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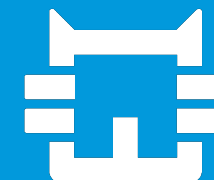
Designing Inclusive and Gender-balanced Coding Camps: A Comprehensive Assessment Framework

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OSCAR
CODING CAMPS

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Introduction



- Non-conventional learning experiences (hackathons, coding camps) are used to **promote inclusion and attract more girls** to STEM
- A systematic approach is needed to design new learning experiences and to assess the existing ones
- Current lack of operational tools



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Our approach



- A comprehensive assessment framework based on existing literature
- A case study analyzing a coding camp and data on inclusion and gender balance in its last six editions



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Comprehensive assessment framework



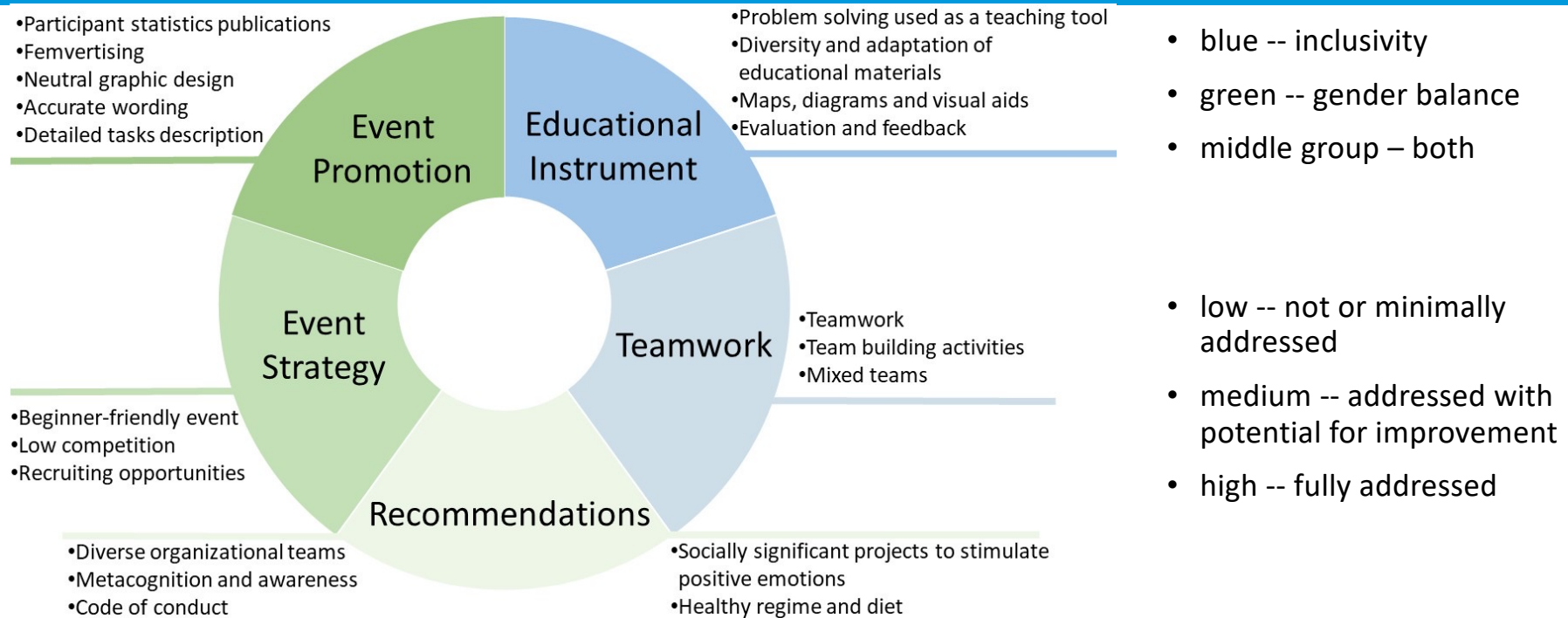
- After identifying **inclusivity and gender balance features** in the existing literature, we **removed duplicates and organized them into five groups**
- Coherent and comprehensive approach for promoting inclusivity and gender balance simultaneously



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Comprehensive assessment framework



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Case study



- Coding camp held annually at the Free University of Bozen/Bolzano, Italy
- Around 180 high school students with little or no software development experience
- Developing mobile apps using a block-based programming environment



<https://mobiledev.inf.unibz.it>



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Case study



- 20 hours, 5 days
- Teams of 3 students, attending three different school types, mixed teams include two F
- Engaging games and activities
- Focus on problem-solving



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Case study



ASSESSMENT FRAMEWORK

INCLUSIVITY GENDER BALANCE	Educational Instruments	• Problem solving used as a teaching tool
		• Diversity and adaptation of educational materials
		• Maps, diagrams and visual aids
		• Evaluation and feedback
	Teamwork	• Teamwork
		• Team building activities
		• Mixed teams
	Recommendations	• Diverse organizational teams
		• Socially significant projects to stimulate positive emotions
		• Metacognition and awareness
		• Code of conduct
	Event Strategy	• Healthy regime and diet
		• Beginner-friendly event
		• Low competition
	Event Promotion	• Recruiting opportunities
		• Femvertising
		• Neutral graphic design
		• Accurate wording
		• Participant statistics publications
		• Detailed tasks description

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LOW	MEDIUM	HIGH
✓		✓
	✓	
		✓
		✓
		✓
		✓
	✓	✓
	✓	✓
		✓
✓		✓
✓		✓
		✓
	✓	
✓		
	✓	

ANNOTATIONS

The teaching material is currently provided in a standard format. Suggestions: tailor the material to special educational needs; use more maps, diagrams, and visual aids.

Teamwork and team-building activities are the key elements of the instructional strategy.

The collaborative environment fosters metacognition and awareness. Suggestions: implement other strategies, such as raising awareness on a healthy diet.

The camp does not offer direct recruiting opportunities. Suggestions: explore the possibility of implementing this strategy.

The coding camp does not have a female friendly promotion. Suggestions: review the advertising strategy.



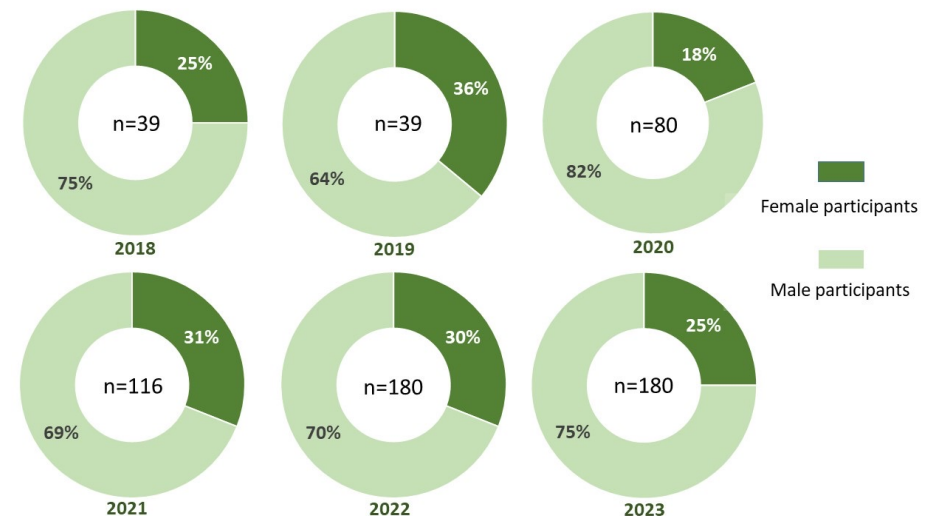
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Reliability of the assessment framework (1/2)



- Diversity currently aligns with the trend in STEM roles in the European Union (from 22% to 46% in 2021)
- The framework highlighted strategies to enhance the coding camp (femvertising and publishing participant statistics)



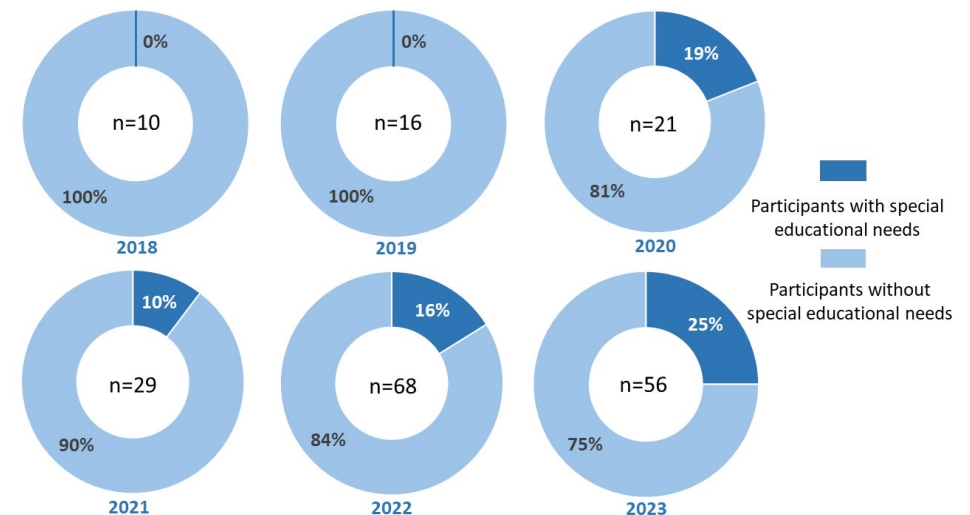
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Reliability of the assessment framework (2/2)



- Increasing number of participants with special educational needs -- heightened awareness and subsequent certification or positive impact of inclusive practices
- The framework highlighted strategies to enhance the coding camp



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Conclusion



- The results show the **reliability of the assessment framework** in accurately representing the camp's inclusivity and gender balance, while also highlighting areas for potential improvement
- Future research efforts should be directed to developing a **template to collect data on the participants' needs**. This would help develop personalized teaching materials.
- Moreover, clarifying the role of support schoolteachers and facilitators in providing personalized teaching at the coding camp is needed.



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Conclusion



- Further **evaluations of different coding camps** are necessary to consolidate the framework as a solid instrument
- Crossing and contrasting data with **satisfaction surveys from participants** could strengthen the assessment framework from the point of view of the participants' experience
- Expanding the assessment framework to promote inclusivity by using **a more holistic approach that considers other dimensions of diversity**, such as origin and language.

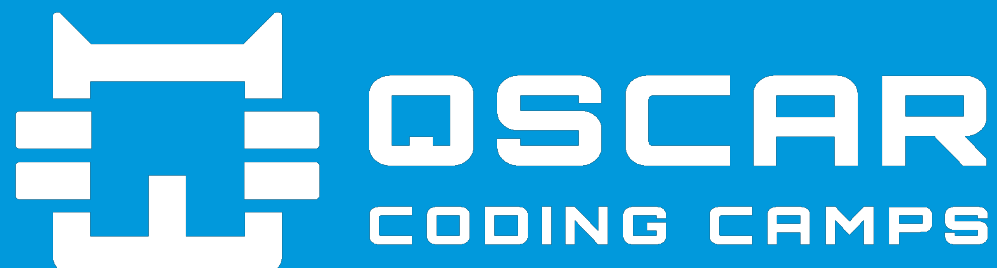


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