Karel Projects

By making their own Karel mazes, learners will develop constructive reasoning.

Why Do Projects?

These projects provide meaning for the skills learned in the NCLab Karel Course by persuading learners to think from a *constructive* perspective. Constructivism is an approach to education where learners are persuaded to ask questions about *how a problem is constructed.* This constructive thinking process is essential to solving complex problems where many connected systems must be understood before a viable solution can be achieved.

For example, software designers often need programs to: access a database, interpret the data, and display the data in a readable format. When resolving problems, a designer must ask the following questions:

- Why is this program *constructed* this way?
- How do the different *systems* interact?
- How are these tools *intended* to be used?

These questions force the designer to think from a *constructive* perspective in order to make sense of a problem. By understanding how the problem is constructed, the problem becomes well-structured and solvable.

Through creating and completing Karel mazes, learners will find the Karel Course to be more meaningful and fun because they will be considering coding challenges from this empowering perspective.

How to Use Karel Projects

The Karel Projects have been sequenced using a *spiraling* curriculum structure. This means that different skill groups such as **spatial reasoning** or **computation** are introduced at regular intervals throughout the sequence of the projects. When approached in sequence, each project will present new types of problems. This structure is very simple to use while producing excellent learning outcomes. If you prefer to group skills together according to educational standards, the Karel Projects Syllabus provides a convenient guide for this.

We recommend you start with Projects 1-5. After that point, continue the projects in sequence, or let learners choose projects based on their own interests. Many projects are a mixture of different skill groups and learners will be delighted by the challenges.
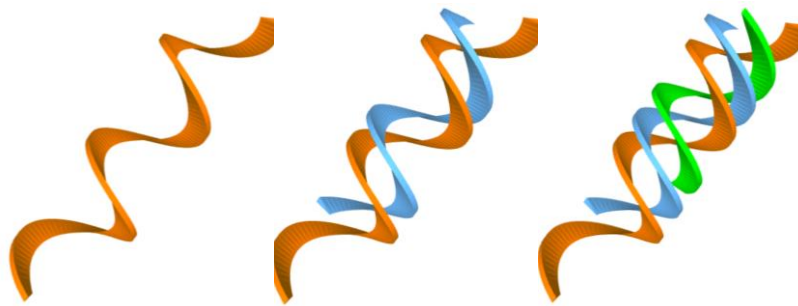
Concepts are repeated at regular intervals to prevent boredom
and promote integrative approaches to problem solving.

For a breakdown of the skill development schedule in Karel Projects, refer to the Karel Projects Syllabus.

Refer to the Karel Course Pacing Guide to determine how much time to allow for Karel Projects in your learning environment.

Thank you for using Karel Projects. We hope you will share some of your amazing games with us.