KEVA®

EDUCATOR'S GUIDE

Activities and Lesson Plans for KEVA Planks®

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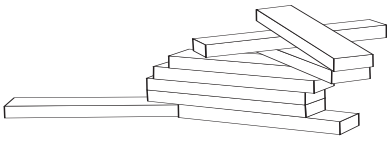


FORWARD

KEVA Planks have diverse educationl benefits.

As I have taken construction planks into classrooms, I have repeatedly seen children respond with enthusiasm to the challenges and activities I have presented to them. KEVA planks are a great equalizer in the classroom. Children of varying abilities can find success quickly. Girls as well as boys seem to think that KEVA planks are "cool". It also seems to grow up with the children; KEVA activities can be challenging to both a five year old and an accomplished architect.

Aside from the benefits of building creatively with KEVA Planks, they are also a great tool for meeting specific educational goals. In social studies, building activities can be tailored to match the culture or society that you are studying. The uniformity of the planks lends itself to numerous math and science applications. The versatility of KEVA planks make them an ideal tool for imaginative activities in art and language arts. It gently nudges artistic minds toward science, and motivates the scientific, mathematically minded students to think more artistically.

These lesson plans and activities were developed during the course of conducting workshops in schools, children's museums, and science museums. These sessions are designed to transform a wide variety of topics into kinesthetic learning adventures. Each lesson plan was written to support the particular learning objectives of the teacher.

The lessons in this book are arranged in order of increasing complexity for each section. However, many of the ideas presented throughout this book can be modified in part or in whole to use for younger or older students.

I hope you will enjoy the activities in this book. I know you will find KEVA Planks to be a wonderful addition to your classroom.

Jane Fowler
Teacher and Educational Consultant

KEVA® Planks are great for:

Constructing simple and complex designs, for builders of all ages.

Making history come alive by building pyramids, castles, plantations, cityscapes, boats, bridges, towers and more.

Creating beautiful wooden sculptures. (You may want to use a camera to capture these masterpieces.)

Using as manipulatives for counting.

Teaching units of measurement. KEVA Planks' uniformity can be used as measurement standards in 1, 2, or 3 dimensions.

Teaching concepts of economics such as scarcity, natural resources, and human resources.

Prompting group discussion and cooperation. Build a world together: plan, build, and present.

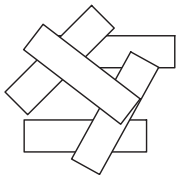
Making mazes and amazing patterns.

Allowing a child to solve 3-D problems.

Teaching principles of cantilever and balance.

Extending literature into the classroom. Recreate exotic or familiar settings from great stories.

Fostering creativity and imagination. The simplicity and uniformity of KEVA Planks allows limitless possibilities in construction!



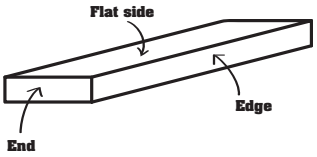
For information on KEVA and Planks workshops, visit www.KEVAplanks.com

Basic Instructions for Building

The following is a list of general tips that will be helpful for both you and your students. Everything mentioned could be discovered by a child if they are given time to experiment, but offering a few tips will help students to a good start. This list will also help to establish some basic terminology in building that will be helpful when using with the rest of the lesson plans in this book.

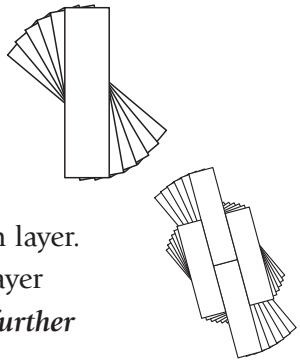
1. **It is best to build on a floor rather than a table, which can be easily knocked.** If the surface of your floor is uneven you can create an even surface by laying planks flat, side by side, as a building platform.

2. **There are three ways to stack KEVA planks.** In this book they will be referred to as: 1) Flat side 2) Edge 3) End

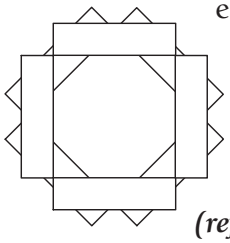


3. **You can also build by leaning or angling the KEVA planks.** Although this method will not bear weight unless heavily braced, it can be used effectively as accent elements, especially for roofs. *(refer to page 2 of the KEVA Guide Book)*

4. **Spirals.** Spirals make beautiful accents and are easy to construct. Begin by laying a plank flat. Lay another plank flat directly on top of the first plank, but offset a tiny bit (about 10 degrees). Be sure that your spacing is the same at each end of the planks so your spiral will stay centered. Continue this process to create a spiral. Larger and more intricate spirals can be made with two, three or four planks on each layer. The basic steps are the same. Begin with one flat layer. Line up the next layer exactly, with a slight twist. *(refer to page 18 in the KEVA Guide Book for further instruction)*



5. **Bowls, Domes and Globes.** Start with a square, hexagon, octagon or larger closed figure built by laying the KEVA Planks flat in two rows, the second bisecting the first. Then, with each successive layer, place each plank a small (5mm) step outward. With each layer the figure will have a greater outer diameter. Eventually you will find you cannot move out any farther or the piece will topple. You may now build straight up or begin placing the planks a small step inward to create a dome. The key to this type of construction is using small steps. *(refer to photo on page 19 of the KEVA Guide Book)*



6. **Angled or Zigzag Towers.** These towers can be built by laying the planks flat or on edge. From your base, offset each successive layer by a small amount (several mm) in one direction. After several layers (4–6), before the tower begins to become unstable, offset the next 4-6 layers by several mm each in the opposite direction. This can be continued for several angles using decreasing numbers of layers before the tower loses its stability.

7. **Bridges and Spans.** Start with two or more pedestals, spaced two to three plank lengths apart. Build the pedestals first, using any combination of flat, edge or end construction. The pedestals can be short or tall, narrow or large. After constructing the pedestals, use cantilever techniques *(see page 17 in the Mathematics and Science section of this book)* to span the distances between the pedestals using flat or edge construction. After practicing several times, you will be able to get the planks to meet in the middle making a perfect fit for whatever span design you are constructing. As with other cantilever constructions, several layers of planks built on top of the spans above and between the pedestals will increase the stability of the entire structure. Once the structure is secured in this manner, it can support the weight of houses, trains or other creations built on the span. ***(example span shown on page 3 of the KEVA Guide Book)***

INCENTIVES AND REWARD SYSTEMS

KEVA can be used as an excellent positive reinforcement tool. If you have a reward system in use in your classroom, consider using KEVA as a part of it. For a certain number of points, a child could either earn minutes of building time during their free time or they could earn a certain number of KEVA with which to build. A dedicated builder would be motivated to acquire as many blocks for his daily or weekly building time as possible.

TIPS TO CUSTOMIZE ACTIVITIES

Most of the activities in this book can be easily modified by adjusting the number of planks that are used. If fewer planks are used, the activity will be take less time and usually will be easier. Adjust every activity according to the number of planks you have, the number of students, the skill level or experience, the amount of time you have and your learning objectives.

STUDENTS TEACHING STUDENTS

Students will observe the innovations of other builders and develop more and more construction techniques. Over time, you will see more complex structures being built because of the shared knowledge base. It is fascinating to watch the progression of innovation in a classroom. It is important to recognize and praise the construction accomplishments of students.

Team Building and Incentives

KEVA Planks are a great resource to have in the classroom for team-building activities. While working together on creative and challenging assignments, students will learn cooperation and communication skills. KEVA challenges can be used to boost self-confidence, as well. Most of all, KEVA planks are a fun way to bring students together in mind-stretching activities.

CHALLENGES AND TEAM BUILDING

Here are some quick challenges that will require students to use creativity and coordination. They can be given to individuals or to small groups. Many of these activities work well as team-building exercises. Students who work together without arguing will be more successful than the students who do not. Camaraderie is also established as groups plan together and successfully complete their goals. ***(See many other challenges on page 18 of the KEVA Guide Book).***

1. **Build the Tallest Tower (with a limited number of blocks).** For this activity you specify the amount of blocks each student or group will be given — 50 to 200 planks can be used depending on the age of the students and the time limit. Have the students count out the amount. In a very competitive crowd you can then have the students switch piles of KEVA and recount their planks. The student or group that can build the tallest tower with a set amount of planks would win the challenge. You can do this activity with a time limit or without. With a time limit, you will be emphasizing speed. Without a time limit, you will be emphasizing skill in building techniques.

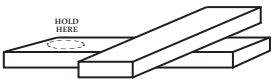
2. **Build the Widest Bridge Span.** Have the students build two columns and challenge them to create the longest span between the columns without a support beneath it. For this activity students will need to have equal number of KEVA planks — 50 to 200 planks can be used depending on the age of the students and the time limit. Have the students count out the amount. Again, in a very competitive crowd you can then have the students switch piles of KEVA and recount their planks. You can do this activity with a time limit or without. With a time limit, you will be emphasizing speed. Without a time limit, you will be emphasizing skill in building techniques.

3. **A Quick, Warm-up Activity.** Ask the students to build a tower taller than themselves in five minutes. 50 to 100 planks will be enough for each student if they are brave and skilled enough to build with the planks on the end.

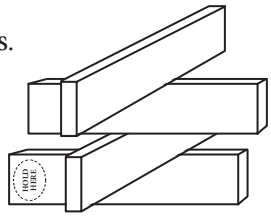
4. **Build a Dome.** Ask the students to build a dome which encloses an object. If you have access to a lot of KEVA Planks, you can have a group of students build a dome which encloses a student. The captured student will have to break out after the building is completed.

5. **KEVA Topple.** Have students build a tall tower alternating end construction and flat or edge construction. After the tower is four feet high or higher, students can see if they can carefully tap away some of the lower planks. The taller the tower the easier this is to do without toppling your tower. Students can experiment to discover how tall the tower must be, and they can come up with a theory as to why this works.

6. **KEVA Relay.** This activity emphasizes balancing skills using KEVA planks. Have the students hold a KEVA plank by its end, flat side up. Balance another plank on top of this one on its flat side or edge. You can begin your relay race from this point or from the point of picking up the plank. The competitors will need to walk a short distance as they keep their planks balanced. If they drop their planks they must rebalance them before they continue.



7. **Balancing Act.** This activity emphasizes balancing skills using KEVA planks. Have the students hold a KEVA plank by its end, flat side up. Balance another plank on top of this one on its flat side. The students can now attempt to add more planks to their stack, all the while holding only one plank by its end. Students can compete against one another but time should not be a factor because this is a slow and steady activity, which takes concentration. You can make this a much harder activity by turning the KEVA planks on their edge. To balance three planks on edge is very hard and six is an international record!



8. **KEVA Mazes.** Use KEVA Planks to build 3-D mazes on the floor of your classroom. This can be done by laying planks flat or on their edge. After one student or group of students have constructed a maze, other students can try to solve the maze using a toy car or plastic figure. Challenge mazes can also be made in the shape of familiar objects.

9. **Tower Relay.** Give each team 200 KEVA Planks. Have the students count out the exact amount, opposite teams can verify the counting. The relay will consist of each team building a tower of any shape with their planks. Once their tower is completed using all 200 planks, they will dismantle it without allowing it to topple and reassemble it on the opposite side of the room. They may use only their hands to carry the planks. No shirts can be used as

buckets and no pinning planks against their bodies. The first team to complete the second tower is the winner. The children will be most successful if they work as a team to build, disassemble and carry the KEVA Planks. You may want to allow time for the children to discuss the division of labor before they begin or you may wish for them to discover this along the way. A variation of this relay can be done by not allowing any talking.

10. **Bridge Relay.** Give each team 200 KEVA Planks. Have the students count out the exact amount, opposite teams can verify the counting. The relay will consist of each team building a bridge of any shape with their planks. The bridge must span at least three columns. Once their bridge is completed using all 200 planks, they will dismantle it without allowing it to topple and reassemble it on the opposite side of the room. They may use only their hands to carry the planks. No shirts can be used as buckets and no pinning planks against their bodies. The first team to complete the second bridge is the winner. The children will be most successful if they work as a team to build, disassemble and carry the KEVA Planks. You may want to allow time for the children to discuss the division of labor before they begin or you may wish for them to discover this along the way. A variation of this relay can be done by not allowing any talking.

11. **Interconnected Building.** This can be done with 5 to 30 children. Each student will need about 200 KEVA planks. Have the students form a circle and then sit down with their plank piles. Students should work on the outside of the circle facing inward. Students will be building a tower 6 to 12 inches high. You must determine the height beforehand to ensure uniformity. The easiest thing to do is to build the towers all together as a group to insure the exact height. As one person builds have him call out the directions for each row. *(For example: Row #1 = two planks laid flat, parallel to one another; Row #2 = two planks laid on edge, perpendicular to Row #1.)* These structures should be no more than two plank lengths apart. After this is completed have the students bridge the towers — each student working in both directions to meet his neighbors in the middle. The spans could be made in various ways or a uniform method could be suggested. ***(see page 21 of the KEVA Guide Book)***

For Young Children

FOLLOW THE LEADER: GUIDED BUILDING

For young children or low skill level students, try a guided building activity. The following is an example of a progression of activities that could be done one-on-one or with a room full of students. You can build and imagine right along with them. Emphasize verbal or visual clues as needed or according to your objectives. Give students the chance to respond first. However, it they do not understand your verbal instruction, a glimpse at your moves may be all that is needed. USE YOUR OWN IMAGINATION. Try adding a story as you build and allow the children to add to the story. This is so adaptable, you can use it to reinforce virtually any learning objective.

Let's do it. You could read this out loud to students but it is better if you go with the flow.

How many sides does a triangle have? Can you make a triangle? Show me three different ways you could make a triangle. Show me three more ways to make a triangle.
See if you can make the number by laying planks flat on the table. Make three stacks of three. Without counting them, do you know how many planks are in two piles of three?

How many sides does a square have? Could you show me a square using four planks? Show me a square using 8 planks. Add four layers to your square. Lets pretend this is a house. ***(See page 23 of the KEVA Guide Book for a simple house. The roof can be flat for more simplicity.)*** Who's house should it be? Let's make another house of a friend. Make a road or a sidewalk so the friends can easily visit each other.

Let's make a pond that they could fish in. *(make an irregular shaped figure flat on the floor or table)*

Do you know how to make a tree or a bush? ***(See page 22 of the KEVA Guide Book. A bush is just the top part of the tree.)*** Make a bush that is exactly seven planks high. Make a bush that is 12 planks high.

Make a road or sidewalk leading somewhere. Let's put another building by the road. What should it be? *(another friend's house? grocery store? restaurant?)*

Let's make a tall building.

What else would you like to make? …And you are on your way. Sometimes let a student lead in a *Follow the Leader* type activity.