. Construct a rolled newspaper building.

Explore straw buildings by stacking cups. Explore building foundations.

Look through books, iPad, and discuss different purposes for buildings. Cut pictures of buildings out of magazines and chart the different purposes.

Discover what happens when a tornado or earthquake strikes a building using a blow dryer and shaky surfaces.

Discuss different architectural elements of buildings. Look for buildings in books and on a walk.

Choose a building to create and draw blueprints. Practice drawing different angles.

Plan what materials are needed. Work to collect materials.

Work together to build the structure they design and plan.

Material Hunt around the school. Rubbings of different materials

Explore what holds materials together. Problem solving how to keep bricks and wood together.

Use wood workshop tools to hammer, saw, drill, nail, and screw.

Use marshmallows and toothpicks to build a structure. Construct a rolled newspaper building.

Walk to campus and look at the different types of buildings. Draw observations.

Discuss different architectural elements of buildings. Look for buildings in books and on a walk.

Plan what types of building children want to build and what the building’s purpose will be. Build in block area. Include different pieces based on the purpose.

Choose a building to create and draw blueprints. Practice drawing different angles.

Plan what materials are needed. Work to collect materials.

Work together to build the structure they design and plan.

Look at building materials under a microscope.

Explore what holds materials together. Problem solving how to keep bricks and wood together.

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Architects

To begin our investigation into buildings the class first explored the meanings of some new words. The first words the teachers wanted the children to understand were architect and construction worker. The dramatic play area was turned into an architect’s office. There were keyboards, pencil, rulers, and clipboards with paper and a big whiteboard with markers. There were also some jackets and safety goggles. The children worked in the office and drew up new buildings. Sometimes the children would take their drawings to the block area which was turned into the construction area. In the construction area there were lots of different types of blocks as well as hard hats, vests and safety goggles.

Standards: Cognitive: Recreates complex ideas, events/situations with personal adaptations, Participates cooperatively in complex pretend play, involving assigned roles and an overall plan. Math: Creates shapes during play by building, drawing, etc. F5; Combines simple shapes to form larger shapes F6. Approaches Towards Learning: Develops, initiates and carries out simple plans to obtain a goal.
Masons

To continue learning about structural design, the students tried their hand at being masons. After looking at lots of brick buildings around campus and in books, the children tried to create a brick wall themselves. The children first used gram crackers and marshmallow fluff to make a wall. The teachers showed the children how to alternate the bricks and make a pattern instead of stacking the crackers on top of one another. After working on a small scale, the children were able to try brick laying in the sandbox. The children used blocks of wood and wet sand as the mortar. The children were very interested in this activity and continued it over a few days. Groups of children worked together to make buildings and walls alternating the wood to make patterns.
Masons

Standards: Cognitive: Solves problems by planning and carrying out a sequence of actions C2, Seeks more than one solution to a question, problem or task C3; Approaches Towards Learning: Develops, initiates and carries out simple plans to obtain a goal A4-5, Uses creative and flexible thinking to solve problems C2; Science: Shows confidence in own abilities and accomplishes routine and familiar tasks independently A10-11; Science: With modeling and support, explores the properties of objects and materials C1.
While learning about forts, the children worked on building together in a new way. The teacher brought out building materials called Crazy Forts. The children used sticks and balls with holes in them to build different 3 dimensional shapes and structures. The children worked to build cubes and other forms. When some of the structures were finished, the children covered their structures with blankets to make forts.

Standards: Math: Creates shapes during play by building, drawing, etc. F5, Combines simple shapes to form larger shapes F6, Demonstrates understanding of the relative position of objects. Approaches Towards Learning: Develops, initiates and carries out simple plans to obtain a goal A4-5. Social and Emotional: Shows confidence in own abilities and accomplish routine and familiar tasks independently A10-11. Cognitive: Solves problems by planning and carrying out a sequence of actions.
Drawing Blueprints

After learning about different types of buildings and materials, the children learned how to build a structurally safe building. Then the children had the opportunity to create their own building. The first part of this process was to draw out the blueprint design for what their building would look like. As the children were drawing their blueprint they also decided what the purpose of their building would be. The children drew out their buildings while the teachers annotated what the purpose and function of their building would be.
Exploring Materials

While learning about buildings, the class wanted to take a look at what buildings are made of. During circle time the children looked through books and discussed what materials are used to create buildings. The children came up with wood, bricks, concrete, glass and metal. To get a better look at these materials, the teacher put them under the microscope and the children drew what they saw. The children also explored these different materials by doing rubbings of them to explore the different textures.

Standards: Science: Makes careful observations A2, Records observations using words, pictures, charts, graphs, etc. A6, 7 With modeling and support, explores the properties of objects and materials C1. Language and Literacy: With modeling and support, uses words acquired through conversations and shared reading A19-20.
To get a better look at different types of buildings, the children went on a field trip to UD’s campus. On the walk the children were able to see some of the different architectural details found on different buildings. The children noticed the columns and arches and domes. The children also looked at the different materials the buildings are made out of such as brick, concrete, wood, metal and glass. The weather was soggy, but the children were too interested to notice. The class went to the law building, Albert Emmanuel, UD Chapel, and the humanities building. At each of the buildings the class stopped and took a few minutes to draw their observations.
Standards: Science: Makes careful observations A2, Records observations using words, pictures, charts, graphs, etc. A6,7; Cognitive: Communicates about past events and anticipates what comes next during familiar routines and experiences A1; With modeling and support remembers and uses information for a variety of purposes A2; Language and Literacy: With modeling and support, uses words acquired through conversations and shared reading A19-20.
Making Cherry Pizza

After collecting cherries from the cherry tree, the Explorer class worked to make “cherry pizza.” The children collected all the cherries from the tree. Then the children helped the teacher pit the cherries using paper clips. Later the children made the dough for the bottom of the pizza and mixed all the ingredients together for the filling. The teacher baked the pizza in the oven, and the children all tried it during afternoon snack. It was very TART!
Marshmallow Building

To better learn about structural design, the children had different opportunities to build with different materials. One of the first materials they built with were different sized marshmallows, toothpicks and skewers. The children worked on creating a tall building with these materials. While making their tall marshmallow building, the children had to problem solve how to make the building so it wouldn’t fall down. The children tried using different sized sticks and marshmallows. The children also tried making different shaped buildings. The class found that triangular shaped buildings seemed to be the sturdiest.

Standards: Math: Creates shapes during play by building, drawing, etc. F5, Combines simple shapes to form larger shapes F6, Cognitive: Solves problems by planning and carrying out a sequence of actions C2, Seeks more than one solution to a question, problem or task C3. Approaches Towards Learning: Uses creative and flexible thinking to solve problems C2, Carries out tasks, activities, projects or experiences from beginning to end B2-4.
Material Hunt

After discussing the materials that make up a building, the class wanted to see what materials are in their school building. The children went on a materials hunt around the school and tallied the different materials they found on their hunt. After the hunt we transferred all the tallies onto a bigger chart and counted how many of each material was found. The children discussed which items they found the most of and the least of.

Standards: Math: Counts to 20 by ones with increasing accuracy A1; Demonstrates one to one correspondence when counting objects up to 10 A4; Collects data by categories to answer simple questions E1; Counts to solve simple addition and subtraction problems with totals smaller than 8, using concrete objects B1-2; Science: Makes careful observations A2; Language and Literacy: With modeling and support, prints letters of own name and other meaningful words with mock letters and some actual letters C3.
Newspaper Buildings

To continue learning about structural design, the class tried their hand at building with rolled newspaper. The children worked to roll up the big pieces of newspaper and tape them. The children then attempted to build with the newspaper rolls by taping the ends together. The class quickly found out this experience required a bit more teacher intervention. The teachers helped to show the children how to make triangles with the newspaper rolls and then connect the big triangles together. The children added more rolls onto the structure and created a large house/fort. The children then climbed in the fort and had fun sitting in their own building they had made.

Standards: Math: Creates shapes during play by building, drawing, etc. F5, Combines simple shapes to form larger shapes F6, Cognitive: Solves problems by planning and carrying out a sequence of actions C2, Seeks more than one solution to a question, problem or task C3. Approaches Towards Learning: Uses creative and flexible thinking to solve problems C2, Carries out tasks, activities, projects or experiences from beginning to end B2-4.
Tornado Strong

After working throughout the week on how to build structurally sound buildings that wouldn’t fall down, the teachers challenged the children. The teachers brought in a blow-dryer and explained to the children that the blow-dryer was going to act like a tornado. The children used some blocks to build towers. After the children created their buildings, they used the blow-dryer on their buildings. Almost all of their buildings were knocked down. The children then had to problem solve how they were going to rebuild their buildings so they wouldn’t fall down. On the second try most of the children’s buildings withstood the tornado.

Standards: Math: Creates shapes during play by building, drawing, etc. F5, Combines simple shapes to form larger shapes F6, Demonstrates understanding of the relative position of objects; Cognitive: Solves problems by planning and carrying out a sequence of actions C2, Seeks more than one solution to a question, problem or task C3; Approaches Towards Learning: Carries out tasks, activities, projects or experiences from beginning to end B2-4. Uses creative and flexible thinking to solve problems C2; Social Emotional: Shows confidence in own abilities and accomplishes routine and familiar tasks independently A10-11.
Wood Working

While talking about architecture and construction, the children had the opportunity to try their hands at woodworking. There were different pieces of wood and lots of wood working tools. The children wore safety goggles and used hammers to pound nails, screwdrivers to twist screws and even a powerless drill to put holes in the wood. The children were able to create different structures with the wood.

Standards: Cognitive: Solves problems by planning and carrying out a sequence of actions C2; Seeks more than one solution to a question, problem or task C3; Approaches Towards Learning: Develops, initiates and carries out simple plans to obtain a goal. A4-5; Uses creative and flexible thinking to solve problems C2; Social and Emotional: Shows confidence in own abilities and accomplishes routine and familiar tasks independently A10-11. Science: With modeling and support, explores the properties of objects and materials C1.