



Ren and the Flat Marble Track

A TINKERING STORY

TEACHER RYOKO SET UP A TINKERING EXPLORATION FOR CHILDREN TO EXPLORE RAMPS AND ROLLERS. She set out ramps and tracks of varying lengths, rolling objects that included marbles and wooden balls, and other materials to catch the rollers at the end of the ramps (plastic containers, and different-sized bowls).

Four-year-old Ren* tinkered with the materials and, with Ryoko's support, designed his own investigation!

First, Ren placed a marble on a flat track on the floor and blew at the marble to make it move. Then, he added another track to make a longer course and he blew the marble from end to end.

Ryoko suggested, "Now, you have two tracks. Let's see how many tracks you can connect and blow a marble on them." Ren tried three, and blew the marble to the end. Then he added another track to make his course four-tracks long and after attempting to blow the marble down the tracks said, "It didn't work." Teacher Ryoko wondered aloud,

"I wonder why it didn't work?" and he explained, "It was too long."

Ren continued tinkering, eventually creating track angles so the marble would roll freely from track to track. He went back and forth between blowing on the marbles and changing the angles of the tracks to make the marbles roll.

*A pseudonym



Interpreting Ren's Learning Across Domains

In Ren's investigation, he developed knowledge, skills, and concepts across multiple domains.

Through this tinkering experience, Ren had an opportunity to build **SOCIAL EMOTIONAL SKILLS**.

In particular:

→ Ren was actively engaged in the learning opportunity. He pursued his idea and added more tracks to find out how far the marble can roll when blowing on it. This shows Ren's *initiative in learning*.

→ Ren regulated his attention and thoughts and stayed focused on his goal. This gave Ren an opportunity to practice *self-regulation*.

→ Ren engaged in a reciprocal interaction with teacher Ryoko. He added more tracks in response to her prompt and continued to investigate how far the marble can roll. This is an example of Ren having *supportive interactions with adults*.

In addition, the tinkering experience supported Ren's **PHYSICAL DEVELOPMENT**.

→ Ren chose marbles, rather than larger balls, for his exploration. He built *fine motor skills* and strength grabbing and moving the small objects with a pincer grasp.

→ As Ren navigated the shared tinkering space with his peers, he used his *perceptual-motor skills* to move around other creations without knocking them over, and made decisions about shared space.

The shared tinkering experience supported Ren's **LANGUAGE AND LITERACY skills**.

→ Ren responded to Ryoko's verbal prompts, using *spoken language* to describe what he was doing.

→ Ren described why the marble didn't move down the fourth track with *descriptive vocabulary*, telling Ryoko "It was too long."

Ren explored **MATHEMATICS** through his investigations of number, length, and size.

→ Ren added more tracks, one at a time, while Ryoko introduced number words, supporting his growing *number sense*.

→ When Ren added more tracks, laid end-to-end to make a longer course, he was investigating *measurement and length*.

Finally, Ren explored **SCIENCE** concepts through his investigation with the marble and tracks.

→ Ren observed, investigated, and described the motion of the marble on the tracks, learning *observation and investigation* skills.

→ Ren explored the effect of his own actions on the *motion* of the marble. He experimented with blowing on a marble to make it roll down a course, increasing its length, and changing how the marble traveled.

