

Appendix F

Pop-ups Created by User Test Subjects

Photos of all the pop-ups made in user testing are shown in this appendix, as well as a short summary of each user test session. These are chronologically by child and show the development of their pop-up making abilities. See Chapter 6 for descriptions of the methods and analysis of the results, as well as Appendix D for a complete list of books, tools and materials available to the children.

F.1 Daisy

Daisy was 12 when she started user testing, and had been in the 6th grade the previous year. She liked middle school and was fond of math and language arts (although she indicated she liked reading but not writing.) She did crafts, and was currently working on making a dollhouse—making the furniture out of wood. Daisy said she liked to draw, especially imaginary creatures. She was in summer camp, and doing a lot of outdoor activities. She used the computer occasionally at home for games.

During Daisy's first session, we talked about her and about pop-ups, and she looked at the three sample books and talked about them. She then started experimenting with the Popup Workshop. She used a lot of elements at random, and did not print a pop-up, but she got to see the action of all the controls. (Session 1 date: 7/03/06, 35 minutes)

In her second session, Daisy used non-applied structures to make an "alien" design. She used the craft knife to cut it out. It had a lot of small structures, and took some time to fold.

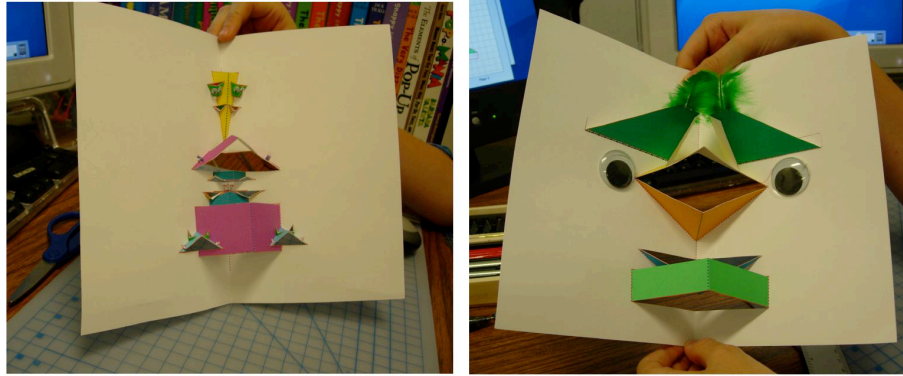


Figure F.1: Daisy session 2: Two abstract figures, an alien and a bird.

She added googly eyes to it. She then made a bird. This also included two v-folds, and she made larger structures that were easier to cut and fold. This was decorated with googly eyes and feathers. She then spent some time looking at several pop-up books, talking about how they were made. The two pop-ups created in this session are shown in Figure F.1. (Session 2 date: 7/11/06, 116 minutes)

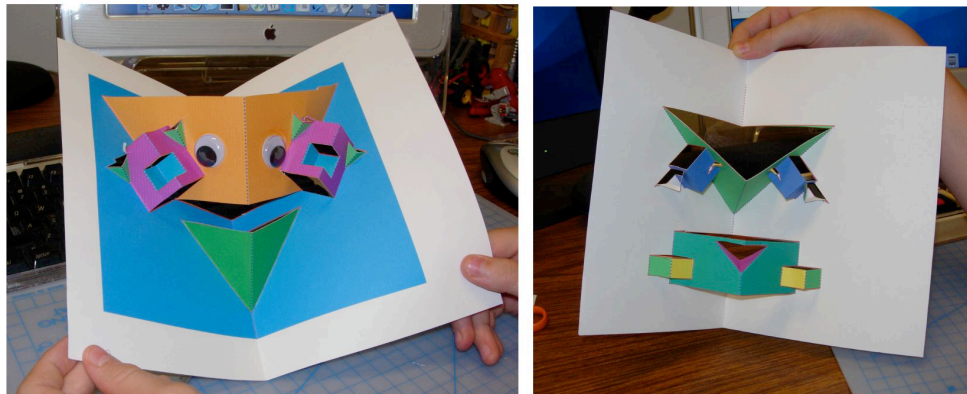


Figure F.2: Daisy session 3: Two abstract figures.

In session 3, Daisy built 2 pop-ups, and a third which was not decorated until session 7. All three of these pop-ups arose from discussions of the features of the program, in particular the replication button, the difference between tents and steps, and the difference between putting

elements on the center fold of another element, and putting them on the outer folds. She also spent some time in looking at pop-up books after finishing her session at the computer. The researcher suggested that she might want to do an illustration of a story, and to think about that for the next session. The two completed pop-ups from this session are shown in Figure F.2 (although the first pop-up is also shown in Figure F.6 after yarn was added.) Daisy also completed cutting, folding, and gluing on the first pop-up shown in Figure F.6, but did not add decoration until session 7. (Session 3 date: 7/18/06, 113 minutes)

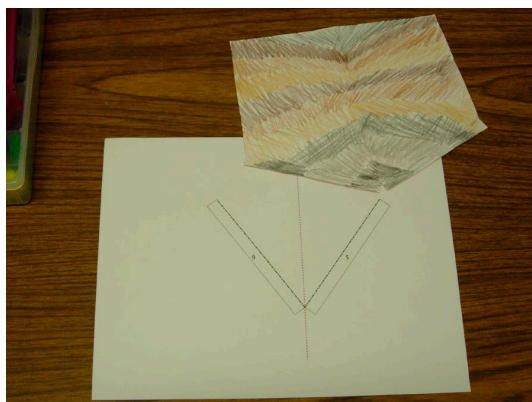


Figure F.3: Daisy session 4: Beginning the owl.

Since the suggestion had been made during the last session about illustrating a story, in session 4 Daisy came with a book that she was reading, *The Capture* [65]. The characters in the book are owls, and Daisy wanted to make an owl pop-up. She looked at several pop-up books with birds, and liked the toucan in *The Very Lazy Lion*. This became her model. This pop-up uses a v-fold for the bird's body. Daisy made a v-fold on the computer and experimented with getting the v-fold to slant the way she wanted it. She printed it, and discarded the base, choosing to use a larger base made of two sheets of scrapbooking paper. (Because she arranged the v-fold on the new base later to suit, the v-fold slanted more in the final owl.) She also drew and cut out a head, and colored the body. The body and original base are shown in Figure F.3. (Session 4 date: 8/02/06, 52 minutes)

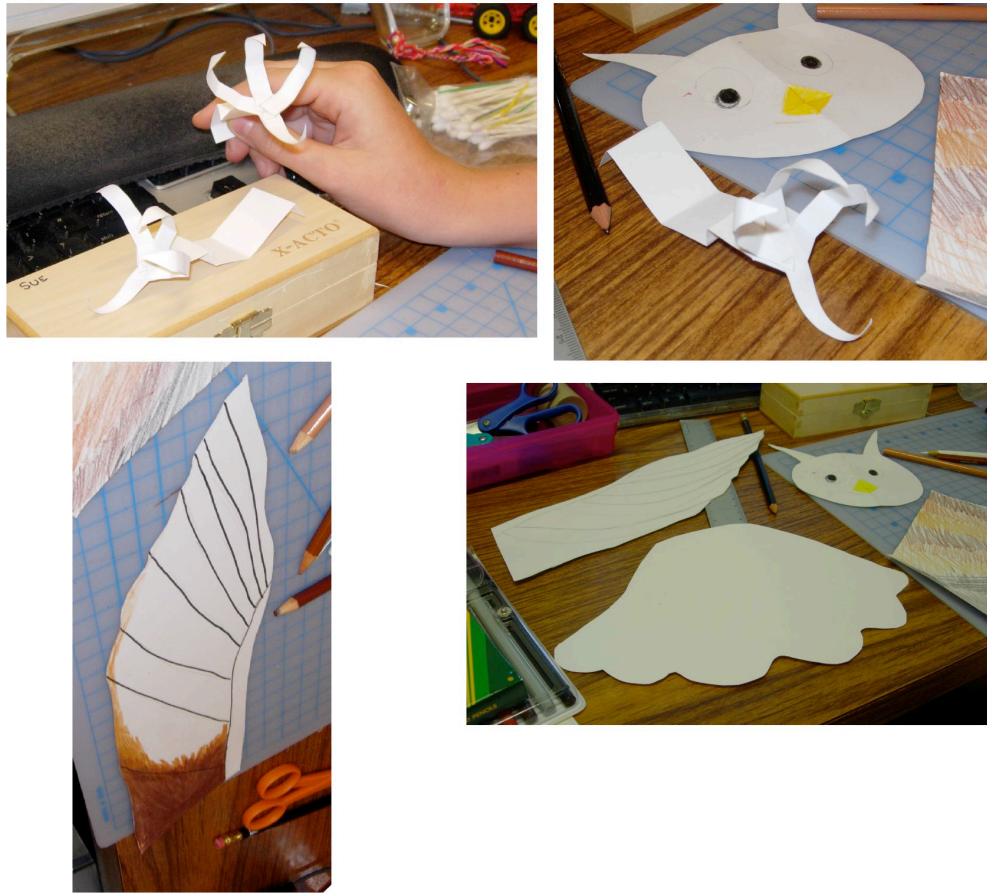


Figure F.4: Daisy session 5: Details of the owl's talons, wing being colored, and the head, wing and tail sections.

In session 5, Daisy added ears and a beak to the owl's head, and cut out pieces for the wings and tail. Most of the second half of the session was spent in making the legs and talons for the owl. These are not foldable, the resulting owl is more a paper sculpture than a pop-up, although without the feet it will fold. During most of this session, Daisy used pictures of owls on the web to refine her design. By the end of the session, all of the parts of the owl were cut out. Various pieces of the owl are shown in Figure F.4. (Session 5 date: 8/24/06, 104 minutes)

Most of session 6 was spent in coloring the owl which Daisy then assembled. The feet were attached with double-sided tape so that they could be detached and the owl folded when it



Figure F.5: Daisy session 6: Putting the owl together, and the finished owl, both sitting on the table, and as a viewer would see it, from below, when it is on her wall.

was moved. (This was a concern both for taking it home, and because Daisy's family was moving overseas the next week.) The finished owl is quite large—the background is two sheets of 12" x 12" scrapbooking paper glued together, so it is very nearly 2 feet in width. Daisy said that she wanted to put it on the wall of her bedroom. An early test to see how things fit, and the finished owl are shown in Figure F.5. The owl is also shown as it would appear from below after it is hung on her wall. (Session 6 date: 9/28/06, 91 minutes)

In her final session, Daisy started by further decorating two pop-ups built in session 3. She had wanted to put yarn on them at that time, and the yarn was now available. We talked about the program and looked at the sample books. Finally, Daisy made a quick abstract design on the



Figure F.6: Daisy session 7: An abstract face which was built in session 3, but not decorated until session 7, adding yarn to one pop-up produced in session 3 (shown without yarn in Figure F.2), and an abstract design.

computer. She started to do the cuts and folds, but decided that something needed to be changed. She changed it, reprinted, and finished the pop-up. (This was an advantage with the program.) The two popups built in session 3 and further decorated in this session, and a final abstract design are shown in Figure F.6. (Session 7 date: 9/29/06, 52 minutes)

F.2 Ursula

Ursula was 6 years old when she started the testing. She had completed kindergarten and was going to start first grade that fall. She had done a lot of paper construction before she started; she liked to build scenes out of paper and had made a large paper unicorn. Ursula was very quiet and shy.

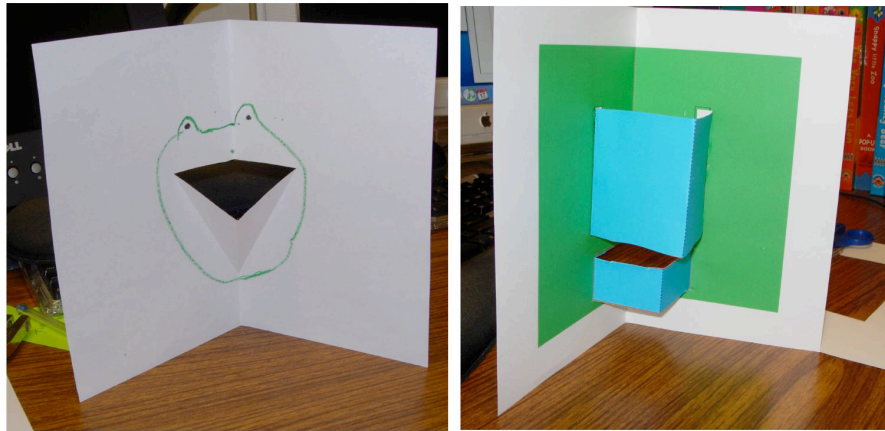


Figure F.7: Ursula session 1: A frog and blue boxes

In her first session, Ursula mentioned that a friend made a pop-up frog, but she did not know how to make one herself. Knowing that the beak can be, and often is, used to make a frog mouth, the researcher made the cut and folds for a beak by hand, showing her how it worked. Ursula drew the frog. She also mentioned that she wanted to make a book about a bunny. After the preliminary questions and looking at the sample pop-ups, the researcher started the program and asked if she would like to play around with it or get a demonstration. She wanted the demonstration, but most of all she wanted to make a pop-up. The researcher made several figures, changed them, erased them, showing her the program. At one point, 2 boxes (a tent and a step) were on the screen and Ursula wanted to print it. She colored the boxes using the program; it was printed and she and the researcher constructed the two boxes. She said that next time she wanted to make a bunny (although whether as part of the book or as a separate pop-up was not clear.) The

frog and boxes pop-ups are shown in Figure F.7. (Session 1 date: 7/7/06, 49 minutes)



Figure F.8: Ursula session 2: Bunny's picnic. Front and top views

In her second session, Ursula wanted to make a bunny, and had a story to go with the bunny book she wanted to make. (The bunny has a picnic with his friends; they go swimming, then go to the airport and fly to New Jersey, where they go to the beach.) She elected to play with the program some more to get ideas. She was shown change (on a v-fold), and delete. The researcher had her add some steps and beaks to the side of a step using replicate. She didn't want to color it, and had it printed. A v-fold was suggested for the bunny and she agreed. She drew a v-fold and she and the researcher changed it. She tried some drawn lines but didn't like them. She accidentally closed the program, and made the v-fold again. She made it bigger, printed it, then cut the bunny out of it. She had thought to make a separate body drawn on the paper, but she decided to draw the whole bunny on the v-fold. She colored it, put on googly eyes, then the researcher helped her glue it on to the base page, which she decorated to show the picnic blanket and a lake. She also started to do the cuts on the abstract boxes design before the session ended. The bunny is shown in Figure F.8. (Session 2 date: 7/14/06, 58 minutes)

Ursula's third session was a bit longer. She cut and folded the abstract white box popup printed in session 2 (the researcher helped with starting the smaller cuts and some of the folding.) She looked at *Snappy Little Fairy Tales*, and got an idea to make a bunny and his house. On the computer, she selected a v-fold for the house. After printing it, she made it into a castle instead, cutting crenellations on the top of the v-fold. She wanted to make a stand-up bunny, so the

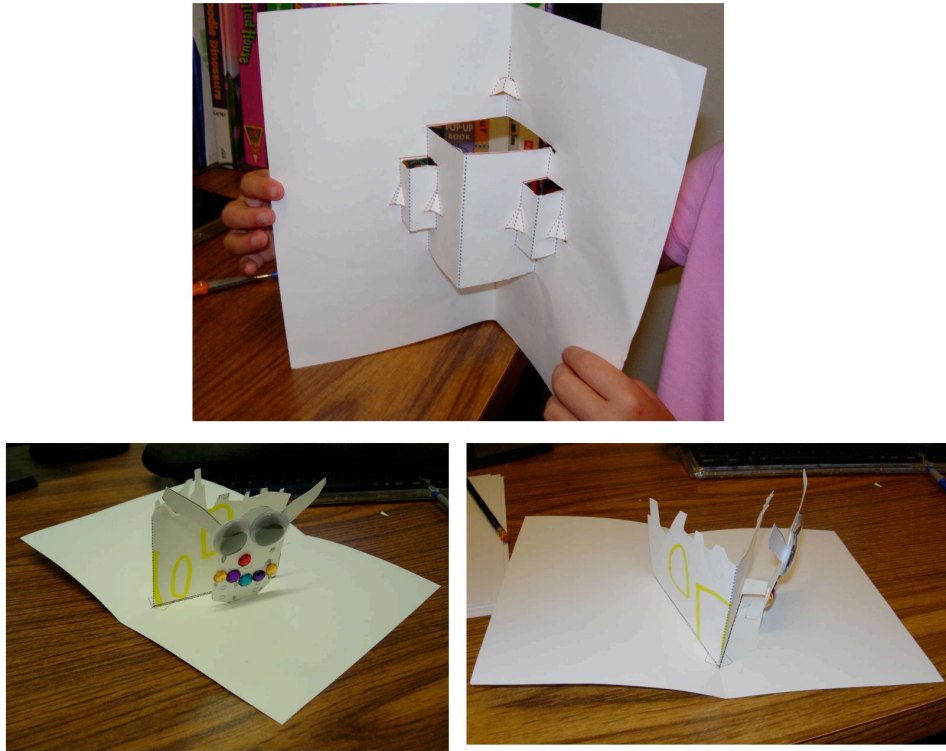


Figure F.9: Ursula session 3: Abstract design and the Bunny and his Castle (shown in two views to demonstrate the construction).

researcher suggested a tent to make it stand up (using the *Pop-o-mania* book as a guide.) A tent was put on the side of the v-fold, and the bunny attached to it. Since he lived in a castle, the bunny needed to be fancy, so Ursula selected some jewels and googly eyes to decorate him. The white abstract popup and the bunny and his castle are shown in Figure F.9. (Session 3 date: 7/21/06, 70 minutes)

Ursula decided in session 4 to make a turtle. She made a large v-fold on the computer. The turtle was drawn in on the v-fold—he was upside down, so she decided that he was a gymnast. She decorated him with a sequin for a nose, googly eyes, and feathers for him to fall into. Then the researcher asked her to design something using only the 3 simple (non-glued) structures and coloring with the computer (since she had been using mostly v-folds). The result is the house for

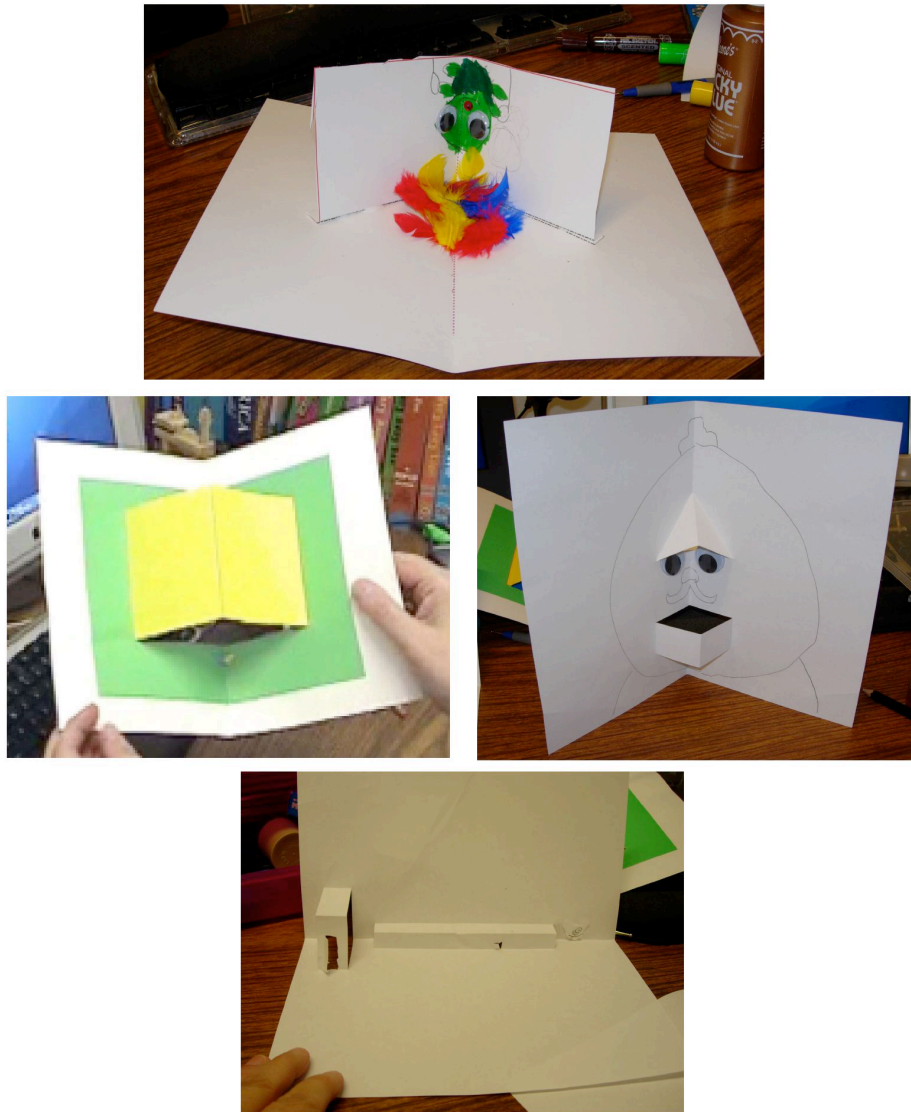


Figure F.10: Ursula session 4: Turtle Gymnast, houses for mommy and baby bunny, a white alien, and bunny and her houses.

mommy bunny and a small house for baby bunny. (The larger house is a step, and the smaller is an angled step, and she colored them yellow in the program.) The researcher showed her how to make the step elements by hand and she created the bunny and his house, and the white alien, which also used a beak. (These two pop-ups were made by hand, not with the program.) The four

pop-ups made in this session are shown in Figure F.10. (Session 4 date: 8/04/06, 47 minutes)

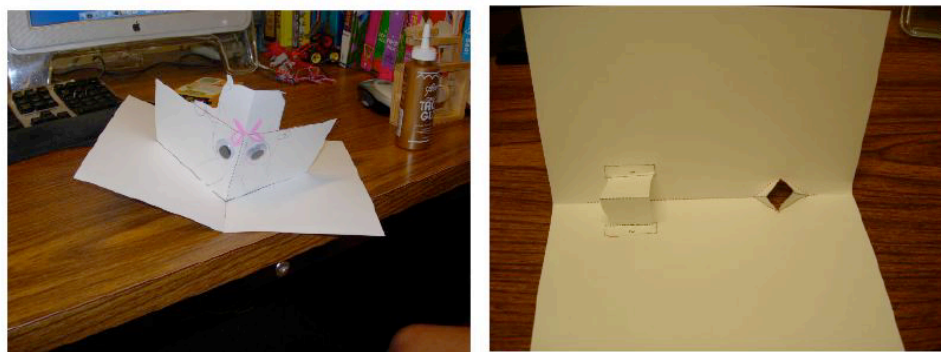


Figure F.11: Ursula session 5: Fat upside-down bunny gymnast, with a pink ribbon and the base for a pop-up completed in session 6, and shown in Figure F.12.

In session 5, Ursula wanted to make a bunny like her gymnast turtle (upside down), so she made a large v-fold. She asked to print the v-fold, and drew a bunny with a pink ribbon on it. She decided that since this is a fat bunny, that he can stick up above the original v-fold. She was much more confident in putting it together than she was with the turtle. We looked at some pop-up books and at *Elements of Pop-up* and *Pop-o-mania*. She liked the castle scene in *Pop-o-mania* and wanted to make something like it. After some discussion, she made two beaks together, and a tent to serve as the base for the scene. We printed it, and she cut, folded and glued it. This pop-up was completed in the next session. The gymnast bunny and the base for the castle are shown in Figure F.11. (Session 5 date: 8/18/06, 57 minutes)

Ursula was in her first week of first grade when she had session 6, and was a bit tired and off-task. She completed the castle scene, with bunny in his hole, and a castle with a swimming pool (with a turtle swimming in it), a balcony and a drawbridge. The rest of the session was spent in looking at pop-up books (*America the Beautiful*, *Pop-up Haunted House*, *The Wizard of Oz*, both versions of *Alice in Wonderland*, and *Animal Popposites*). The pop-up with the castle and the bunny in his hole are shown in Figure F.12. (Session 6 date: 8/25/06, 49 minutes)

Session 7 came after a more than 2-month hiatus. But Ursula remembered how to use the

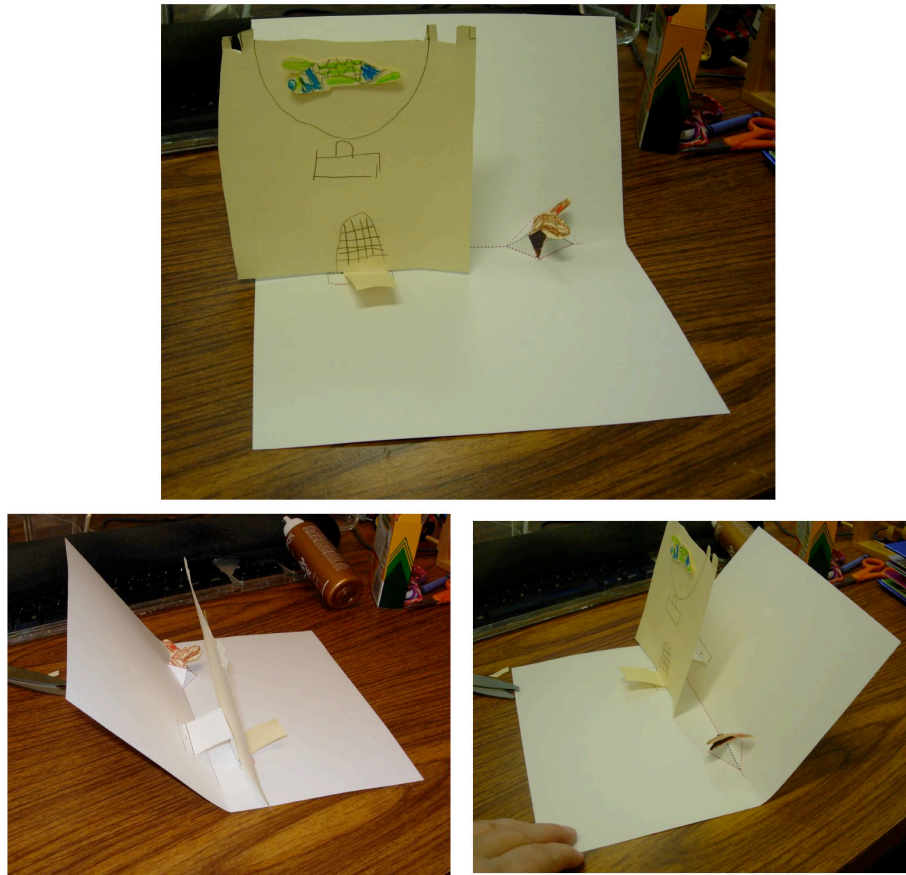


Figure F.12: Ursula session 6: The Castle of Bunny and Turtle. The pop-up uses the base constructed in session 5, and shown in Figure F.11

program and how to cut and fold a pop-up. She first made a quick abstract design which, because the beaks were small, was somewhat hard to fold. Also, the researcher used a knife to cut the very small triangle. She looked at *One Red Dot*. Then, because it was almost Veteran's Day and her class had been talking about the flag, she wanted to make an American Flag for her teacher. She picked the step for this herself. She tried to color it using the program, but since coloring is only lines or a fill of a whole segment this did not work well, and she took the color away and used markers after it was printed. We also looked at *Pop-o-mania* and *Encyclopedia Prehistorica Dinosaurs*. Her abstract design and the flag are shown in Figure F.13. (Session 7 date: 11/10/06,

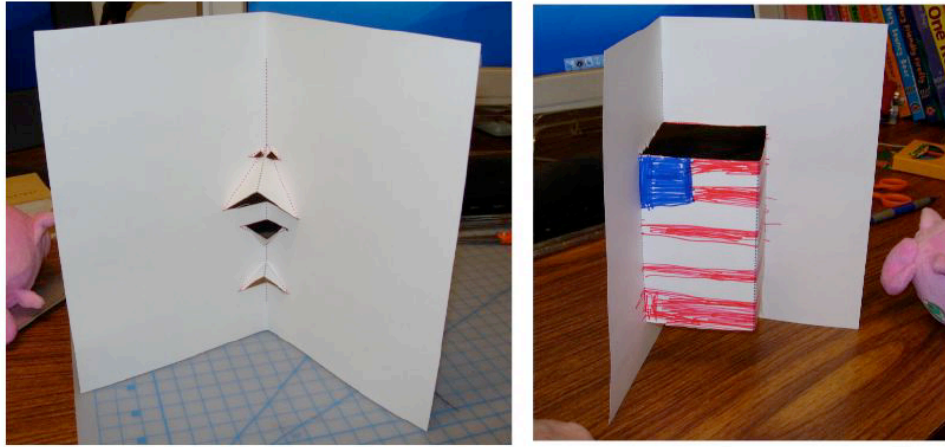


Figure F.13: Ursula session 7: An abstract design, and American Flag.

49 minutes)

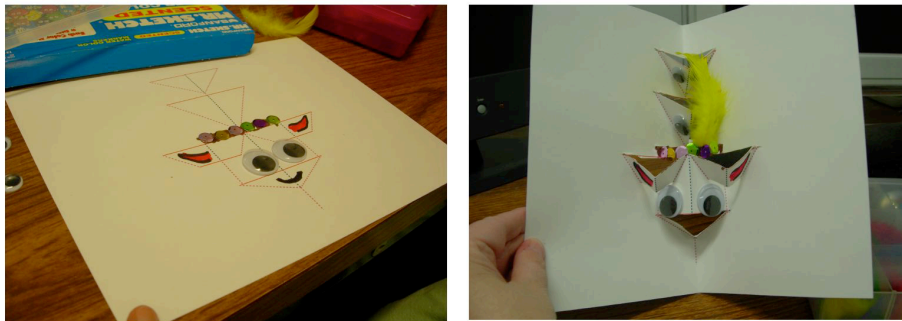


Figure F.14: Ursula session 8: Totem Pole.

Ursula made one pop-up in session 8, and we did the final testing. She played around on the computer. (The researcher suggested that she concentrate on non-applied elements.) Once again, she wanted to print very quickly without coloring. She decorated the result with googly eyes, sequins, markers and feathers. She did not name this pop-up during the session, but called it a totem pole when talking with her father. We did the tests, talked and looked at the sample books. Her totem pole, both in an early state and completed, is shown in Figure F.14. (Session 8 date: 11/17/06, 23 minutes)

F.3 Richard

Richard was 6 years old and about to start first grade when testing was begun. He liked to write and color in school. Richard had done some pop-up making on his own before starting sessions. (His sister is Daisy, who began before he did, and it is possible that seeing her pop-ups inspired him.) He enjoyed playing with paper and playing games on the computer. He was in a summer camp at the time. Since he and his sister were moving, he only participated in 5 sessions. Richard was very talkative—he tended to voice his thoughts, which made him a very good test subject.



Figure F.15: Richard session 1: Alien and His Ship, front and side views.

At Richard's first session he answered questions and looked at the sample pop-ups. Then, since he had been making his own pop-ups before, he was asked to make one in order to see what sort of pop-ups he had been doing. He cut out 3 steps, then attached an alien and his ship while he talked about his activities in and out of school. He looked at the 3 sample pop-up books. He added some decorations (sequins and feathers) to the alien and the ship, and colored the background. He described the alien as just landing as it started to rain. He started to play with the program but did not complete a pop-up before the session ended. The alien and ship pop-up made in this session is shown in Figure F.15. (Session 1 date: 8/02/06, 45 minutes)

In Richard's second session, he started by looking at the *Pop-o-mania* book. He had never

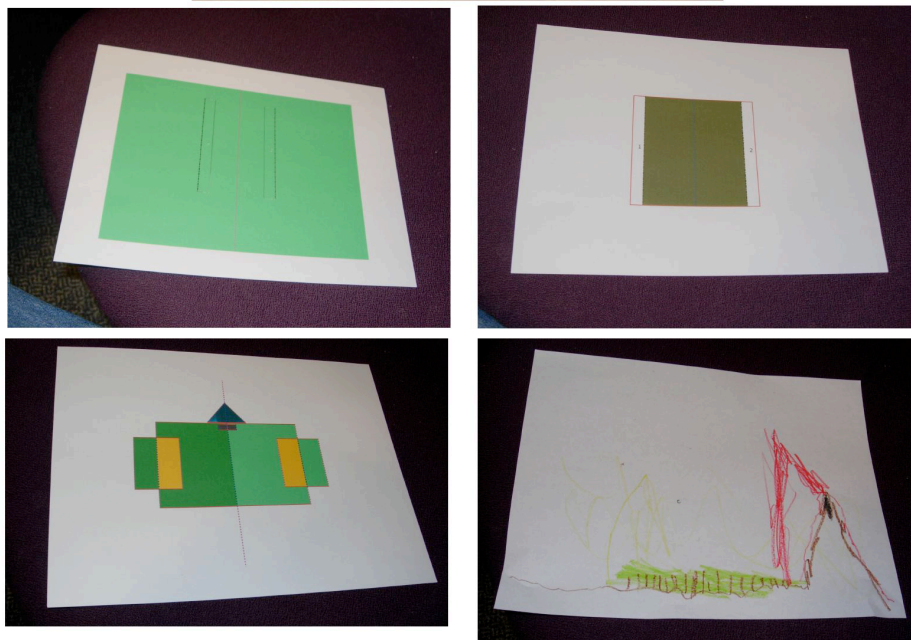


Figure F.16: Richard session 2: Man with a Cold, and incomplete pop-ups made in session 3. Two pieces which will become part of Volcano Camp, an abstract design, and a sketch of Volcano Camp. See Figure F.17 to see the finished pop-ups.

done a beak before, and looking at the book he took a piece of paper and tried to make his own. The first one he made on the paper was a cut-out triangle (the mouth for the person in the pop-up), but the second was a correctly made beak. These form the basis for the Man with a Cold

pop-up, which he decorated. We talked about beaks and steps, then moved to the computer, where he played with those and with angled steps. He made an abstract design in the process, colored it on the computer, and we printed it out, deciding to cut and fold it next time. (He wanted to make it as a present for his sister.) He then tried a tent on the computer. He had an idea about using it to make a volcano, and drew a sketch of a volcano and a forest. He colored the tent, and we printed it—to put together next time. The Man with a Cold, the two unfinished pop-ups, and the sketch of the volcano pop-up are shown in Figure F.16. (Session 2 date: 8/18/06, 51 minutes)

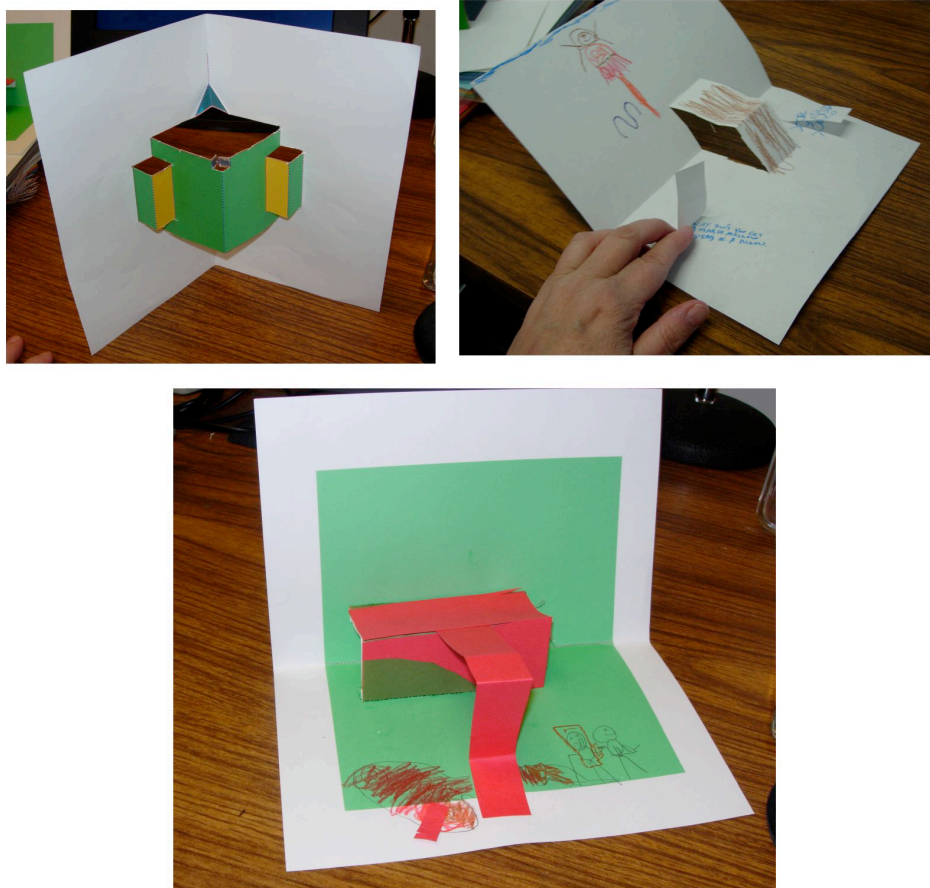


Figure F.17: Richard session 3: An abstract design, Alien and Ship with Flaps, and Volcano Camp. See Figure F.16 to see the original printed sheets and sketch of the Volcano Camp.

In session 3, Richard cut out, folded and attached the tent for the volcano camp pop-up. Then he cut and folded the abstract while it dried. He added red paper for the lava on the volcano (which he cut freehand—it bent where the natural folding occurred when it was closed.) He drew 2 campers, one of which is trying to alert the other one (who is oblivious) about the volcano, and their tent, which is surrounded by lava. When the volcano camp pop-up was complete, he took another piece of paper to make a final pop-up. He made a step by hand, and colored it and drew on the paper to make a mountain and an alien ship. He also added two flaps. He asked the researcher to write "Why don't you get a marshmallow instead of a pillow" under one flap, and drew a picture under the other. Figure F.17 shows the finished abstract, Volcano Camp, and Alien and his Ship pop-ups. (Session 3 date: 9/22/06, 51 minutes)

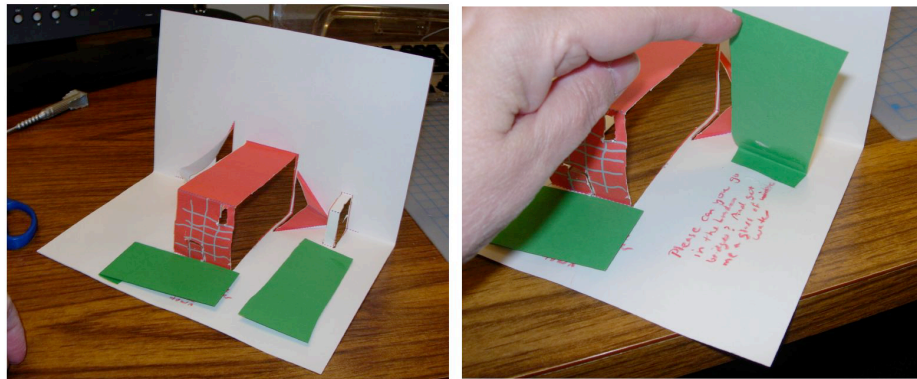


Figure F.18: Richard session 4: A city with flaps. 4 non-applied structures and two flaps.

In session 4 (10/5/06), Richard looked at several pop-up books, one of which was *America the Beautiful*, which has a lot of buildings in it. In playing with the computer, he wanted to make a city. He made several non-applied structures, one of which was a step. He used change to make it longer on one side, and used the line drawing tool to make a brick design on one face. This became his city. After it was cut and folded, he added flaps. He asked the researcher to write under the flaps for him. Figure F.18 shows the finished city pop-up. (Session 4 date: 10/05/06, 63 minutes)

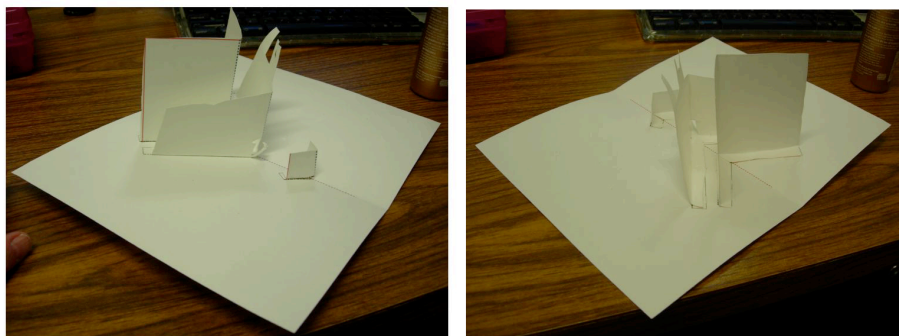


Figure F.19: Richard session 5: Base for castle, mountain (in the back), and soldiers.

Richard's session 5 was his last. He looked at the sample pop-up books. He had made no v-folds up to this time, and he really liked one pop-up in the *Raggedy Ann* book that was a castle, mountain and soldiers made from multiple v-folds. When he had finished looking at the books, we looked at the program, and he made a similar pop-up with 3 v-folds—to make a mountain, castle, and soldiers. He finished getting the v-folds on the base page, and took it home to decorate later. This unfinished pop-up is shown in Figure F.19. (Session 5 date: 10/06/06, 64 minutes)

F.4 Peggy

Peggy was 11 years old when she started testing and turned 12 during the test period. She was in 6th grade. She enjoyed pop-ups and had some at home. Her favorite activities were reading, shopping with her Mom, and playing games on the computer and drawing with SketchUp. She said that she enjoyed all her school subjects, although later in the testing she expressed some frustration with her math class. She had made a few simple pop-ups with her twin sister (Emily, see Section F.5) but only during the holidays. She did crafts with her sister sometimes, but said that Emily was the crafty one.

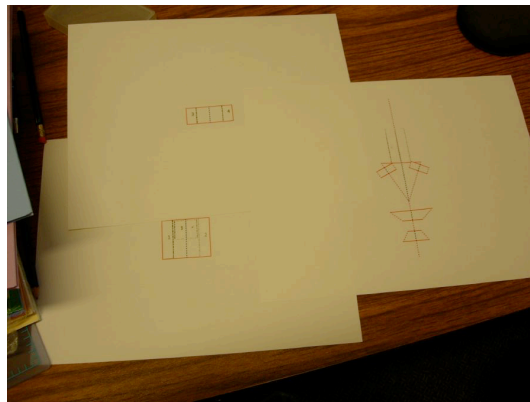


Figure F.20: Peggy session 1: The beginning of an abstract face.

After answering preliminary questions, and looking at the sample pop-up books, Peggy started looking at the program in her first session. We explored the tools. She put a tent over another tent, and this became part of her first pop-up, which she built upside down. (What was originally viewed as a beard became a hat in the finished pop-up.) She used the Viewer extensively, and at one point when the figure was rotated in the Viewer, started to view the pop-up in the Editor as being upside down. She colored the pattern at the start, but decided to print it as a white pop-up. We talked about materials and she looked at Sabuda's *Alice in Wonderland* before the session finished. The unfinished pop-up is shown in Figure F.20. (Session 1 date: 11/05/06, 49 minutes)

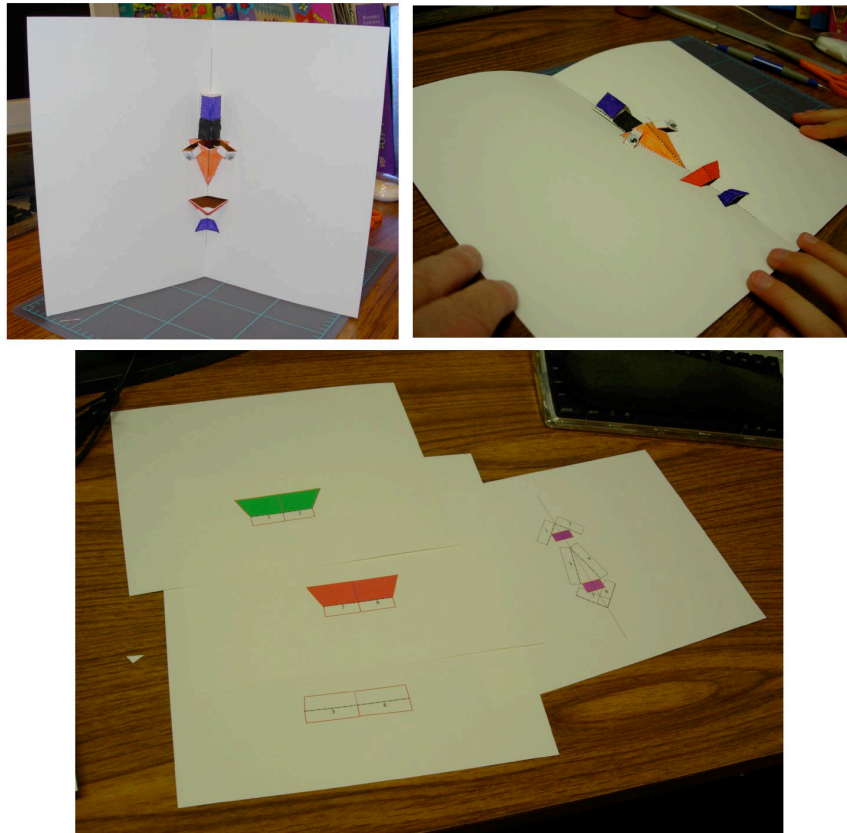


Figure F.21: Peggy session 2: The abstract face complete, two views. The beginning pieces of the table and chairs.

In session 2, Peggy cut, folded and glued the pop-up from session 1. This was decorated with googly eyes and markers. Back at the computer, Peggy made a v-fold, which was one element she had not yet tried. We took some time to look at the books on making pop-ups. She went back to the computer and played with the v-fold, seeing it as a chair. We discussed ways of making a seat, and she opted for a step. She then thought a table would be a good addition. We discussed table shapes for a while (there are several ways to make such a structure), and she decided on a v-fold with a flat piece (folded in the center) on top of it. She quickly made a chair for the other side of the table and colored the table and chairs. She had to leave, so the researcher printed and saved the design after she was gone. The finished pop-up started in session 1, and the unfinished

table and chairs are shown in Figure F.21. (Session 2 date: 11/12/06, 51 minutes)

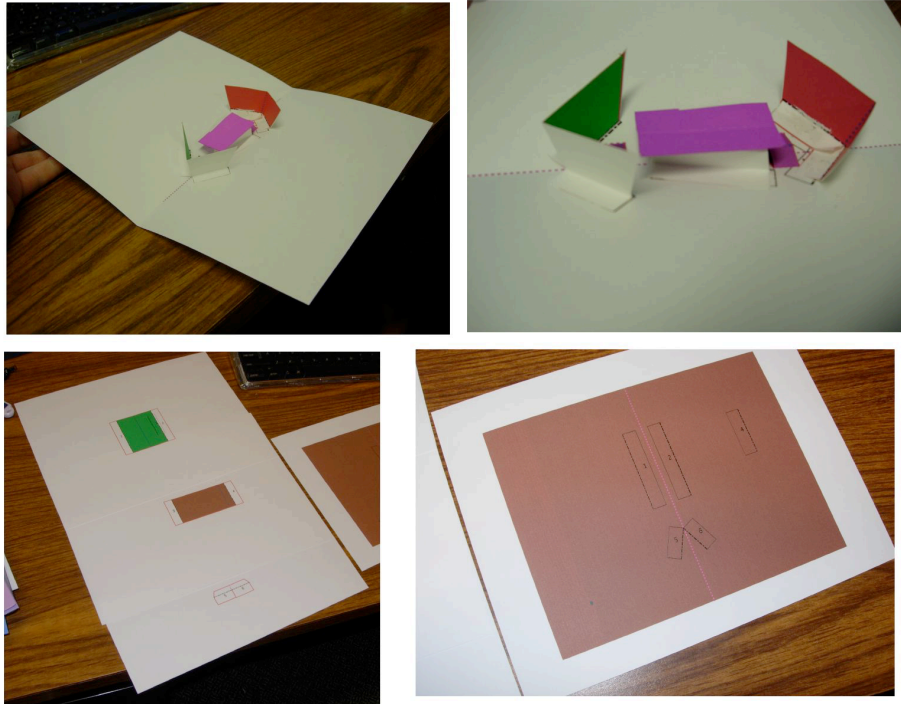


Figure F.22: Peggy session 3: The table and chairs, and pieces for the campground.

Peggy assembled the table and chairs in session 3, adding a table top cut from purple paper and using white-out to remove the numbers on the tabs that showed. She played with tents on the computer which suggested the idea of a campground, and she ended up putting a tent on the side of the tent to support other structures. She also wanted a campfire, and added a v-fold to do a campfire in the same way as she had done the table previously. The campground was printed and ready for assembly at the end of the session. The finished table and chairs started in session 1, and the unfinished campground are shown in Figure F.22. (Session 3 date: 11/19/06, 55 minutes)

In session 4, Peggy wanted two trees and a person for her campground, and drew and colored them, coloring on both sides. She spent some time on constructing the tent extension for the trees and person, the main problem being to brace the pieces so they would stand up when opened (and not flop.) The campfire is similar to the table, with a folded piece on top of the

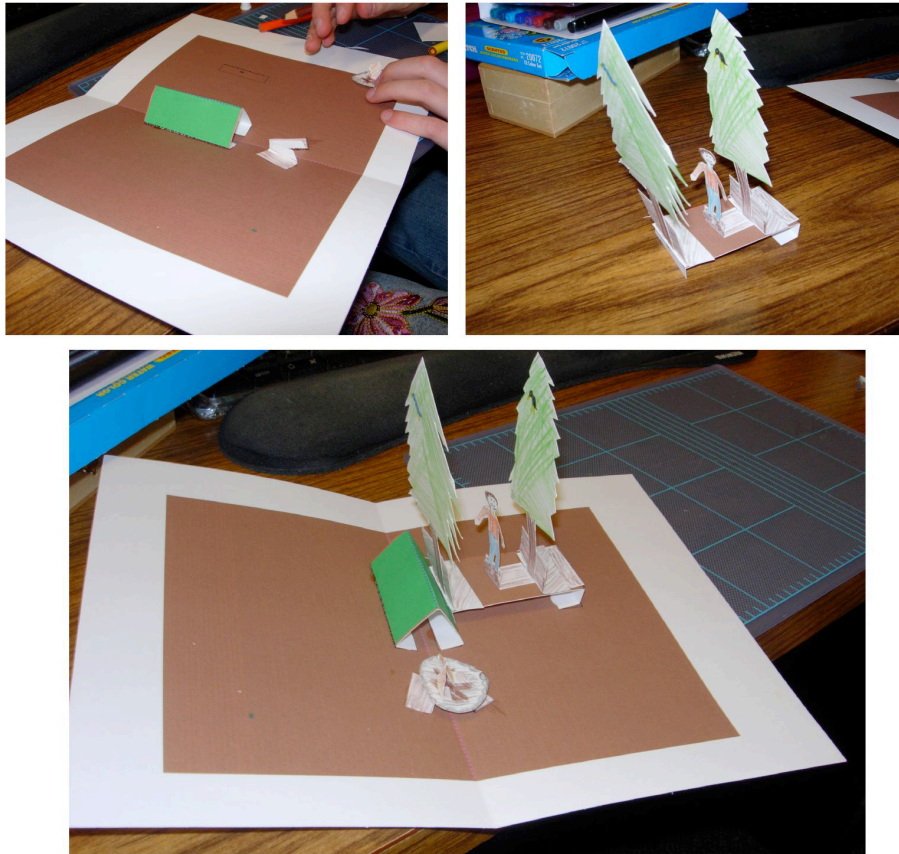


Figure F.23: Peggy session 4: The campground being constructed, and the finished campground.

v-fold, however she attached the flames separately. The campground, both under construction and completed, is shown in Figure F.23. (Session 4 date: 11/26/06, 61 minutes)

In starting her next pop-up in session 5, Peggy wanted to make something with a wheel. We looked at several wheels, and she settled on something like one example in the *Elements of Pop-up*, with changing colors under the base page. She thought of that as the sun. She wanted to make a cloud to cover the sun, and experimented with an asymmetric v-fold. Her model for this was a flapping arm in *Pizza!*. She added a tree trunk. By the end of the session, she had the pop-up printed, and the tree trunk cut and folded. (Session 5 date: 12/03/06, 54 minutes)

In session 6, Peggy cut and folded the v-fold for the cloud. At this point, the original

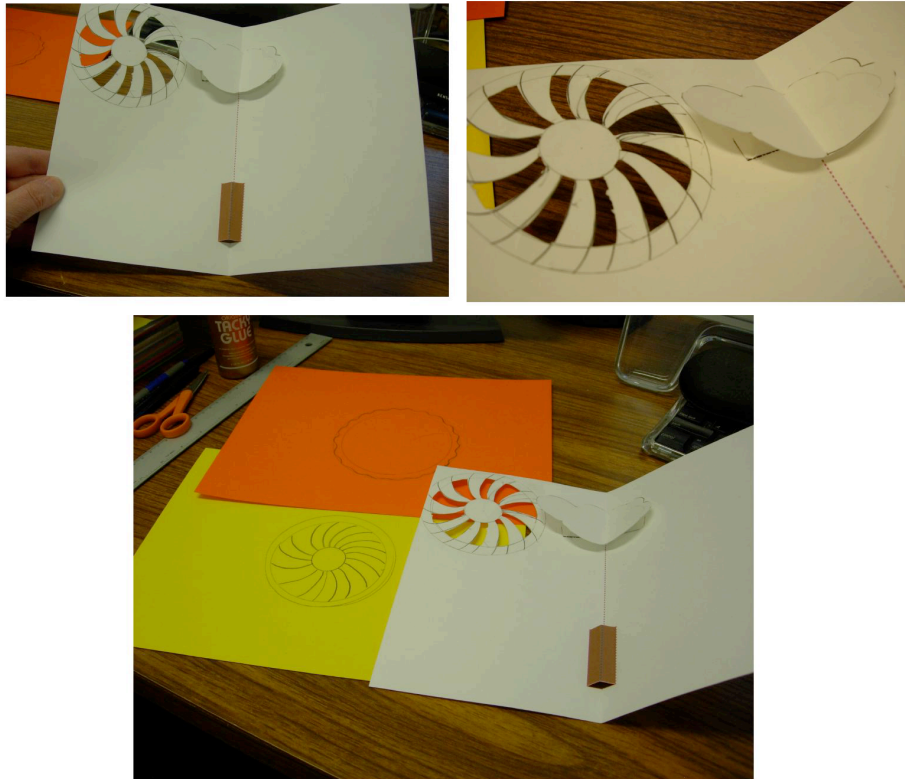


Figure F.24: Peggy session 6: The sun, tree and cloud, under construction.

idea for the flapping arm of the v-fold being the cloud was forgotten, and the cloud became a "table" like her previous campfire. As it turned out, the cloud did not cover the sun, but the table construction allowed it to "float" above the rest of the base page, which was a good effect. Peggy then turned to the sun. She made the parts of the sun wheel—yellow and orange—and cut out the holes on the base page so that the sun would show through. She was still uncertain how to attach the wheel. The tree, cloud and sun scene at the end of the session is shown in Figure F.24. Note the parts of the sun-wheel and the floating cloud effect. (Session 6 date: 1/07/07, 50 minutes)

At the start of session 7, the attachment of the wheel was resolved. The researcher had discovered how to construct a paper brad, and showed Peggy the books describing it. This construction was used in *Elements of Pop-up*, and Peggy had tried to see how it was done, but it was hard to understand in the finished state of the book. Birmingham's *Pop-up* and Hiner's *Paper*



Figure F.25: Peggy session 7: The sun, tree and cloud, finished. Close-ups of the sun, and the slider on the tree.

Engineering for Pop-Up Books and Cards provided clearer directions. The final design was taken from Birmingham. After the wheel was finished, decoration was added in the center of the sun (a glass jewel) and to the cloud, and the top of the tree was drawn. Peggy also added a slider mechanism to move part of the tree. (This does not show up well in the photos.) The finished tree, cloud and sun scene is shown in Figure F.25. (Session 7 date: 1/28/07, 62 minutes)

Peggy's last session was spent looking at the sample pop-up books and talking about the program. No pop-ups were made. (Session 8 date: 2/04/07, 35 minutes)

F.5 Emily

Emily was 11 when she started the user testing, and turned 12 during testing. (She was the fraternal twin of Peggy, above.) She liked Art and Language Arts in school, and at one point in the testing said that she would like to be a writer. She didn't like math. Emily did a lot of crafts; she was currently weaving, sewing stuffed animals, and taking oil painting lessons. She used the computer a lot at home (StarCraft, SketchUp) but not as much as her sister did. Peggy owned a couple of pop-ups and liked them because they were 3D. She had made some simple pop-ups, and was familiar with the beak, but not the step.



Figure F.26: Emily session 1: Printed face, not yet cut and folded.

In her first session, Emily answered questions and looked at the sample pop-up books. She then started with the program. She found color selection first, and used the viewer quickly. In trying most of the buttons, she built up Freddy Squarehead and printed it. The hair, mouth, eyes and ears were done with the line drawing tool. We discussed where it would be folded and cut, but this was not done until the next session. The uncut and unfolded Freddy Squarehead is shown in Figure F.26. (Session 1 date: 11/05/06, 41 minutes)

In her second session, Emily cut and folded Freddy, then wrote the text on him. (Note that she cut out around the hair on the top of the step that makes up his head.) She wanted to make a cat next. After some discussion and looking at pop-ups, she decided on a step (similar



Figure F.27: Emily session 2: Freddy Squarehead and Cinnamon the Cat.

to Freddy.) She wanted the nose to fold out, so she put two beaks inside each other. (The first would fold in, and the second would fold out.) The ears and facial features were done using the line drawing tool. (The ears, eyes and body were colored with markers later.) In cutting out the cat, she changed the top cut to be around the ears and rounded the bottom of the head, using yellow paper to fill in the brown color from the step. Emily found that doing two beaks inside one another was very difficult to fold, and left the nose indented. The finished Freddy Squarehead and Cinnamon the Cat are shown in Figure F.27. (Session 2 date: 11/12/06, 62 minutes)

Emily made the mouse with a beak, but otherwise the construction was much like that for the two previous characters—with the basic shape changed along the cut line. A tent was added for the paws. This time, a flap was added, with a piece of cheese underneath. Emily wanted to make a bird. This time, an angled step was the body, and she changed the top cut for the head once more, with a v-fold for a beak. The finished Mr. Mousy and the printed pieces for the bird are shown in Figure F.28. (Session 3 date: 11/19/06, 21 minutes)

In session 4, Emily cut out the bird, once again cutting the top line to make the head part of the main element. She covered the head of the bird with blue paper. Since the head was cut out as an extension of the body then covered with blue paper, the part of the base page that makes up the head had a mountain, rather than a valley fold. Emily was concerned that folding the head the other way would make the beak not attach properly, but found that it worked well. We discussed

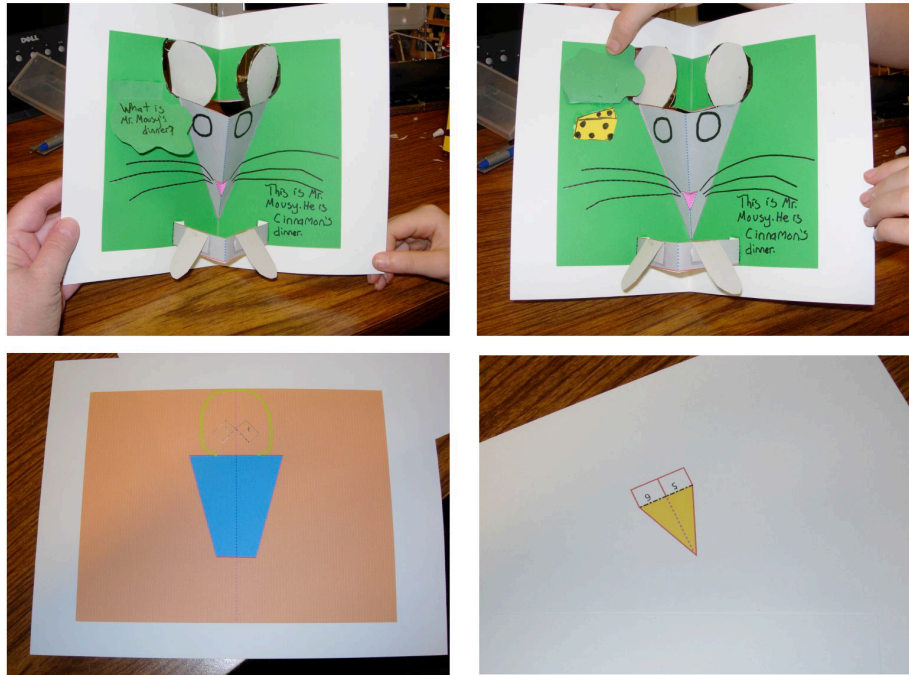


Figure F.28: Emily session 3: Mr. Mousy, showing the action of the flap, and the beginning pieces for a bird.



Figure F.29: Emily session 4: Mr. Tweedy Mo, showing the action of the flap.

how to attach the wings, and she decided on simply putting them on the side of the body. This worked just fine. She also added a flap showing the bird's dinner. In this session, Emily also made the giraffe, shown in session 5, except for the neck, text, and flap. The finished bird is shown in

Figure F.29. (Session 4 date: 11/26/06, 60 minutes)



Figure F.30: Emily session 5: Howard the Giraffe, showing the action of the flap.

Emily finished the giraffe in session 5, adding the neck and head, the flap and the text. In this figure, she did not make the head or legs part of the body, but attached them separately. She also started to make a cow. She suggested "something above the paper." We looked at some pop-up books, and discussed various ways of doing this, and she decided on two v-folds, one for the head and one for the body. (This is similar to the "table" that her sister used in several pop-ups.) She also got the head for the cow drawn and colored, but not attached. (She used a "South Park" cow we found on the web as a model.) The finished giraffe is shown in Figure F.30. (Session 5 date: 12/03/06, 61 minutes)

During the 6th session, Emily finished the cow, and started on a moose. (She said that she wanted a moose and an elephant for the next pop-ups, then all the characters going down a slide for the last, so her overall plan for the book was complete by this point.) The finished cow floats above the surface of the page, with the head and the body moving separately. The flap shows the cow tap-dancing on the giraffe. Emily got the step for the moose completed and printed. The finished cow, along with close-ups of the flap, are shown in Figure F.31. (Session 6 date: 1/07/06, 65 minutes)

In session 7, Emily finished the body of the moose pop-up, altering the step to suggest the

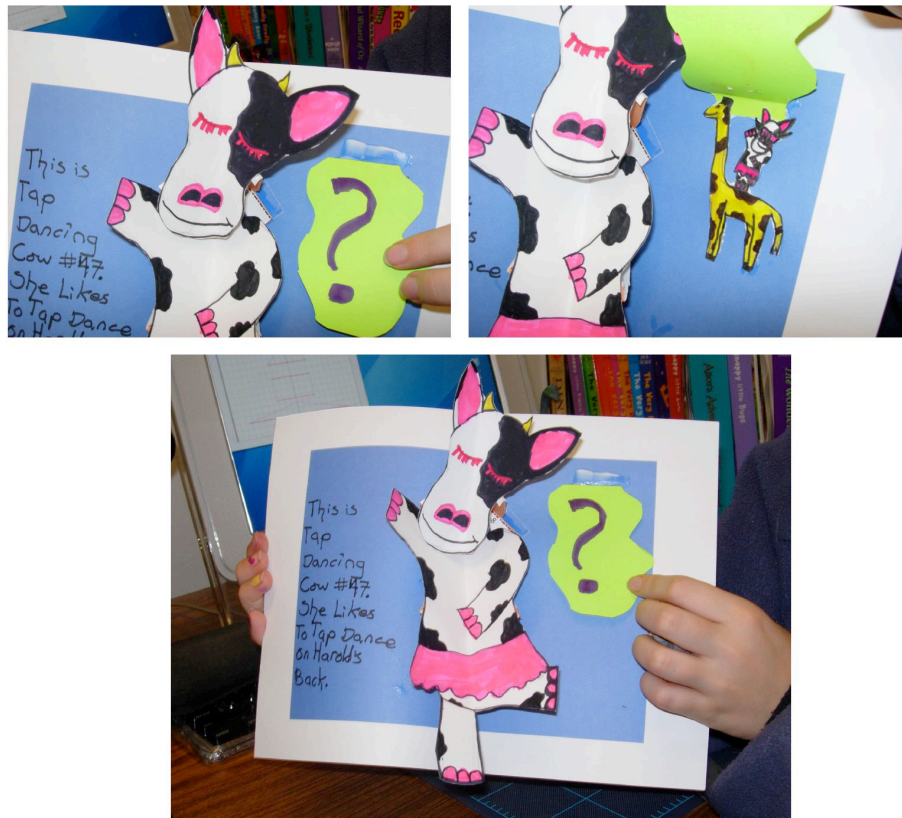


Figure F.31: Emily session 6: Tap-dancing Cow No. 47, showing the action of the flap.

shape of the moose's head, and adding antlers on the top of the head. She wanted to do a pull-tab mechanism on this pop-up and drew a picture of it—a smiley face that changes and sticks out its tongue. The sketch did not include a mechanism, and she decided to do a prototype. By the end of the session, she had a rough prototype. There were two problems that she had found with it that were as yet unsolved. First, the tongue needed to reliably come through the slot to stick out. Second, There was no way for the tab to stop at the right points. The moose without the tab and the prototype of the pull-tab are shown in Figure F.32. (Session 7 date: 1/28/07, 53 minutes)

Emily solved the tongue problem in session 8 by attaching a length of paper which remained through the slot and guided the tongue through. She added the smiley face to the moose pop-up and constructed the slider. She also solved the stopping problem (at least for pulling it

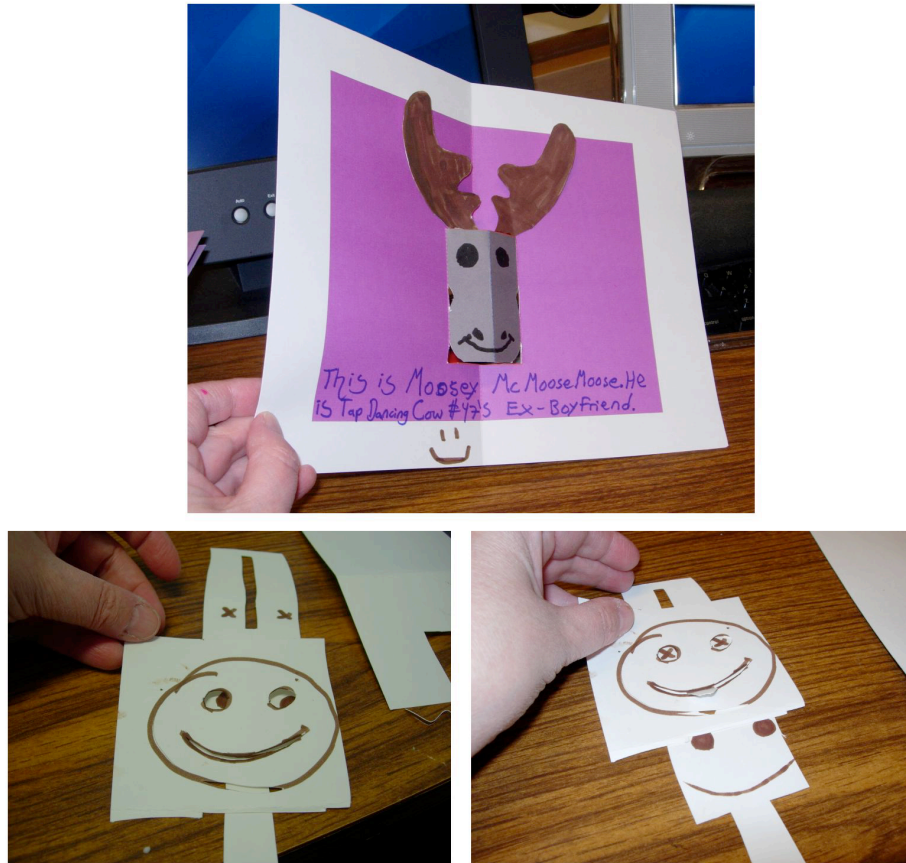


Figure F.32: Emily session 7: Moosey McMooseMoose. The moose pop-up and the prototype of the pull-tab mechanism.

down) by narrowing the slider for the slit at the point where she wanted it to stop. At the end of this session the pull-tab mechanism was mostly complete. The moose and the finished (but not yet attached and working) pull-tab mechanism are shown in Figure F.33. (Session 8 date: 2/04/07, 59 minutes)

Emily started session 9 by putting a stop on the pull tab so that it could not go too far up. At this point, she discovered that pulling the tab worked, but that the tab bent and could not be pushed back. She experimented with putting a back on the mechanism, but this did not help. At last, she put another tab on the top, so that one pulled the tab for motion in either direction.

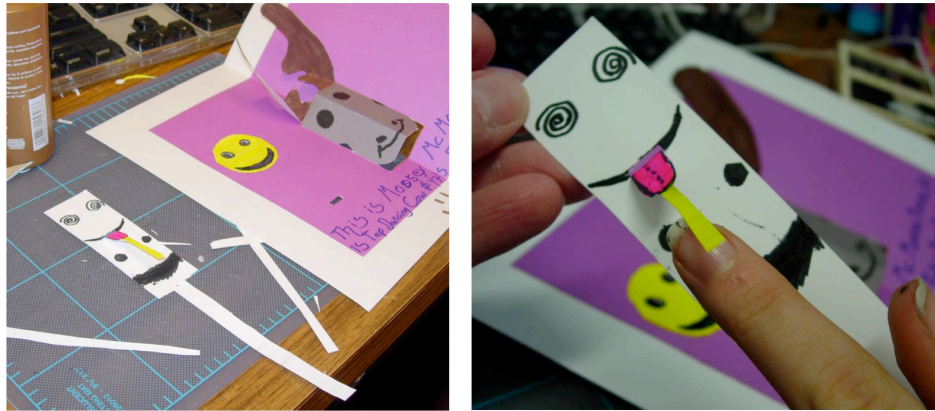


Figure F.33: Emily session 8: More work on Moosey McMooseMoose. The final pull-tab mechanism and face to be added to the picture.

This worked well. During drying times, Emily started on the elephant. She made a beak for the face, and a v-fold for the trunk. The printer was out of ink, so it was printed later from the jpeg produced by "Export" (one time that making a jpeg was very useful.) The finished moose and close-ups of the pull-tab operation, along with the uncut pieces for the elephant, are shown in Figure F.34. (Session 9 date: 2/18/07, 120 minutes)

In session 10, Emily cut and folded the beak for the elephant's face. She then attached the trunk and bent it. (The v-fold still folds when bent.) Since we had printed several extra trunk pieces when we were having printer problems, she glued two trunk pieces together back-to-back so that both sides looked the same. Then Emily made tusks and attached them. (They also still fold correctly.) She decorated the background and wrote the text. She used a piece of gray paper to surround the other pieces and make the rest of the head. She wanted to attach a v-fold for the ears, with one anchoring point on the base (beside the head) and the other on the inside of the face (beak). She was uncertain that this would work, so she made a prototype and decided that it would. She attached the ears, and they folded well. She allowed the centerline to appear where it wanted to when folded. (The ears were not done with the computer.) In this session she also made a base page with just green color—no pop-up elements, which she would use for her



Figure F.34: Emily session 9: Moosey Mc Moose Moose complete, with details of the tab operation. The pieces for the elephant (designed during Session 9, but printed later in the week).

last pop-up. The steps in making Bart the Elephant are shown in Figure F.35. (Session 10 date: 2/25/07, 113 minutes)

In session 11, Emily wanted to put v-folds on the ears to make little pockets for the other characters to live in. She cut them freehand with the knife; it took several tries to get them just the right size. She attached these, and folded the elephant. She looked at photos of each of her pop-ups while she drew pictures of the characters to put on the ears. Then she attached them—to

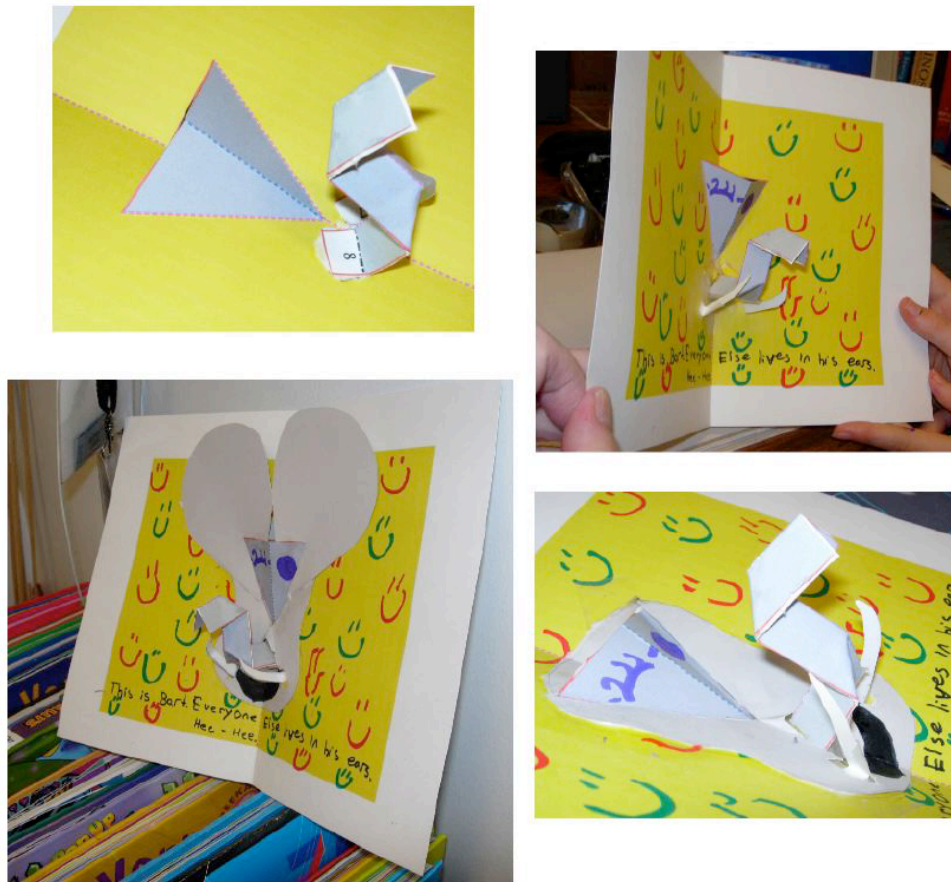


Figure F.35: Emily session 10: Steps in making Bart the Elephant. Clockwise from upper left: 1) The trunk is attached. 2) Decoration and tusks are added. 3) The head is fitted around the face. 4) The ears are added (v-folds attached to side of head, and on the inside of the face).

the ears and to each other. We finished by looking at some spirals in various books, as she wanted to make a spiral for her final pop-up. Bart the Elephant, without and with his ear friends, is shown in Figure F.36. (Session 11 date: 3/04/07, 95 minutes)

In session 10, Emily had made a base page for her final pop-up. Now in session 12, she finished it. Since the pop-up contained a spiral, not a type of element that the computer makes, she only did the background in the program. She made the spiral by drawing around a CD box, then cut it, and positioned it on the paper. She made the ladder, the nasty fellow with the teeth, and the sign for the Slide of Ignorance with the knife and colored paper. (The sign letters are cut



Figure F.36: Emily session 11: Bart the Elephant is finished. Top left shows the v-fold pockets added to the ears. Then the characters are added to the ears. They are glued to the ears and to each other, not the base, which keeps the pop-up foldable.

freehand with the knife.) She drew the characters, making bodies for them and putting them in sliding positions, and gluing them to the slide. Finally the warning sign was made, and the pop-up was finished. The Slide of Ignorance pop-up is shown in Figure F.37. (Session 12 date: 3/11/07, 110 minutes)

Emily's final session was spent in looking at the sample pop-up books and talking about the program. In the course of explaining the program to the researcher, Emily made a surprisingly

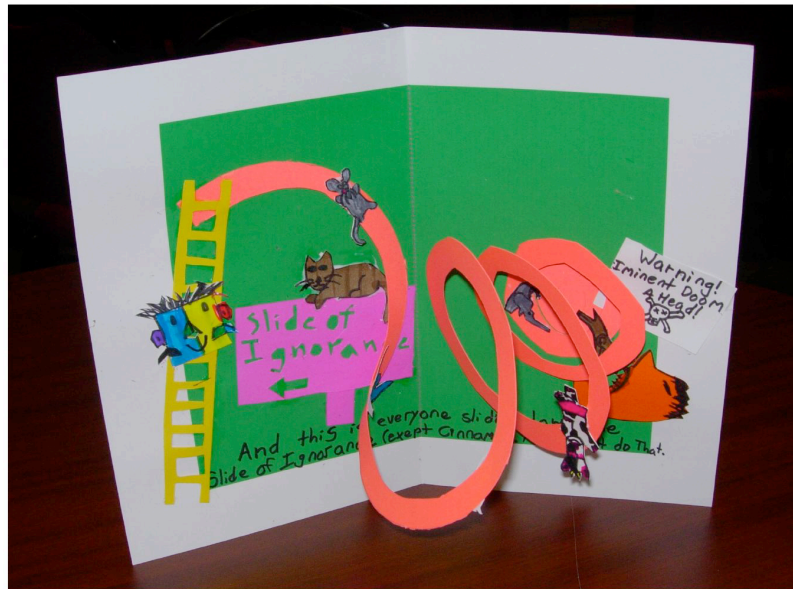


Figure F.37: Emily session 12: All of the characters sliding down the Slide of Ignorance, with a close-up.

asymmetric pop-up. She printed it and took it home to cut and fold. (Her parents had given her a craft knife of her own.) The jpeg which Emily printed to fold at home is shown in Figure F.38.

(Session 13 date: 3/24/07, 45 minutes)

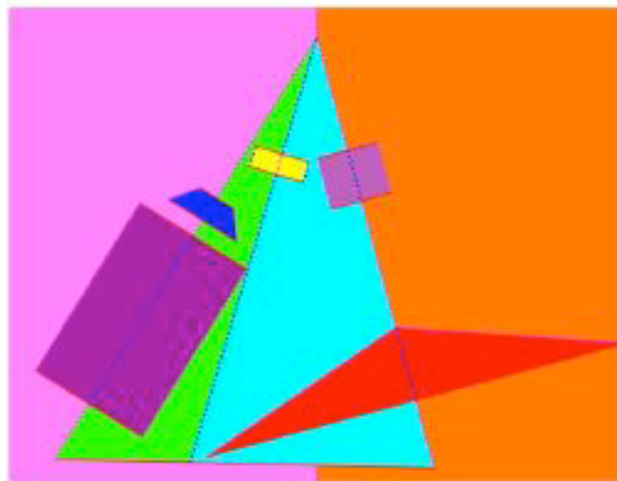


Figure F.38: Emily session 13: An abstract design, made while talking to the researcher. It was printed, and Emily took it home to cut and fold.