

A teacher training program in Argentina analysed by profiles

D. Cura⁽¹⁾ H. Czemerinski^(2,3) V. Marino⁽¹⁾ M. Scasso⁽¹⁾ F. Schapachnik⁽²⁾

(1) Fundación Quántitas (2) Fundación Sadosky (3) Universidad Nacional de General Sarmiento

Diagnosis of the situation in Argentina (2016)

- Few well-qualified CS teachers.
- In most provinces there are no teacher training centers offering CS courses.
- Still, there is at least one national public university with a CS career in each province.

Teacher training plan designed by Sadosky Foundation (SF)

- SF designed a **400-hour teacher training certification** aimed at K-12 teachers with no CS background.
- There was a **public call to national universities** for them to partner with a nearby teacher training institute and, together, deliver the training program.
- Based on presentations and teams submitted, **8 out of 17 universities were selected**.

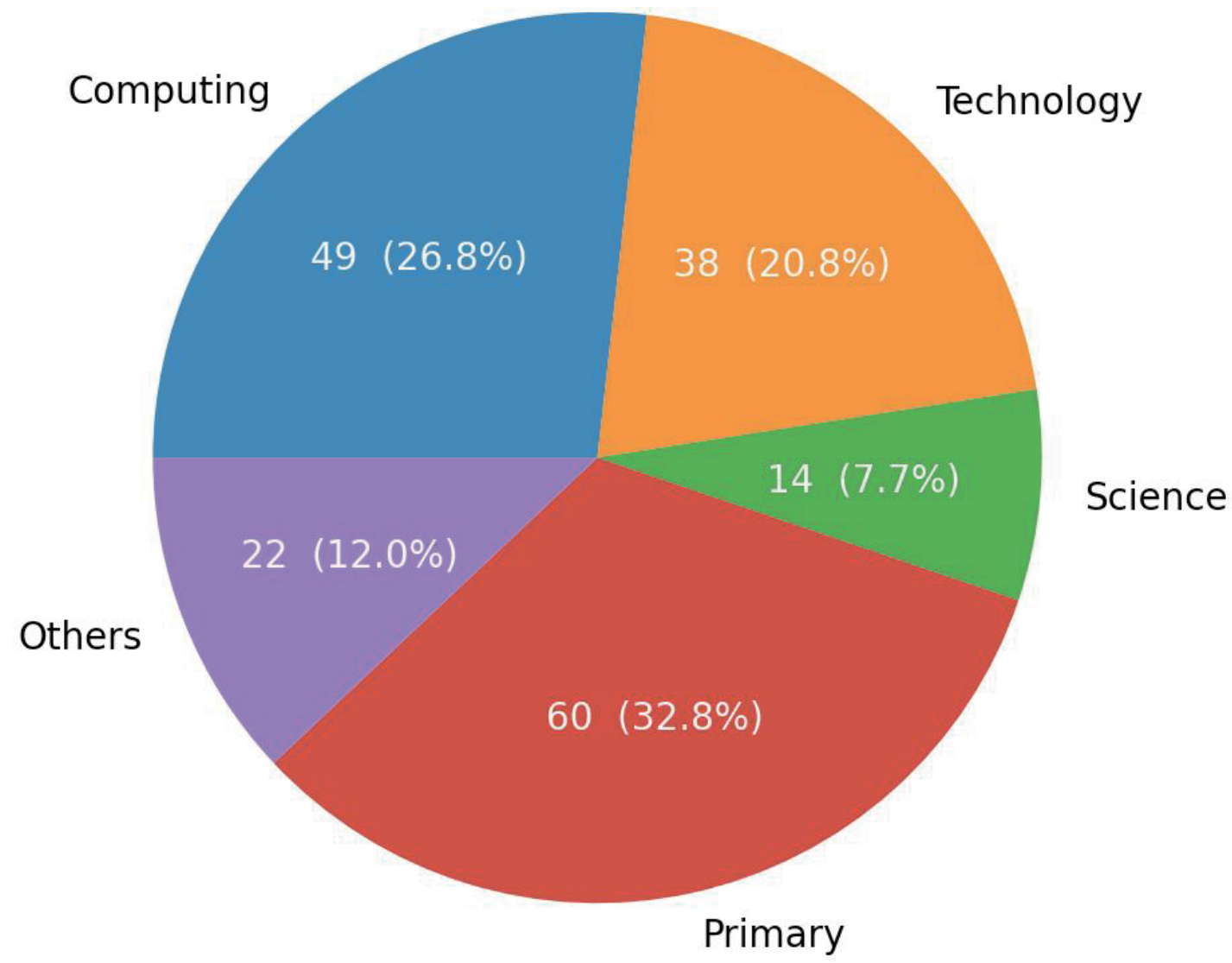


Teacher profiles & RQs

Based on teachers' previous training, there was a plethora of different profiles among program attendees. By grouping teachers by profile we investigate:

- **RQ1:** Have they learned the expected CK?
- **RQ2:** Have they learned the expected PCK?
- **RQ3:** What do they expect to do with the content learned?

The Study is restricted to the 3 consortia that at the time of conducting the research were teaching the last module of the programs. A paper-based standardized examination was used to evaluate both CK and PCK. A self-administered digital-based survey was conducted to explore what teachers expect to do with the contents they learn.



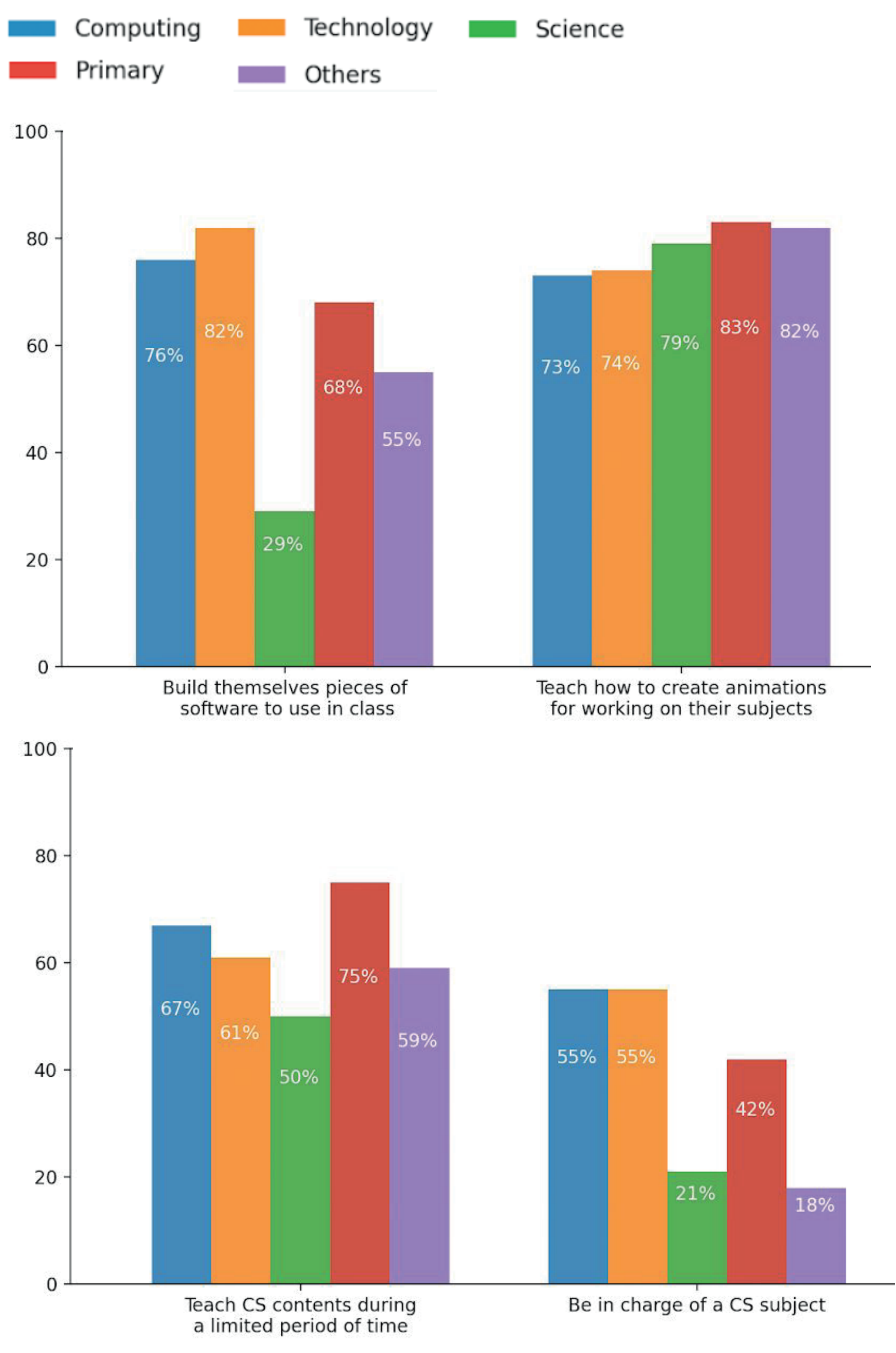
RQ1: Have they learned the expected CK?

We divide content knowledge in 2 main areas:

- **Programming:** writing code using loops, conditionals, variables, functions, etc; identifying errors in programs and fixing them; and analyzing programs in terms of readability, design and efficiency.
- **Computer systems:** identifying artefacts that have an embedded computer; characterizing computers as input/output machines; and handling problems that may appear while using a computer or a computer network.



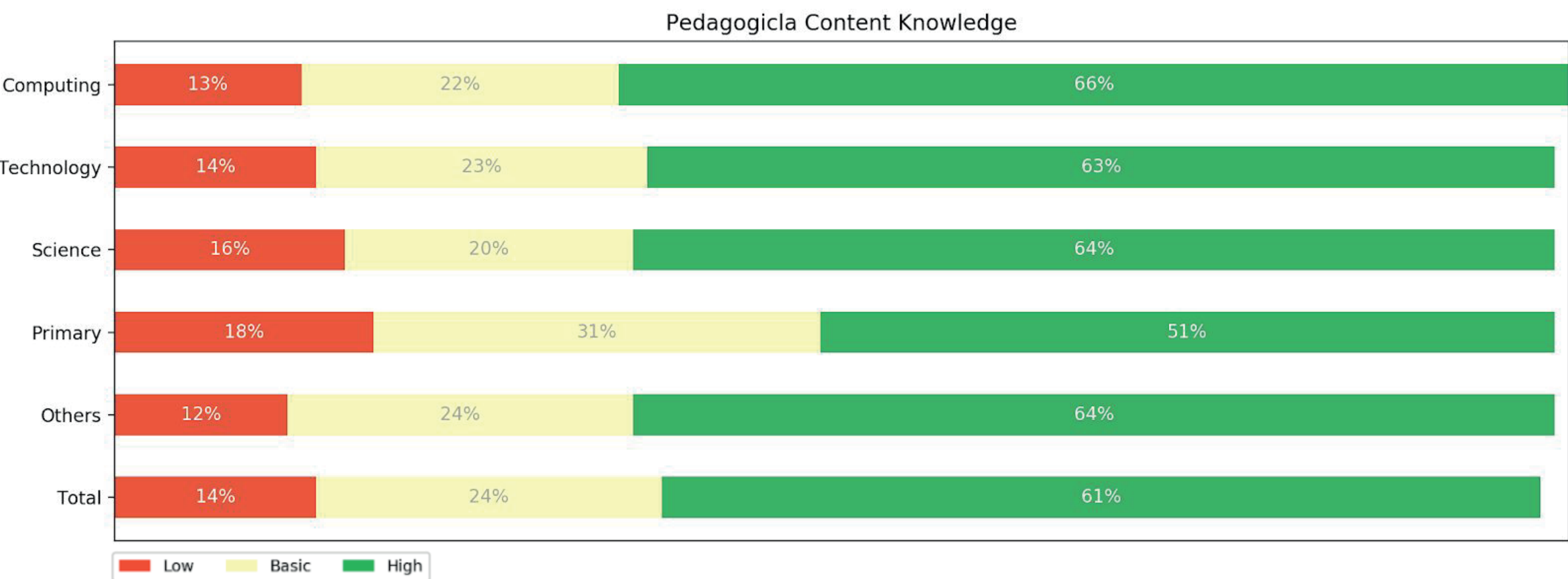
RQ3: What do they expect to do with the content learned?



RQ2: Have they learned the expected PCK?

We evaluate pedagogical content knowledge by asking teachers to:

- sequence unordered blocks corresponding to different moments of a class such that the resulting ordering was compatible with the studied didactic criteria (inquiry based learning);
- solve CK problems, and afterwards identify pedagogical elements and the role they play in the way problems are introduced;
- come up with a series of effective questions for introducing an exercise through an inquiry-based approach.



Conclusions

- Carrying out CS teacher training for a broad spectrum of profiles may be effective for promoting CS contents.
- However, if the goal is to boost teachers' confidence in teaching a CS subject, then having a program which focuses on a more restricted selection of profiles would be a better strategy.