



DAILY PROGRAMME

From STEM to STEAM: Integrating Art into STEM Education

DURATION 5 days · 25 hours	DAILY SCHEDULE 09:30–15:00 Monday to Friday, with a break for lunch	LANGUAGE English (B1+)
COURSE CENTRES Antalya · İstanbul · İzmir · Mersin · Budapest · Bremen · Rome Dates and cities of the scheduled sessions are listed on the course page.		GROUP SIZE Max 20 participants

Week at a glance

DAY 1 Engage: the puzzle, and why the A is not decoration	DAY 2 Explore: investigating an archive	DAY 3 Explain: building the explanation instead of writing it	DAY 4 Elaborate: transfer, prototypes and the second teacher	DAY 5 Evaluate: marking understanding, not polish
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Day by day

Day 1

Engage: the puzzle, and why the A is not decoration

- **Warm-up:** an object is passed round with no explanation — participants meet the group by arguing about what it is for, which is the engage phase happening to them
- Maeda's argument in his own words, and what it does and does not claim: art as the thing that makes STEM matter to people, not as a way to make lessons prettier
- **The BSCS 5E model end to end:** what each phase is for, why the order is fixed, why phases are not optional
- Why engage is the shortest phase and why it is not a pre-test — Bybee's own caution, and what teachers do instead
- **Declaring your route:** each participant states what their classroom actually has, and fixes the topic and driving question their unit will run on
- **Build:** draft the engage phase of your own unit, including the object, image or sound that opens it

Day 2

Explore: investigating an archive

- **Warm-up in new pairs:** two minutes each to describe something in your own subject that a photograph could not explain, then pairs merge into fours and pick the hardest one — regrouping the room before the day's investigation
- One painting, no caption — what can be established from evidence alone, and what is only a guess
- What makes an activity an investigation rather than a demonstration, and how to tell the two apart in your own plans
- Google Arts & Culture as a source of primary material: high-resolution artefacts examined for the science, engineering or mathematics inside them
- **The physical route:** the same investigation with printed images, objects and measurement by hand
- **Build:** draft the explore phase, with the evidence students will collect and the form they will record it in

Day 3

Explain: building the explanation instead of writing it

- Explaining a process using only movement or drawing, no words — then comparing what survived
- **The explain phase is student-led first:** how to hold back the vocabulary until students need it
- **Scratch as an explanation tool:** an animation that has to be sequenced correctly to work, which makes a wrong model visible
- **The physical route:** a comic strip, a flip-book or a demonstrated sequence doing the same job
- **Quick piece:** each participant makes a short explanation of one idea from their own topic, in their own route — an animation, a comic strip or a flip-book — and keeps it for Friday's cross-marking
- **Choosing the form:** what a diagram, an animation, a model or a narration each reveals and each hides about student understanding
- **Build:** draft the explain phase and decide the artefact your students will produce

Day 4

Elaborate: transfer, prototypes and the second teacher

- The same concept in a completely new situation — how far can it travel before it breaks
- What makes an elaboration challenging but achievable, and why this is the phase most often cut for time
- **Tinkercad for prototyping:** modelling a solution in three dimensions when the constraint is real and the design has to answer it
- **The physical route:** card, paper and scale drawing under the same constraints
- **Quick piece:** a rough prototype for one constraint from your own topic, in your own route, also kept for Friday
- **The second teacher:** which colleague your unit genuinely needs, and what you would ask them for
- **Build:** draft the elaborate phase and the cross-subject connection your unit rests on
- **Close:** choose which of the phases you have drafted this week you will write out in full tomorrow, and note what you still need for it

Day 5

Evaluate: marking understanding, not polish

- Two student artefacts, one beautiful and one crude — participants try to agree which shows more understanding
- Writing criteria a student can read and use, separating the science claim from the craft
- **Cross-marking in fours:** each participant applies a colleague's criteria to a quick piece that colleague made, on their own topic, as a learner on Day 3 or Day 4, then the four compare where the criteria failed them
- Two cases brought to the whole group, chosen for what they expose rather than for how well they went
- **Writing block:** the phase chosen yesterday is written out in full with its artefact brief, the criteria are revised against what cross-marking exposed, and the unit outline is completed
- Course evaluation, certificates and course documents

PLEASE NOTE

Sessions run from 09:30 to 15:00, Monday to Friday, with a break for lunch. Timings can shift a little to suit the venue and the group.

Course activities and content may vary depending on participants' needs and the trainer leading the session; any changes are at the trainer's discretion. If there is a specific topic you would like included, please let us know — content-related requests must reach us at least 3 weeks before the course start date so we can confirm them in time.

ISSUED BY

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COURSE PAGE

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