



Platform for Innovative Learning Assessments

MARIO PIACENTINI (MARIO.PIACENTINI@OECD.ORG)

EMMA LINSENMAYER (EMMA.LINSENMAYER@OECD.ORG)

What is PILA?



Free, open-source digital platform to create and share **interactive experiences** powered by AI, where assessment and learning occur simultaneously



Formative assessment system to enable **teachers to support and monitor** how students develop a wide set of disciplinary and 21st century skills



Ongoing **international collaboration** between public organisations, teachers and multi-disciplinary experts

PILA experts



- Disciplinary concepts and 21st century competences
- Accessible competency models

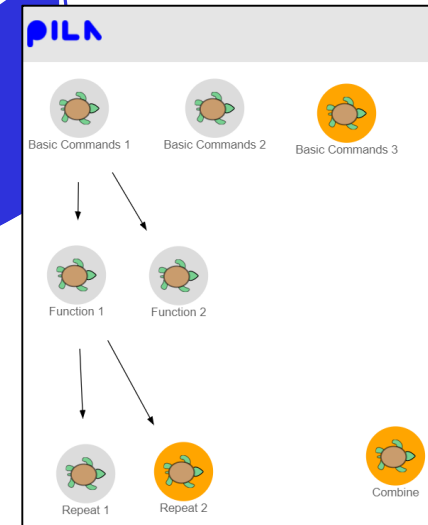
1. MODULES

- Open-ended learning environments
- Embedded & secure data collection

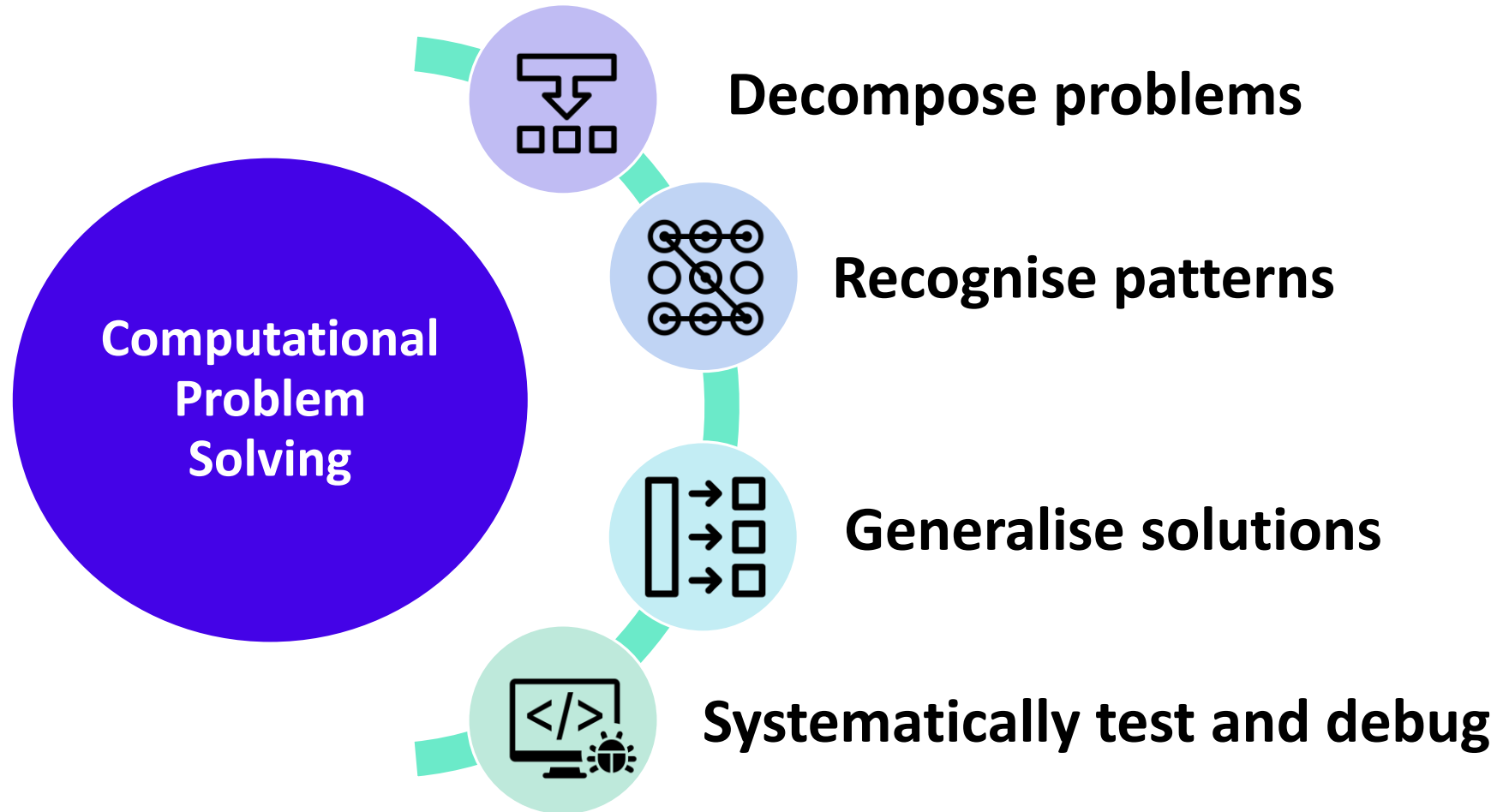
2. APPLICATIONS

- Progression of tasks (see image to right) designed by experts or by teachers
- Real-time monitoring and multi-dimensional reporting

3. ASSESSMENT EXPERIENCES



PILA module 1: Computational problem solving



Assessment application: Karel

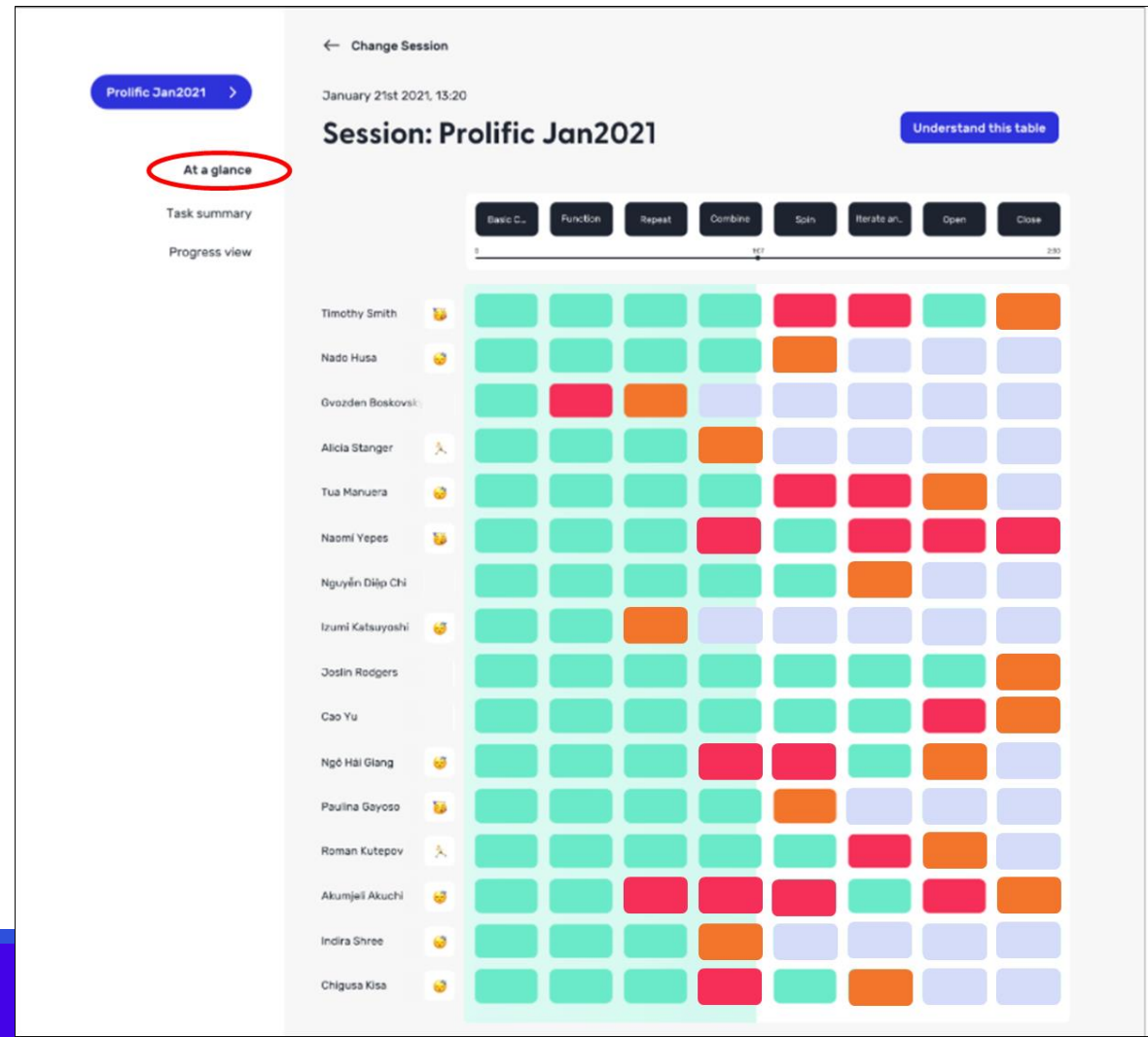
A robotic agent ('Karel') in the shape of a turtle needs help to navigate and collect/place stones in a grid-like 'world'. Students will be asked to learn and apply computational problem-solving concepts and skills in a block-based programming environment to ensure Karel can achieve its goals.

The screenshot displays the Karel programming interface in a web browser. The address bar shows the URL `https://run.knowlearning.systems/9bd93f70-10af-11ec-9e0a-4f9e6aeaaae`. The interface includes a "Back to Map" button and a "Basic Commands" section with a list of actions: "move forward", "turn left", "place stone", and "pickup stone". A "define main" button is also present. A "Challenge" box states: "Write a program that makes Karel move to the position shown in the 'Goal' world." Below this, two grid worlds are shown. The "Start" world has a turtle at the bottom-left and stones at the top-left, top-right, and bottom-right. The "Goal" world has the turtle at the top-right and stones at the top-left, bottom-left, and bottom-right. A "play" button is located below the "Start" world. A "Play Speed" slider is at the bottom right, set to a medium speed between "slow" and "fast".

Teacher dashboard: Live monitoring

As students complete an assigned assessment experience, the teacher can monitor their students work and identify who may need additional help, and in what concepts/skills.

In this example, 16 students (rows) are working through an assessment experience consisting of 8 tasks (columns).

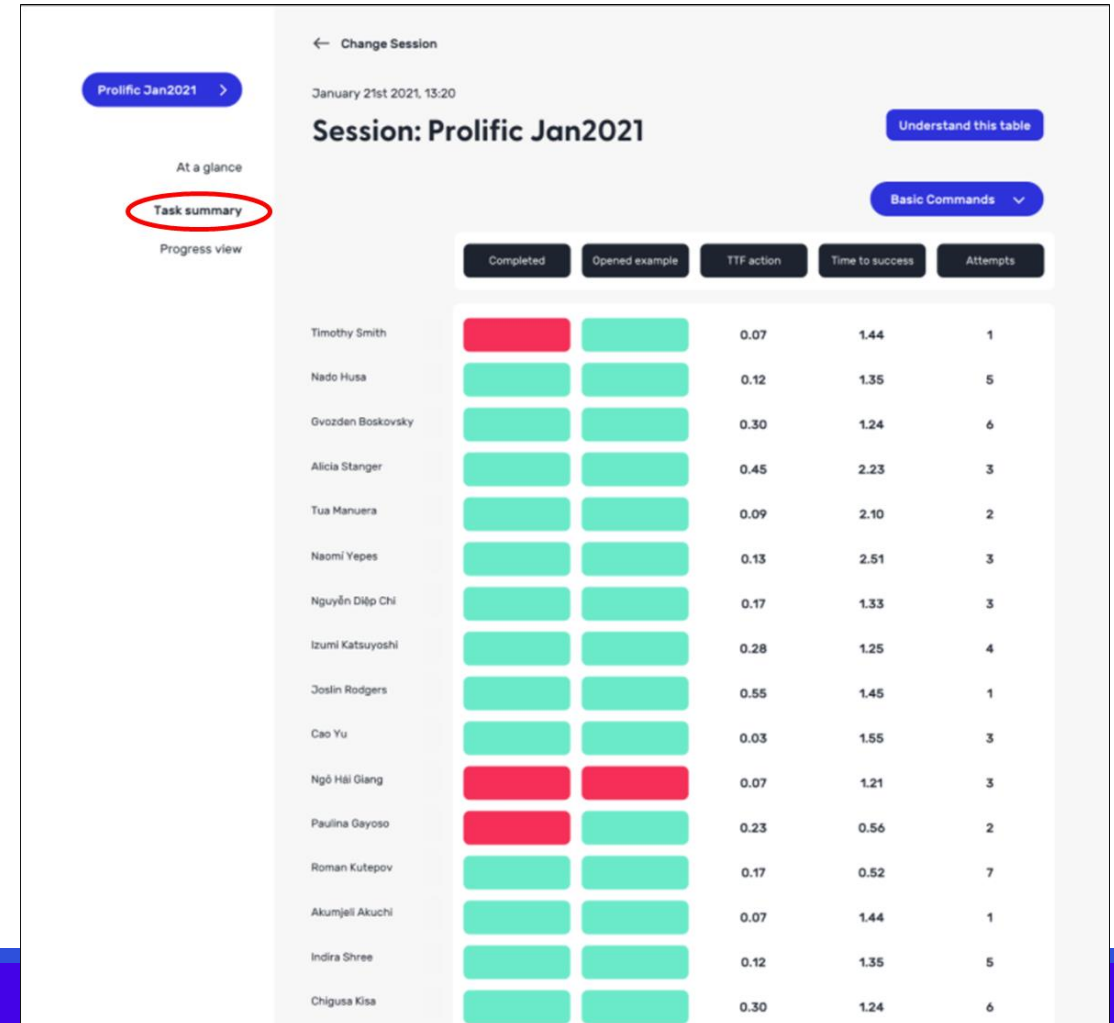


Teacher dashboard: Performance and progress on tasks

After students have finished working on an assessment experience, teachers will have access to the task summary and progress views.

This view provides more detailed information on how and what students did in each task, such as:

- Whether they accessed resources to help them make progress (e.g. hints, examples);
- How many times they tested their code using the run button ('attempts'); and
- How long until their first action and to reach a solution.



The screenshot shows a teacher dashboard for the session 'Prolific Jan2021'. On the left, a sidebar contains a 'Task summary' link circled in red, with 'At a glance' and 'Progress view' options above it. The main area displays a table of student performance metrics. The table has columns for 'Completed', 'Opened example', 'TTF action', 'Time to success', and 'Attempts'. Each row represents a student, with progress bars for 'Completed' and 'Opened example' and numerical values for the other metrics. The 'Completed' bar for Timothy Smith is red, while the others are green. The 'Opened example' bar for Ngô Hải Giang is red, while the others are green.

	Completed	Opened example	TTF action	Time to success	Attempts
Timothy Smith	0.07	1.44	1		
Nado Husa	0.12	1.35	5		
Gvozden Boskovsky	0.30	1.24	6		
Alicia Stanger	0.45	2.23	3		
Tua Manuera	0.09	2.10	2		
Naomi Yepes	0.13	2.51	3		
Nguyễn Diệp Chi	0.17	1.33	3		
Izumi Katsuyoshi	0.28	1.25	4		
Joslin Rodgers	0.55	1.45	1		
Cao Yu	0.03	1.55	3		
Ngô Hải Giang	0.07	1.21	3		
Paulina Gayoso	0.23	0.56	2		
Roman Kutepov	0.17	0.52	7		
Akumjeli Akuchi	0.07	1.44	1		
Indira Shree	0.12	1.35	5		
Chigusa Kisa	0.30	1.24	6		

Customisation tools

- Intuitive authoring tools
 - **Assessment (or 'map') builder tool** – add and arrange tasks to create new assessments for students to work through during or after class
 - **Karel task customiser tool** – create new problems for students to solve in the Karel application
- Embedded and secure data collection

PILA Module 2: Systems thinking/conceptual modelling

Betty's Brain - The Teachable Agents Group @ Vanderbilt University

Betty: Hey, what's up?

Select your response and click 'Send'.

Send

Causal Map | Science Book | Notes | Quiz Results

Quiz History

Everything Quiz taken Wednesday

Everything Quiz taken on Wednesday, March 26 at 9:15 AM

#	Question	Answer	Grade
4.	If vegetation increases, then what happens to ocean levels?	ocean levels will decrease.	✓
5.	If deforestation increases, then what happens to heat reflected t...	heat reflected to Earth will increase.	✓
6.	If deforestation increases, then what happens to electricity gener...	electricity generation will increase.	✗
7.	If vehicle use increases, then what happens to electricity generat...	electricity generation will increase.	✗
8.	If vegetation increases, then what happens to electricity generati...	electricity generation will decrease.	✗

Quiz Score: 38%

The Concept Map used for this Quiz

```
graph LR; FFU[fossil fuel use] -- increases --> C[creates]; C --> CO2[carbon dioxide]; CO2 -- traps --> CO2; CO2 -- absorbs --> V[vegetation]; V -- destroys --> V
```

- Assessing students' capacity to understand complex phenomena and systems' dynamics
- First application: Betty's Brain - a learning-by-teaching paradigm
- First unit on climate change
- Development in collaboration with Vanderbilt University
- Expected in mid-2022

PILA development and validation timeline

