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# ToGather, an interactive website for the stakeholders of school inclusion of children with ASD: an iterative design including user testing

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TOUS ENSEMBLE

université de BORDEAUX

# *ToGather*, an interactive website for the stakeholders of school inclusion of children with ASD: an iterative design including user testing

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PhD Student

Supervised by H. Sauzéon & C. Mazon

AGING, CHRONIC DISEASES, TECHNOLOGY, DISABILITY, AND ENVIRONMENT ACTIVE

# Progress of the presentation

Introduction

Material and methods

Results

Discussion and conclusion

# Autism and schooling

Neurodevelopmental condition

- French prevalence : 36,5/10,000 persons

  (Fombonne, *et al.*, 2019)

- Impairments in communication, social skills, restricted interests and ativities

  (APA, 2013)

- Large inter-individual variability

  → huge personalize care and support

  (Fage, *et al*., 2016)

- The earlier they are included, the more they benefit

  (Ferraioli & Harris, 2011; Osborne é Reed, 2011; Salceanu, 2020)

# Autism and schooling

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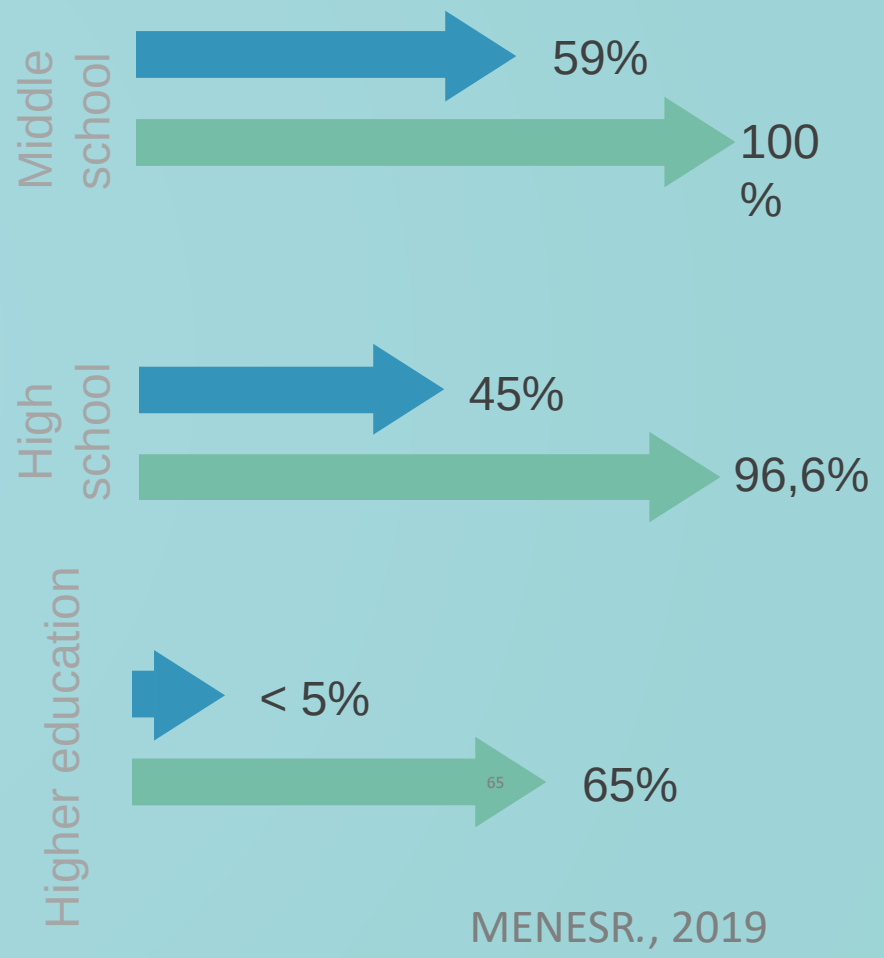
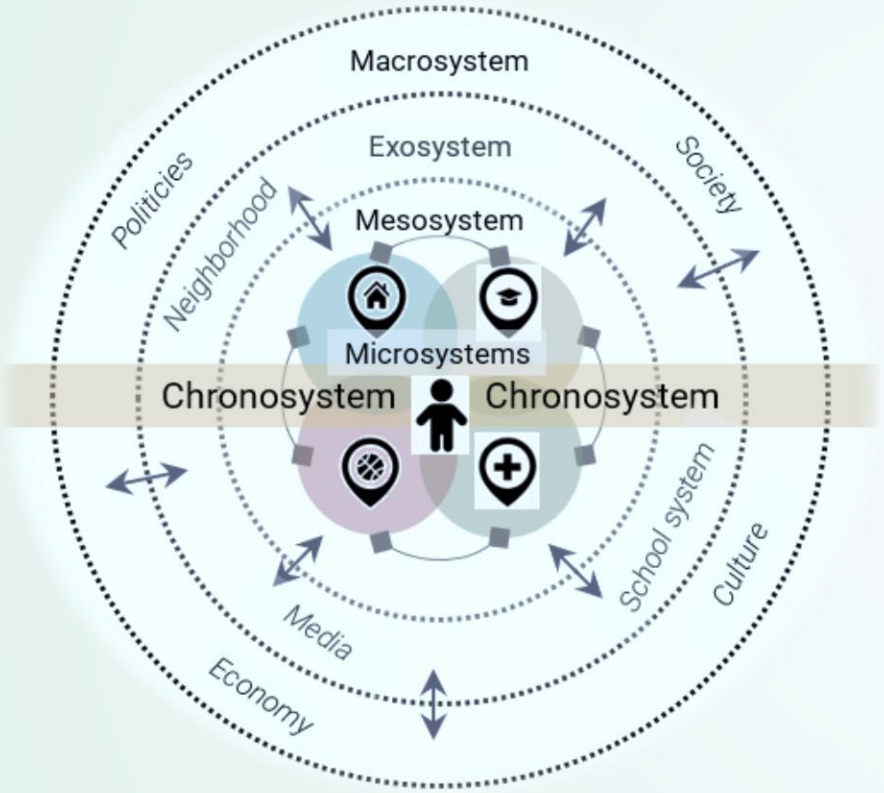
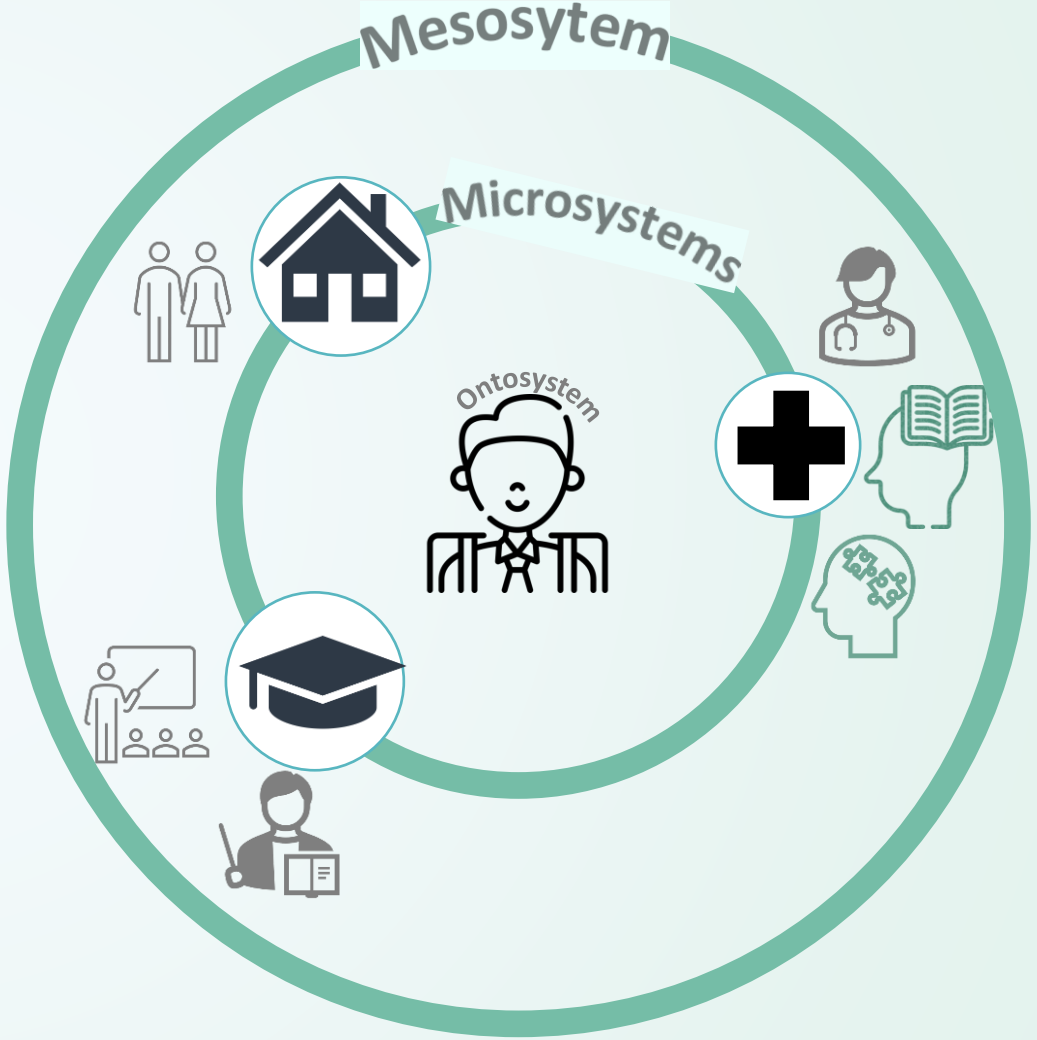


# The ecosystemic approach to leverage the environment




Mazon, 2019



# Factors impacting the school inclusion

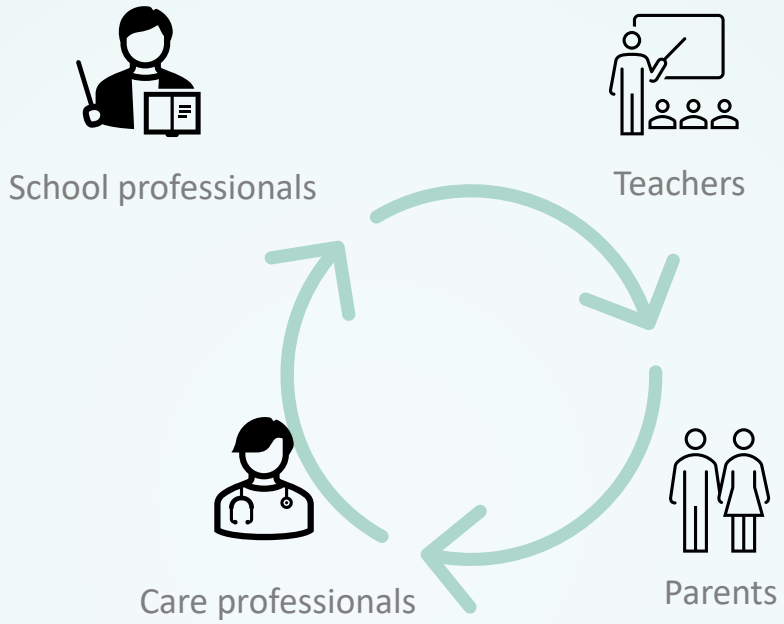
Main barriers to the co-education process:

- Cultural information gap on ASD
- Time availability of the parties involved
- Multi-sectorial information gap
- Evolutivity of the child's educational needs

→ No technology designed to lever up those factors.

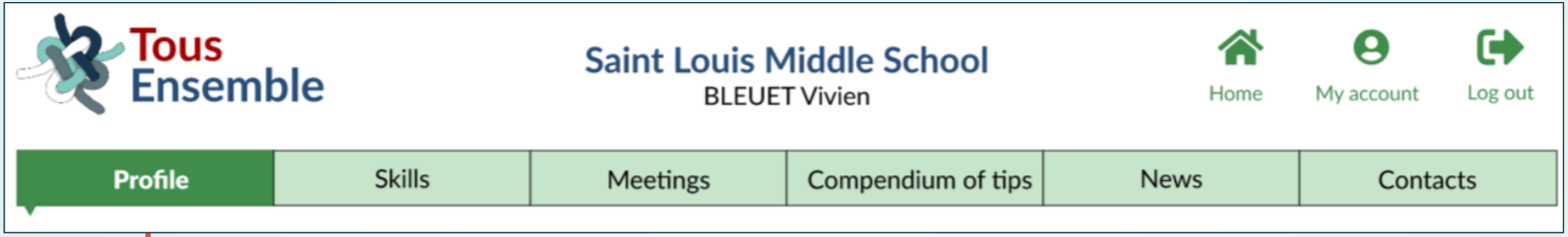
# Previous work

- Design with and for:




- Promote communication and collaboration
- Improve the co-education process
- Produce innovation to address societal issues

# Previous work – the mock-up



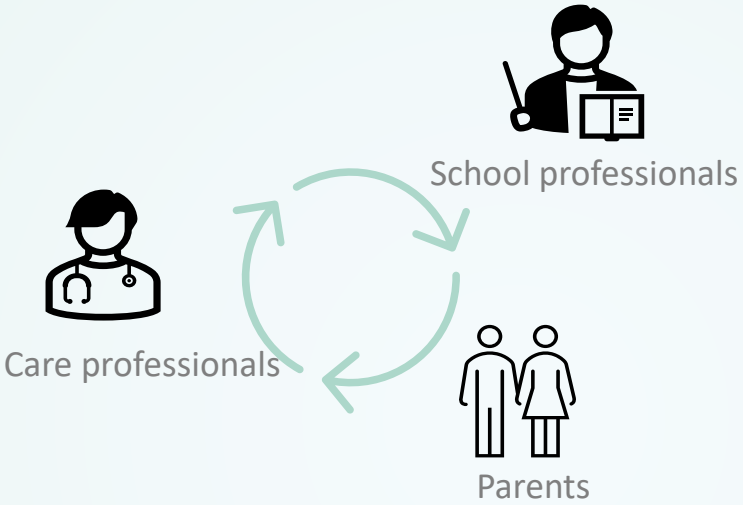

Profile
Particularities of the child for a quick familiarization

# Previous work – the mock-up

Compendium of tips
Psycho-educational tips for the pupil

# Design of the methodology

- Different schedules
- Limited time
- Different goals




- Usual testing method : free web browsing

# Participants

**Personas** | **Roles**

**Alex**

**Jupiter**

**Jessie**

Parent

Teacher

Care

Referent

Nielsen & Landauer (1993) : 5-10 subjects to detect 85% of the main ergonomics design errors

7

7

7

# Methodology

## Personas

**Alex**

**Jupiter**

**Jessie**

## Tabs and related tasks

- Profile
- Skills
- Meetings
- Compendium of tips
- News
- Contacts

Add

Edit

Delete

**Objective measures**

## End users

Perspective-taking

**Parents**

**Teachers**

**Carel professionals**

**Referent**

**Subjective measures**

# Methdology

## Objective measures

- Proportion of correct responses
- Number of active interaction per minute
- Optimality score

## Subjective measures

- Scenario-based Subjective usability
- System Usability Scale
- User Experience Questionnaire
- NASA-TLX
- Elicited self-determination for a collaborative work

**Objective measures**

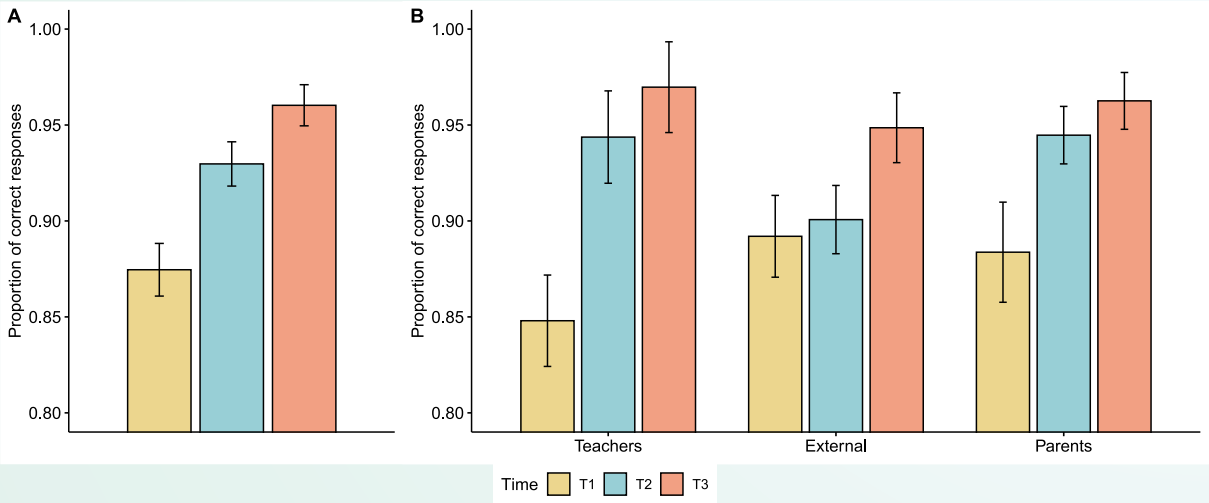
**Subjective measures**

# Objectives measures

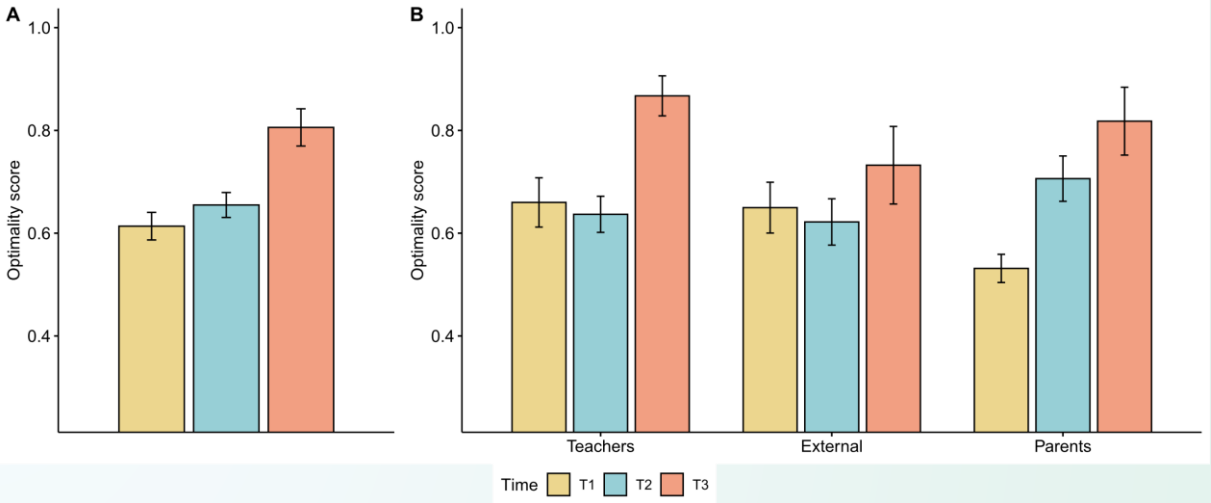
## Inter-rater reliability

- r=9.968

## Proportion of correct responses

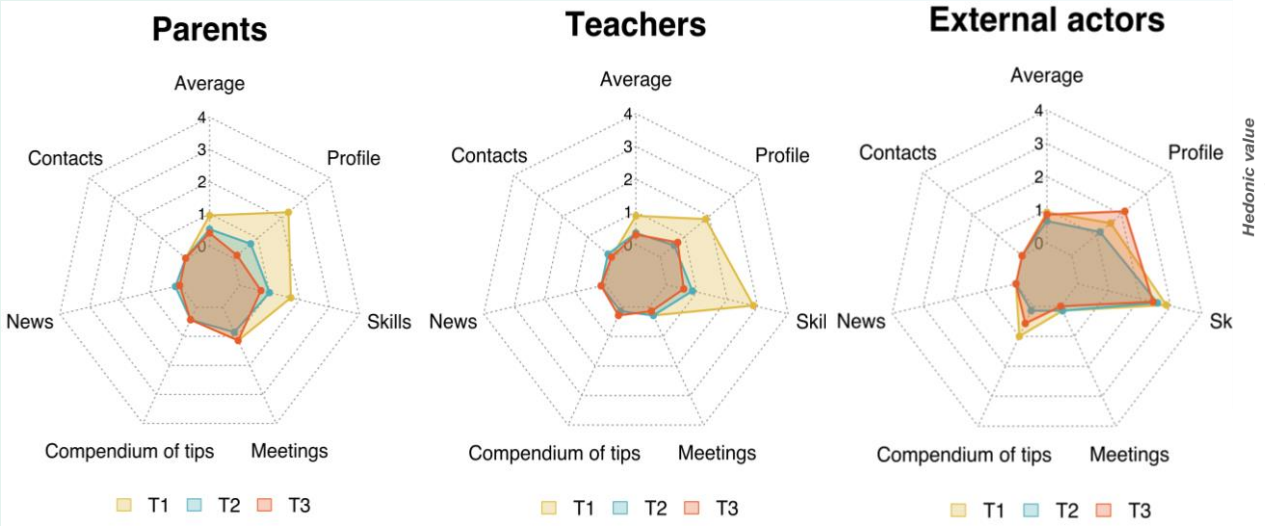



## Optimal score

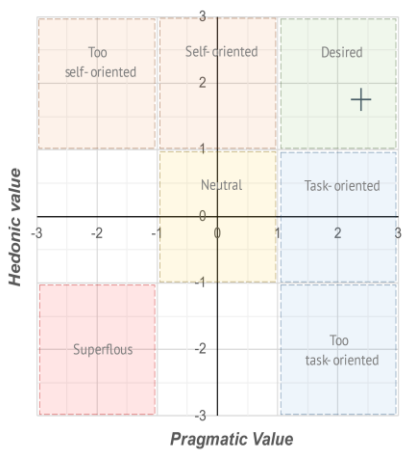


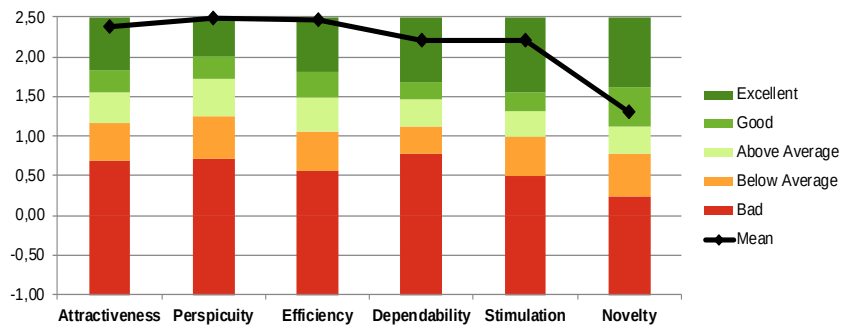
# Subjective measures

## Scenario-based subjective usability



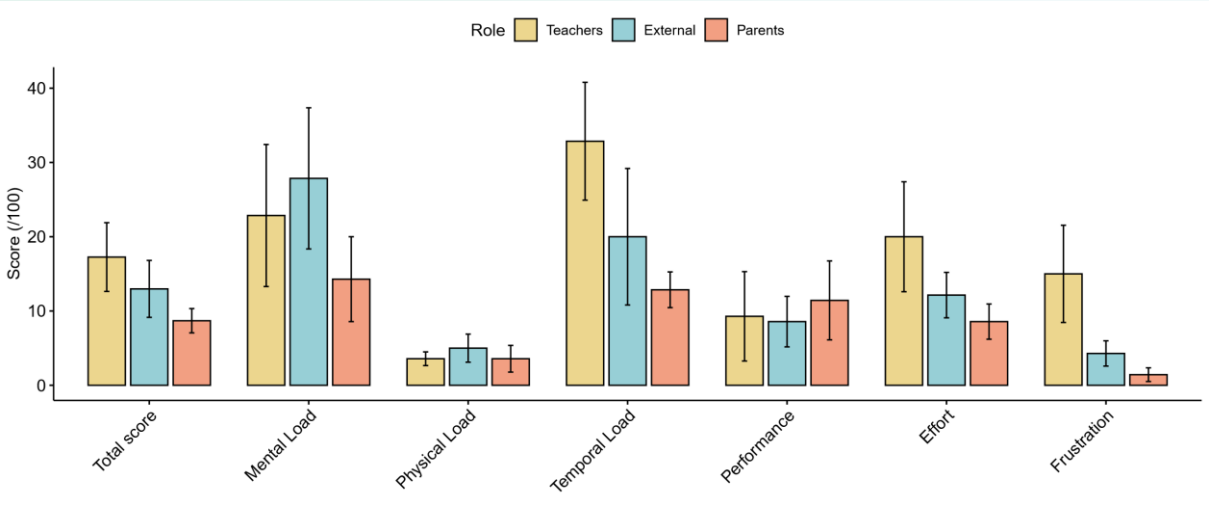

## User Experience Questionnaire



# Subjective measures

## Cognitive Load




## Self determination feeling

- Great level of self-determination feeling for collaborative activities

# Discussion

- Great self-determination feeling underlines the need for a collaborative tool
  - Gather information
  - Empowers each stakeholder
  - Participate in every collective decision
  - Coordinate actions
- Difficulties decreased and even disappeared across scenarios
- Conducting user test before the final version is crucial to meet users’needs

# Limitations

- Non-homogeneous features across tabs

Average number of features per tab

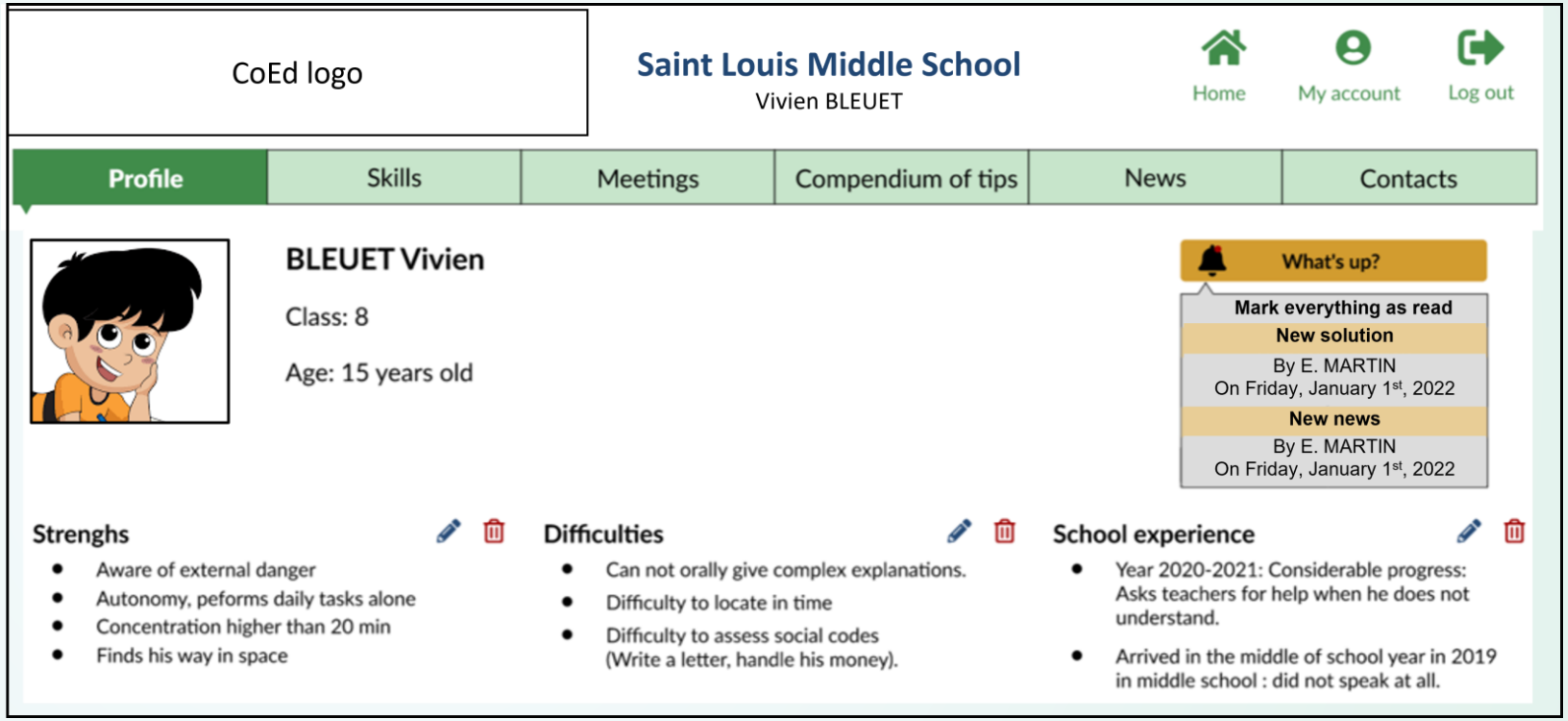
| Dashboard | Profile | Skills | Meetings | Compendium of tips | News | Contacts |
|---|---|---|---|---|---|---|
| 2 | 4,5 | 7 | 1 to 10 | 1 to 8 | 3 | 1 |

- Collection of interaction data

- Usage of scenario

# Conclusion

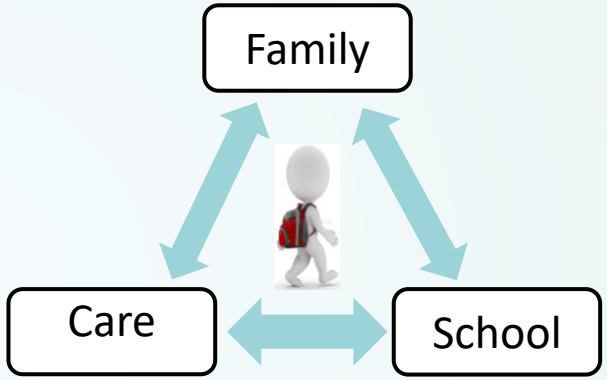
- Participatory design
- ToGather meets the demands
  - Excellent user experience
  - Low cognitive load
  - Easy to use



# What comes next

A field assessment

- To test ToGather in the field via a weekly use
- Recruitement of dyad minimum composed of:
  - Parent & specialized teacher / main teacher
  - Parent & main carer (often specialized educator)
- 2 semesters
- 3 assessments spaced 3 months appart




In the future: *ToGather* from middle school to University

# THANK YOU !

TOUS ENSEMBLE

Time for questions