

Presenting person

MathCityMap

Module 1: Outdoor Mathematics & App

Deutschland
Land der Ideen



Ausgezeichneter Ort 2019



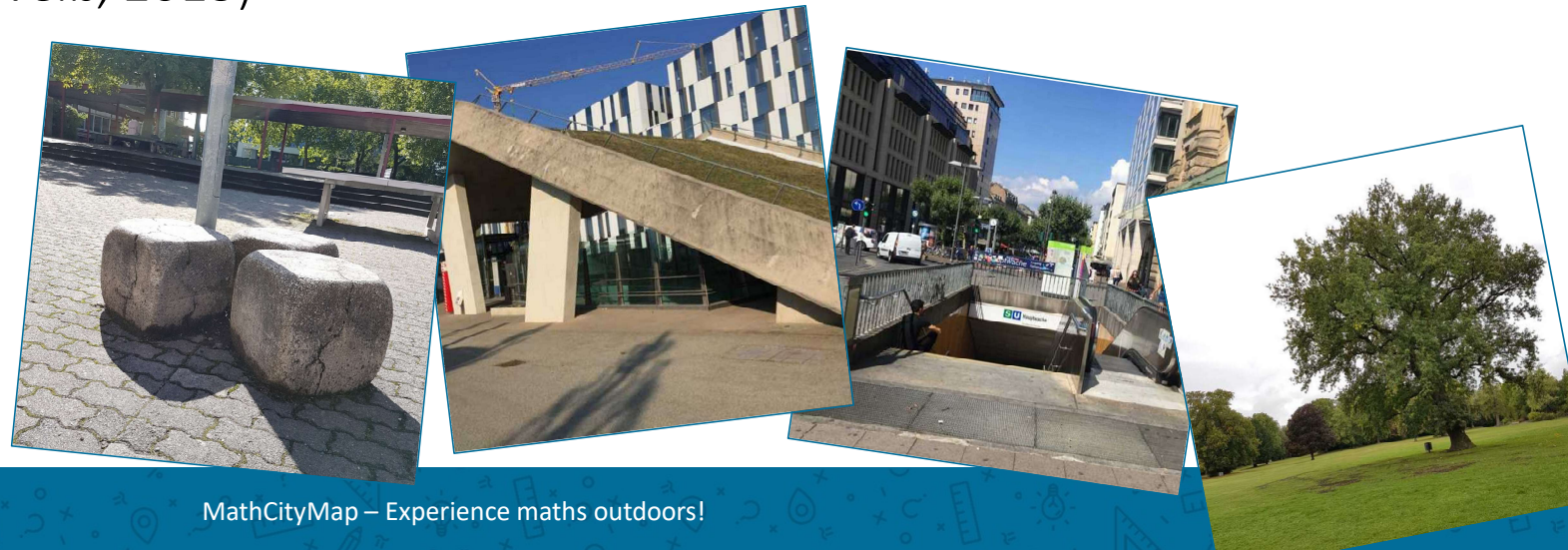
Potential of extracurricular learning

- Great potential is attributed to learning at extracurricular learning centres (DfES, 2006)
 - Creativity
 - Development of subject-related and interdisciplinary skills
 - Attitude towards learning
 - Motivation
- Long-lasting memories of learning in out-of-home situations (Dillon et al., 2006)



Math Trails

- A Math Trail is a mathematical hiking trail
 - A walk through which math can be discovered (Shoaf, Pollak & Schneider, 2004)
 - Discover maths at interesting places / objects
- Can take place anywhere and is suitable for all age groups (Ludwig, Jesberg & Weiß, 2013)

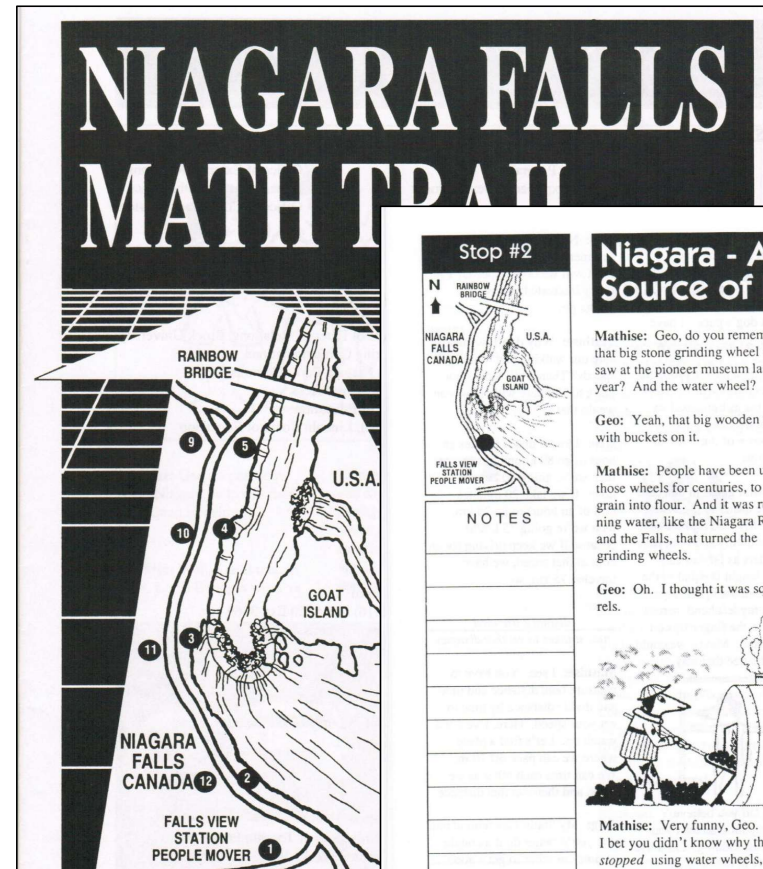


Math Trails

Historical Example: Muller, 1993
 “Niagara Falls Math Trail”

- Realistic tasks
- Based on the local conditions
- Contexts:
 - Waterfall
 - Power generation
 - Bridges

Goal: near to their real-life, tangible maths for everyone



Niagara - An Awesome Source of Power

Mathise: Geo, do you remember that big stone grinding wheel we saw at the pioneer museum last year? And the water wheel?

Geo: Yeah, that big wooden thing with buckets on it.

Mathise: People have been using those wheels for centuries, to grind grain into flour. And it was running water, like the Niagara River and the Falls, that turned the grinding wheels.

Geo: Oh. I thought it was squirrels.

Mathise: Very funny, Geo. Well, I bet you didn't know why they *stopped* using water wheels, at the end of the 18th century. It was because James Watt invented the steam engine. But steam engines were big and really dirty, so by the end of the 19th century people started using electricity.

In 1881 they built a little power plant near the bottom of the Falls. It generated direct current electricity for some lights in the Park. But direct current electricity doesn't travel through wires very well; most of it gets lost on the way. If people wanted to use the electricity they could generate from the Niagara River and the Falls, they had to find a way to get it to Toronto and Buffalo, where all the industry was.

In 1890, the famous physicist Lord Kelvin was part of an international commission of physicists and engineers to figure out how to solve the problem. They recommended a power plant generating alternating electric current, because it travels better than direct current. And in 1896, the first power was sent by wire all the way from Niagara Falls to Buffalo. This was one of the most important moments in our history. Much of what we do uses electricity generated many kilometres away.

Geo: What's that big, fancy building over there? Look at those pillars!

Mathise: That's where the Electrical Development Company made electricity to light the streets and run the streetcars in Toronto. Now we have Ontario Hydro. They

Trails

- Webportal > Trails
- ÖFFENTLICHE TRAILS
- MEINE TRAILS
- FÜR MICH
- FAVORITEN

Sortieren nach
Neueste

D³-Kongress: Sekundarstufe New
DE, Gießen 130.9 km
6 3 0725605 1 [AUF KARTE](#)

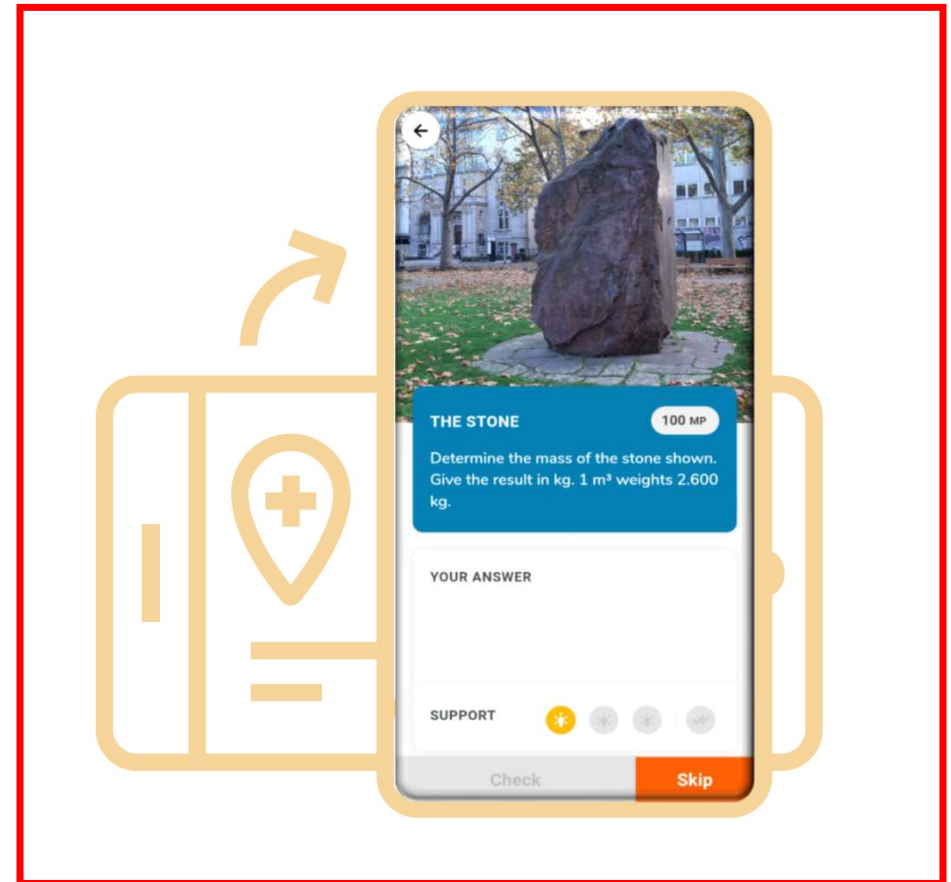
Ville Haute - LU New
LU, Luxembourg 185.0 km
9 15 3425528 10 [AUF KARTE](#)

Voltas À Beira Douro New
PT, Gondomar 1624.2 km
6 20 1625498 0 [AUF KARTE](#)

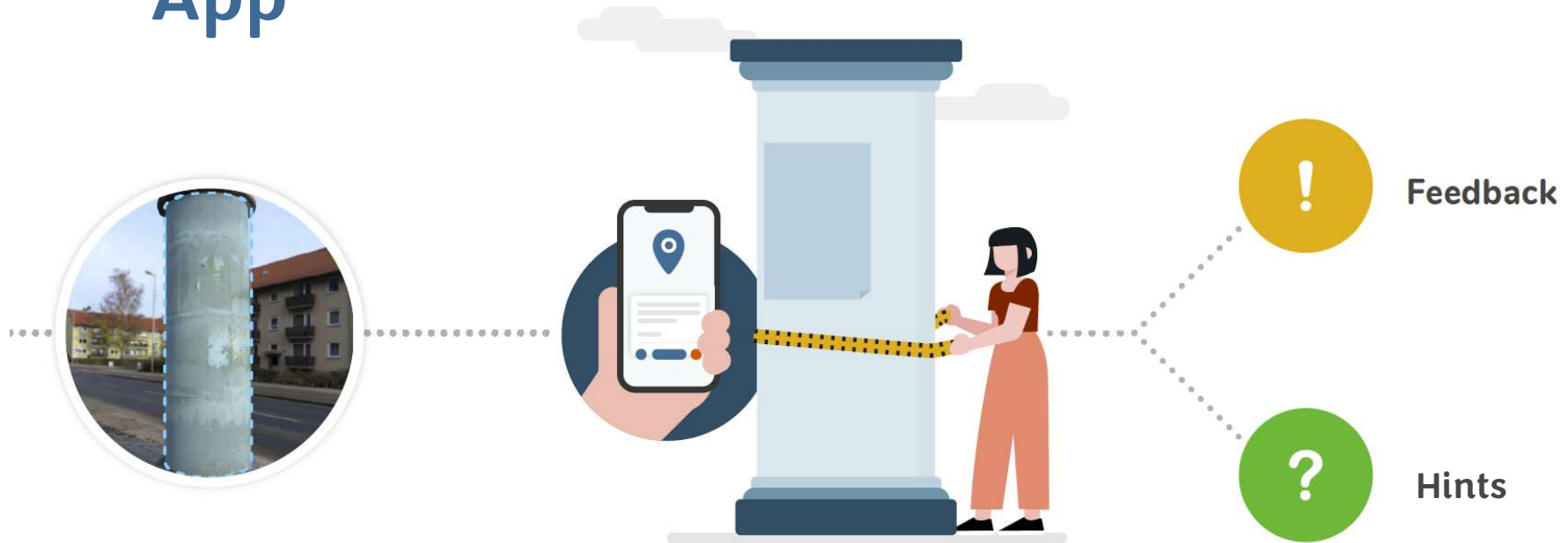
Cité de Carcassonne
FR, Carcassonne 841.8 km
8 11 7925348 14 [AUF KARTE](#)



The MathCityMap System



App



Math  CityMap

Preparation in the classroom

Download the MathCityMap-App

Now form groups of three

Download the MathCityMap-App

*Play Store
(Android)*



*App Store
(iOS)*

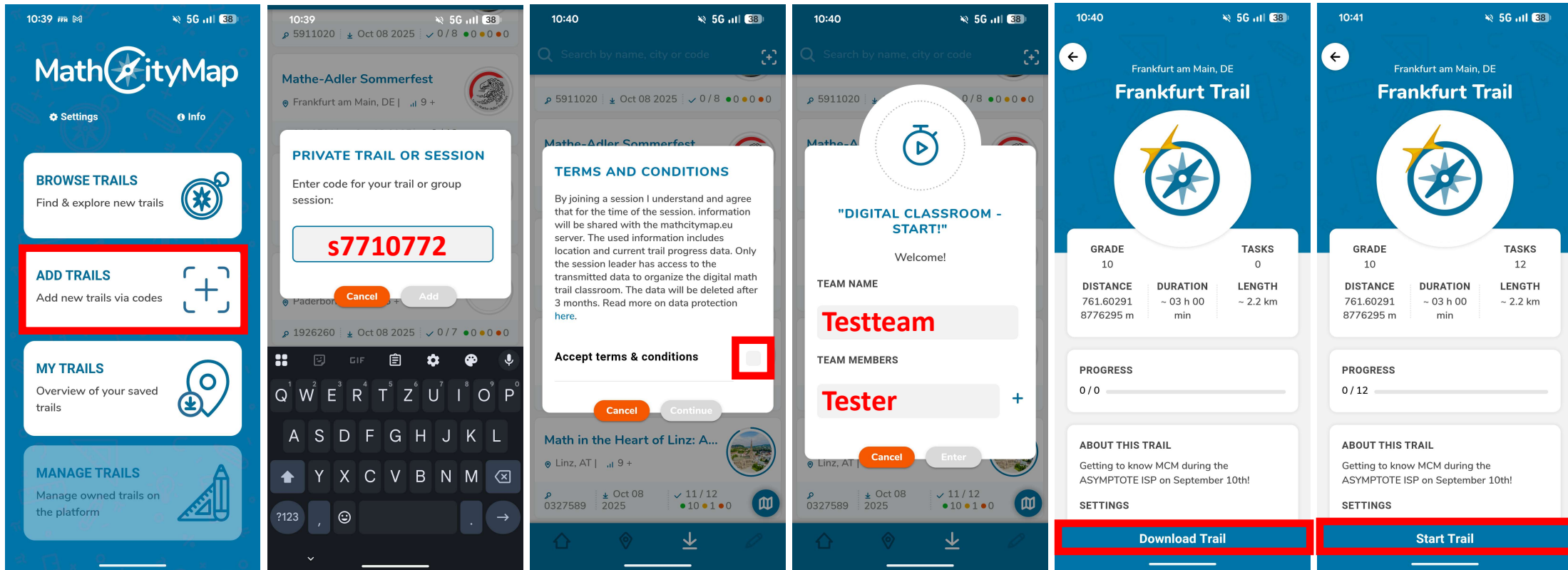


MathCityMap in the classroom

Preparation in the classroom

- Take one Math Trail set per group: folding rule, tape measure, pencil
- Each group only needs 1 mobile device with the MCM app
- There are 3 roles - swapping roles is welcome :
 - Navigation Operates app, helps to find tasks
 - Measuring Responsible for precise measurements and measuring tools
 - Notetaking Records measured values and solution path

Now it's your turn!





We will meet here back at **10:30**.

Trail: **MathCityMap** la première fois

Code: **s7710772**

Have fun!

#1 - Stock Brot | 0

Finja Lilly ian vedad

Progress bar for #1: 10 circles, 1st circle filled.

Zuletzt online: 7 Minuten

#1 - Team demo | 0

Anastazja,Nahide,Hosni

Progress bar for #1: 10 circles, 4th circle filled.

Zuletzt online: 0 Minuten

#2 - Bombaclat | 0

Erik m erik w Luca c

Progress bar for #2: 10 circles, 9th circle filled.

Zuletzt online: 0 Minuten

#3 - Tachenrechner | 0

Aleyna,ben,Julika

Progress bar for #3: 10 circles, 10th circle filled.

Zuletzt online: 6 Minuten

#4 - Herr bugels | 0

Fynn Finn Phillip

Progress bar for #4: 10 circles, 3rd circle filled.



#3 - Les Big GP | 100

3



Last online: 0 minutes

#4 - Apple pi | 100

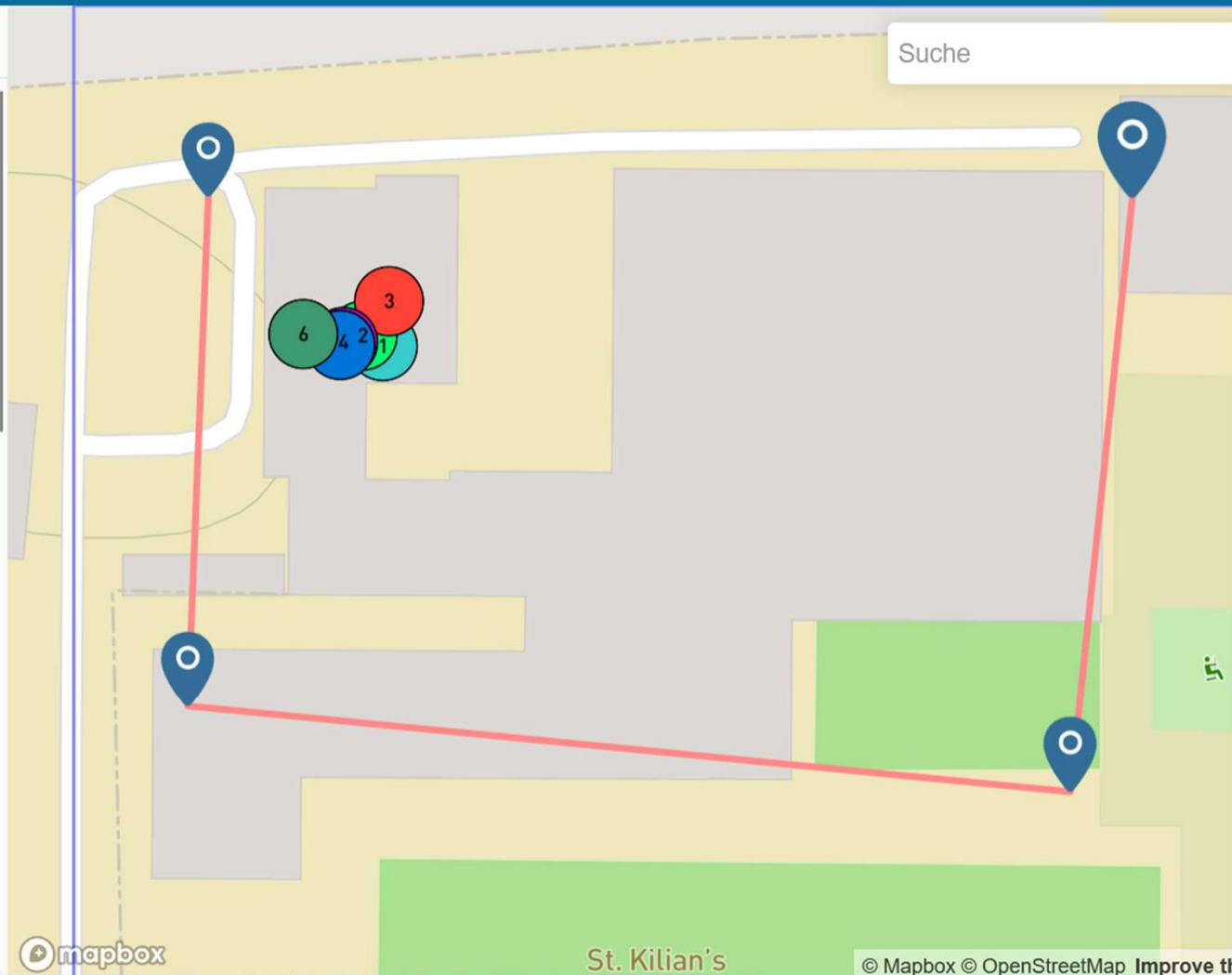
Nathan,Syl,Gaby



Last online: 0 minutes

#6 - Les rats | 100

Audrey,Lara



MCM meets MLS [Laufend - 40 Minuten verbleiben]

Webportal > Trails > Trail 1320078 > Digitale Klassenzimmer > s5110550

TEILNEHMER EINSTELLUNGEN EVENTS

#7 - Stock brot | 216

Finja lilly ian vedad



Zuletzt online: 0 Minuten

#2 - Team demo | 213

Anastazja,Nahide,Hosni



Zuletzt online: 0 Minuten

#8 - Taschenrechner | 204

Aleyna,Julika,Ben



Zuletzt online: 0 Minuten

#6 - Die wilden endecker | 183

Vincent,Fenja,Nina



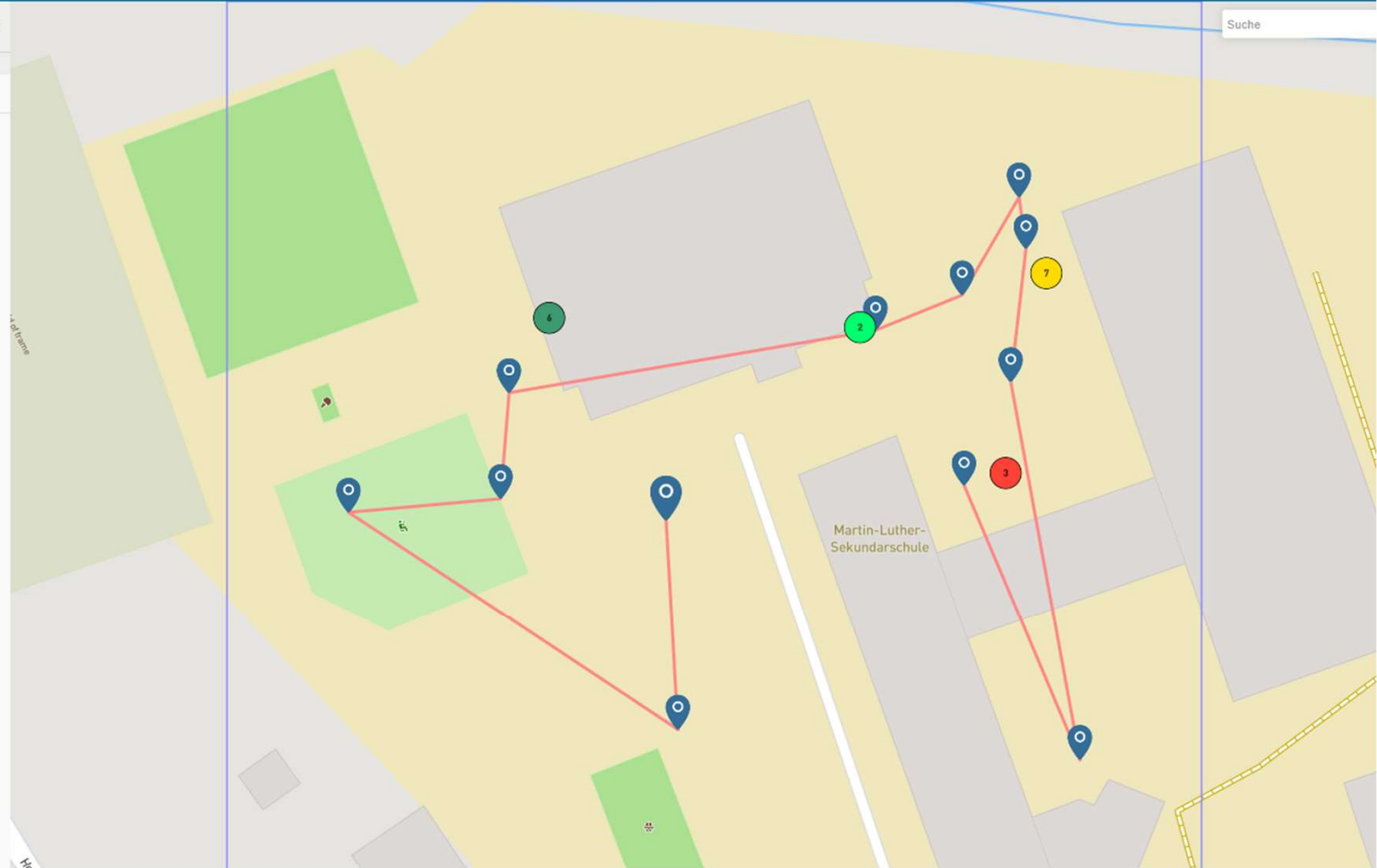
Zuletzt online: 0 Minuten

#3 - Bombaclat | 125

Erik m erik w Luca c



Zuletzt online: 1 Minuten



MCM Webportal

MCM meets MLS [Laufend - 27 Minuten verbleiben]

Webportal > Trails > Trail 1326078 > Digitale Klassenzimmer > s5110556

TEILNEHMER EINSTELLUNGEN EVENTS

#3 - Bombaciat | 325

Erik m erik w Luca c

Zuletzt online: 0 Minuten

#2 - Team demo | 305

Anastazja,Nahide,Hosni

Zuletzt online: 0 Minuten

#7 - Stock brot | 283

Finja lilly ian vedad

Zuletzt online: 0 Minuten

#6 - Die wilden endecker | 253

Vincent,Fenja,Nina

Zuletzt online: 0 Minuten

#8 - Taschenrechner | 204

Aleyna,Julika,Ben

Zuletzt online: 0 Minuten

Page navigation

Related tasks 



1. Le territoire du goblin



2. Trouvez la surface



3. Trouvez le volume



4. Du centre au corner



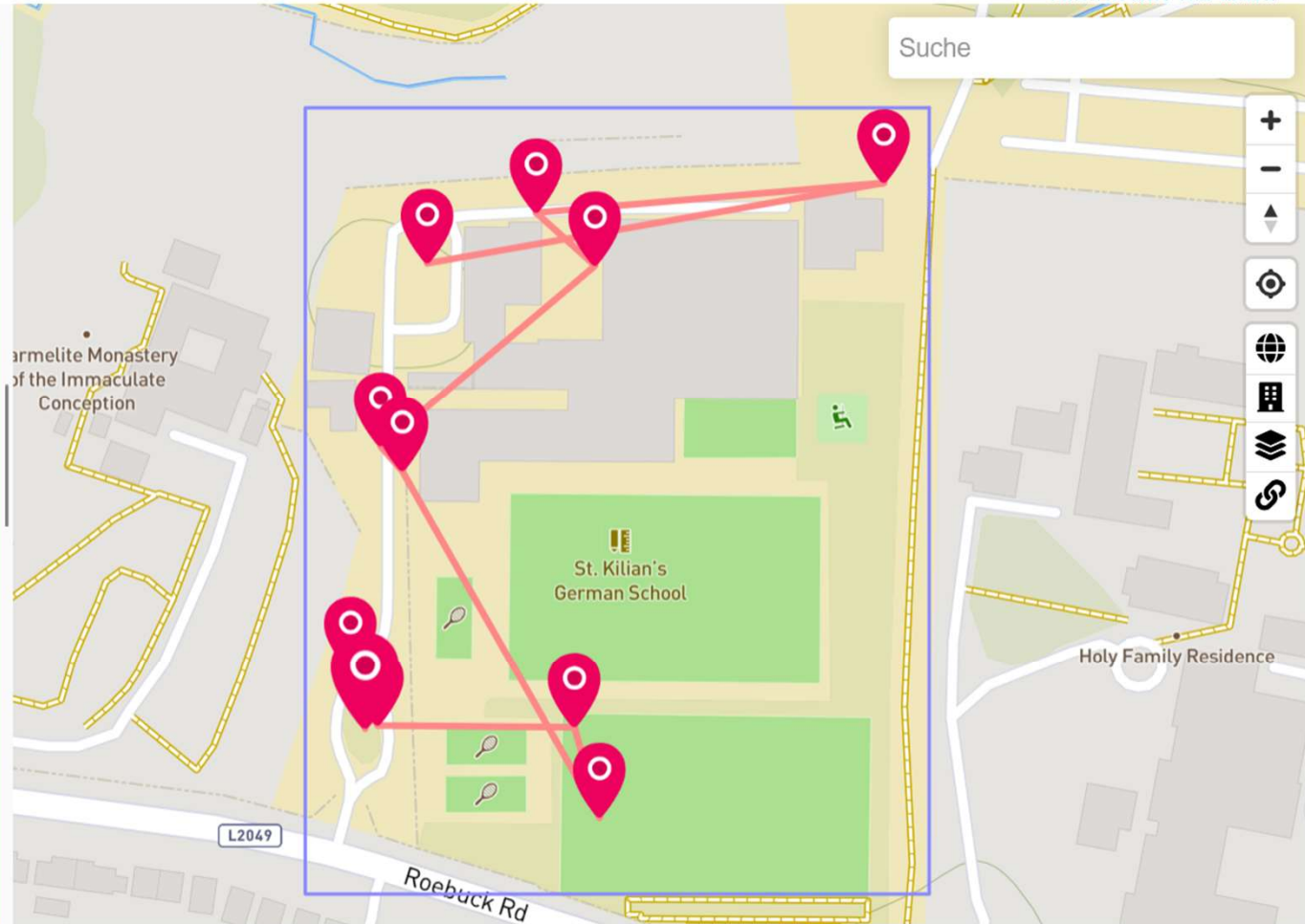
5. La surface de réparation



6. Trouvez la pente



7. Le prix d'un panneau lumineux



Task: Le prix d'un panneau lumineux

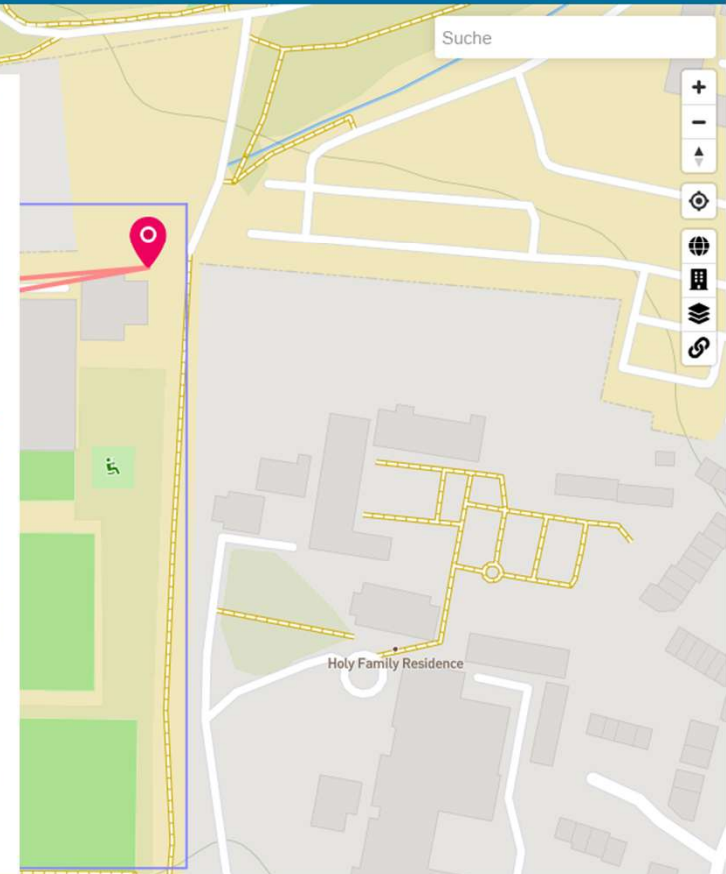
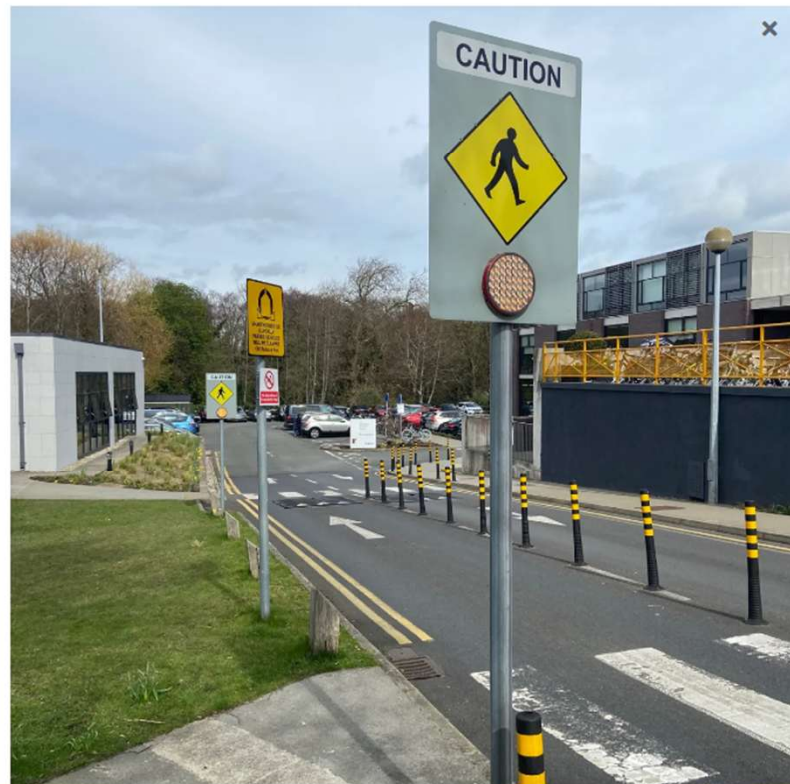
Web portal > Trails > Trail 5726540 > Task 03112526

Trail: Les cerveaux



Le prix d'un panneau lumineux

Combien coûte l'utilisation d'un panneau lumineux composé de plusieurs diodes, au cours du mois de Mars 2025, seulement du Lundi au Vendredi, de 8h à 16h ? (une diode consomme 0,02 W et 1Wh=0,03€) Donne la réponse en Euros.



Feedback

How did you experience working on the Math Trail?