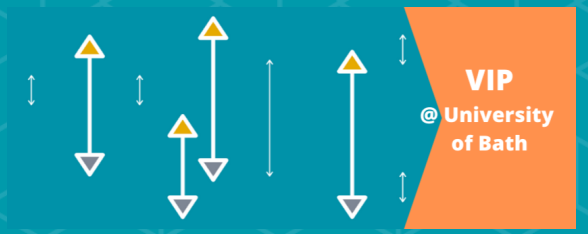
CENTRE FOR LEARNING & TEACHING



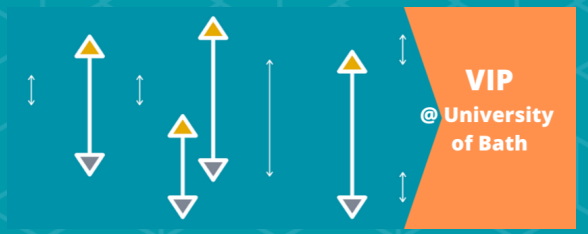
University of Bath

Vertically Integrated Projects

Welcome to our End-of-Semester VIP Poster and Presentation Event

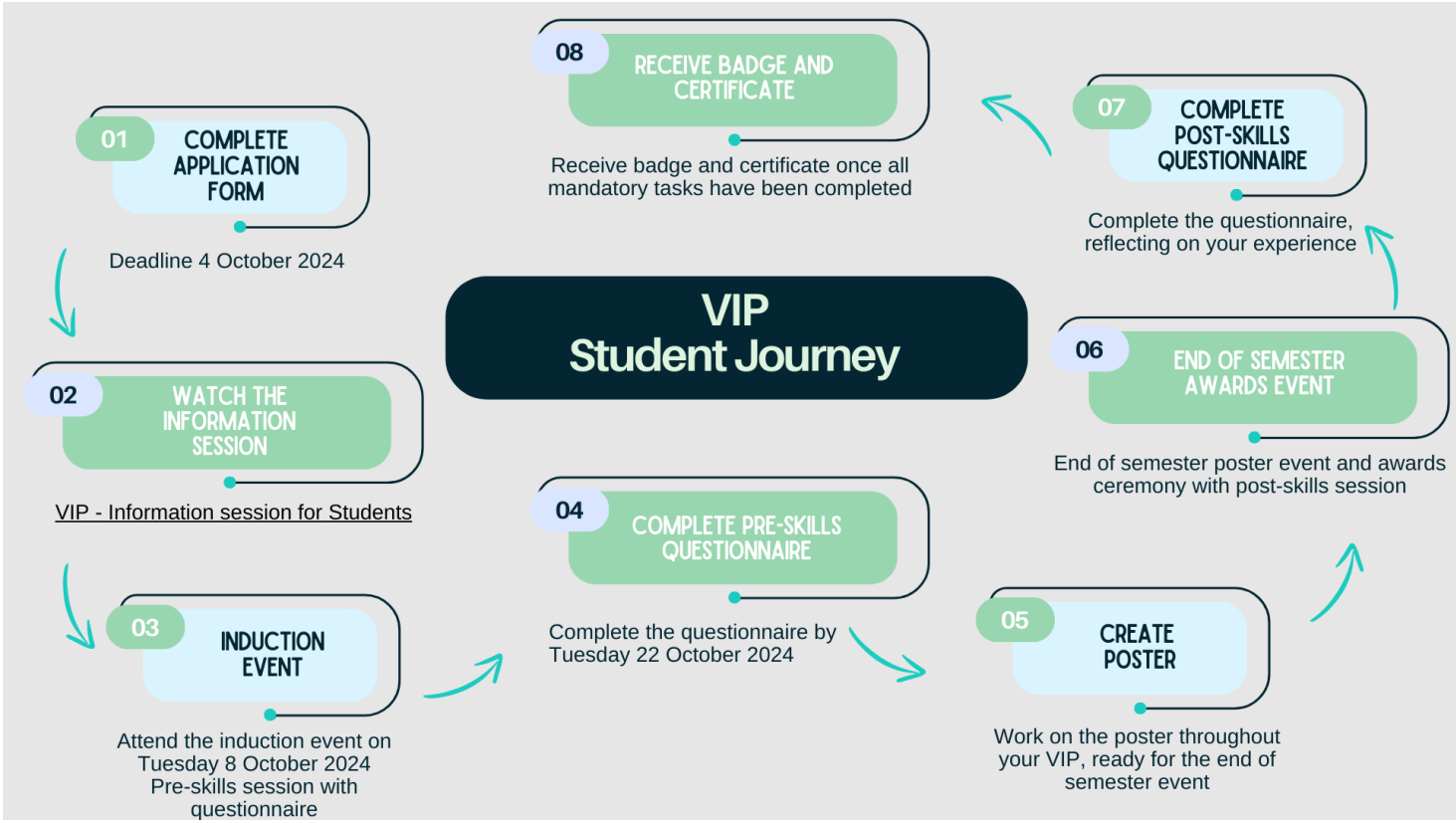
10th December 2024

CENTRE FOR LEARNING & TEACHING



Agenda

16:15	**Welcome and Information**
16:25	Skills progression
16:45	VIP Posters and Questions
17:45	Thanks + Refreshments
18:00	Close



✓ Continuing into Semester 2, Video competition, celebration event in May

VIPs – Skills' Progression

Emma Kerry - Skills Centre: Academic Skills Course Leader

ek840@bath.ac.uk

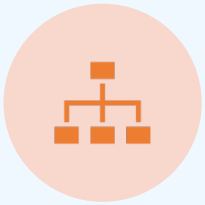
Before Dave spoke about…

Skills Centre | UNIVERSITY OF BATH

TEAM LEADER

CHAIRPERSON

RESEARCHER



ADMINISTRATOR

EDITOR

Dave also spoke about…

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Collaboration skills	Learning from each other - sharing ideas
Communication skills (not just listening skills…)	Providing constructive criticism Accepting feedback
Decision-making skills (roles) and negotiation skills	Improving interpersonal skills and conflict resolution skills Learning to not fear failure whilst being ready to identify when to change
Time management	Learning to organise your time
Leadership skills (involving others and trusting others)	Delegation skills

Go to padlet…

Skills Centre | UNIVERSITY OF BATH

- Share examples individually of your experiences this semester:

Feedforward

Skills Centre | UNIVERSITY OF BATH

Discuss in groups:

- Think about the impact participating in VIPs has had on you as a person. How have you changed?

- Think of a skill you have developed this semester. How would you tell your employer about this? Use STAR.

Feedback for Emma

Skills Centre | UNIVERSITY OF BATH

Skills for Success

What skills will you develop at Bath?

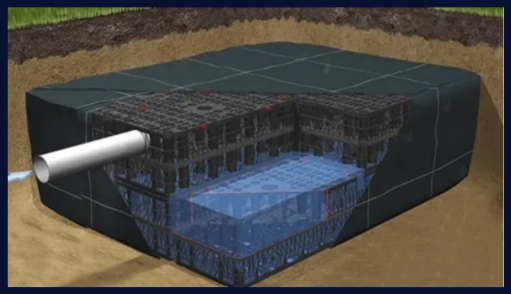
- Academic skills
- Maths and statistics
- Languages
- Employability
- Digital

go.bath.ac.uk/my-skills

@BathSkills

Slow The Flow

Providing a solution to excess surface water buildup by allowing water that is collected from roof guttering to drain slowly into the ground.



Soakaways as a Solution

Reducing stress on drainage piping infrastructure

Experimental Goal:

Investigate the effectiveness of soakaways through recording water levels within the crate over time and the water content in the surrounding soil. Crucial conclusions on whether soakaways are effective in the area will be developed.

Why Soakaways?

- Cost effective
- Easily retrofitted to existing properties/land.
- Non-imposable on aesthetics as they are retrofitted under the soil.
- Hold great weights and will not collapse.

UNIVERSITY OF BATH

Timeline:

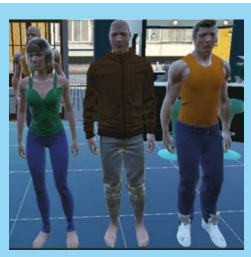
We plan to implement a soakaway crate either in a Bath residents garden through working with the charity Transition Bath or on campus.
It will be in place for a month for data to be measured and modelled mathematically.

Tests For Suitability:

To test if an area is suitable for implementation of soakaways, three tests will be carried out.

- Percolation tests
- Groundwater Source Protection Zone analysis
- Trial Site Sssessment Hole tests

TEAM ACHIEVEMENTS THIS SEMESTER



Academic Team

- Recruited **new members**, enhancing our team through different skills and insights
- Amended **Ethics Application** which has been approved for transcription procedures
- Reached out to **societies, subject mailing lists, EDI team** to promote study, and designed **new promotional materials** to use across social media/campus to encourage participant recruitment
- Submitted an ongoing application to the **Research Participation Scheme (RPS)** to enhance recruitment efforts.

VR Team

- Completed the development of the **VR training scene,** which included:
  - Designing the bar environment
  - **Synchronising all characters** within the scene to follow the same timeline and interact with each other
  - Creating a system to streamline the experiment setup and execution.
  - Conducting **extensive bug testing** to ensure a smooth user experience

AI Team

- **Adapted the model** to work separately for each individual scene
- Obtained vastly improved, **scene-specific training data**
- Optimised the model (with improved training data) to work with **high accuracy of 95%**

General Outreach

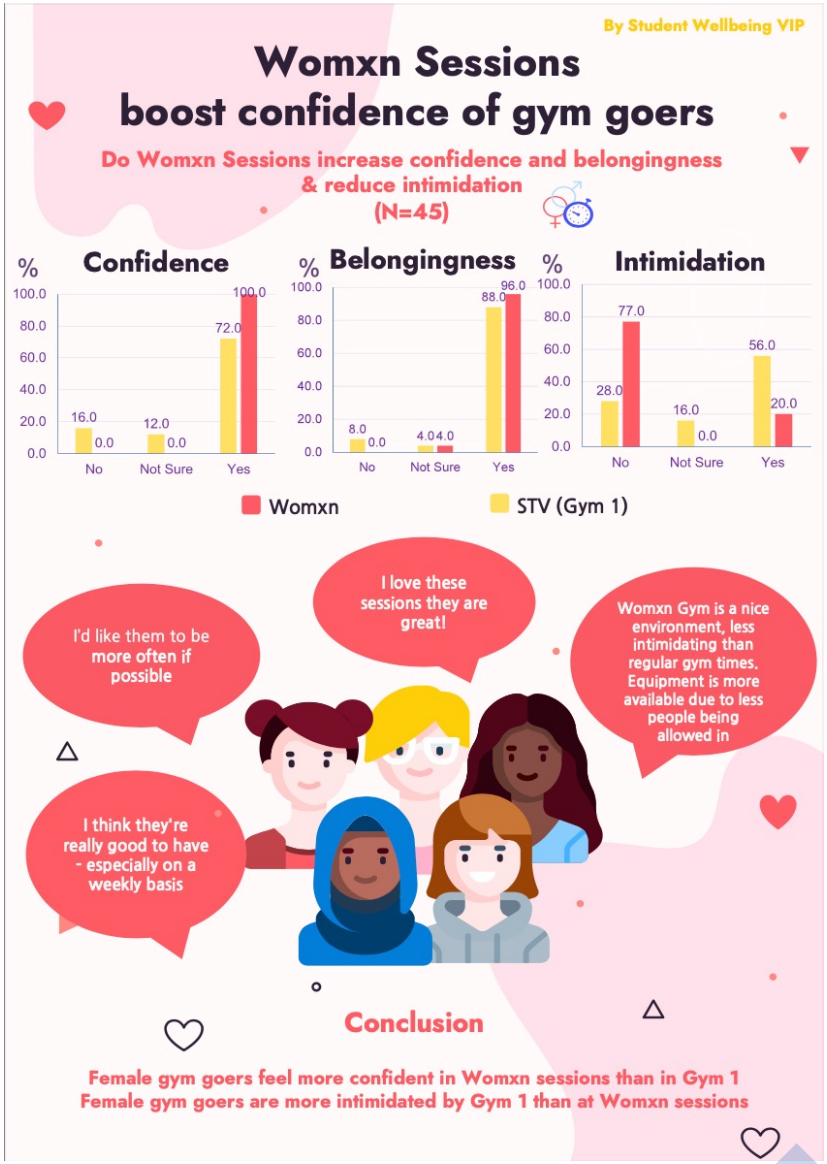
- Presented the project at the **Bath Research Assembly** held at the Percy Centre on the 7th November
- Liaised a public engagement session with the **Bath Medical Museum** (aiming to be held in January/February)

Future Directions:

- Refining the **VR** application
- We are aiming to recruit 5-10 participants to **pilot the VR** before the end of this semester
- **Waiting for RPS approval** to help gain more participants
- Planning a **holistic participant recruitment plan** for 2nd semester (using bottom/top recruitment)

Would you like to participate? Gain valuable **sexual harassment training**, in either a VR or seminar condition!

Sign up to our study here!

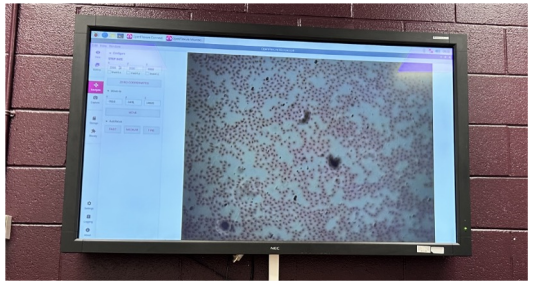

By Student Wellbeing VIP
Womxn Sessions
boost confidence of gym goers
Do Womxn Sessions increase confidence and belongingness
& reduce intimidation
(N=45)
% Confidence
100.0
80.0
60.0
40.0
20.0
0.0
16.0
0.0
12.0
0.0
72.0
100.0
No
Not Sure
Yes
% Belongingness
8.0
0.0
4.0
4.0
88.0
96.0
% Intimidation
28.0
77.0
16.0
0.0
56.0
20.0
Womxn
STV (Gym 1)
I'd like them to be more often if possible
I love these sessions they are great!
Womxn Gym is a nice environment, less intimidating than regular gym times. Equipment is more available due to less people being allowed in
I think they're really good to have - especially on a weekly basis
Conclusion
Female gym goers feel more confident in Womxn sessions than in Gym 1
Female gym goers are more intimidated by Gym 1 than at Womxn sessions

Vertically Integrated Project with The Openflexure Project

openflexure microscope

What is the Openflexure project?

The Openflexure project makes high precision mechanical position available to anyone with a 3D printer for use in microscopes, and more!



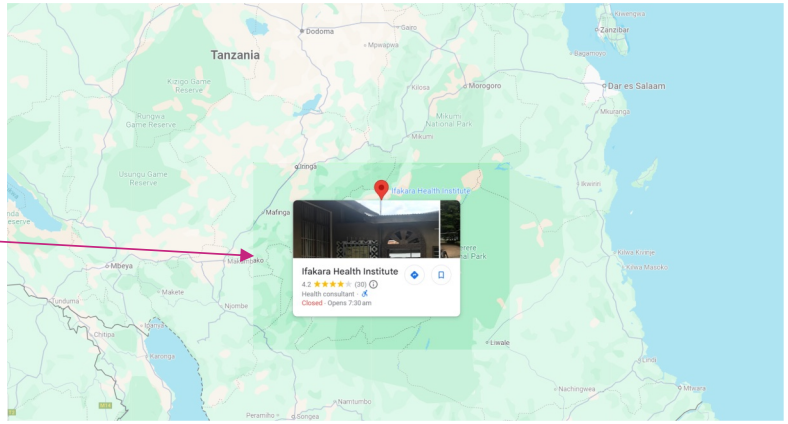
What have we done?

Our first semester has been jam-packed with amazing activities to help us across the project:

- We had a bit of play with the microscopes to understand how they worked.
- We were taught more about open-source tools such as GitHub and open-source CAD software.
- We spoke to users and evaluated the website.
- We found out how we can help!

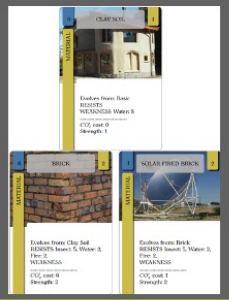
What are going to do now?

We have found issues with heat and humidity in tropical climates such as Tanzania, where it is used for malaria diagnosis. We are going to conduct thermal and mechanical testing to rectify the problem and do some programming so it doesn't happen further.



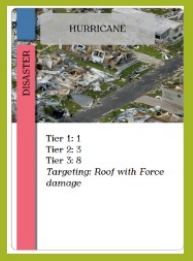
CO-PRODUCTION OF CONSTRUCTION MATERIALS: WORKING FOR AND WITH THE COMMUNITY

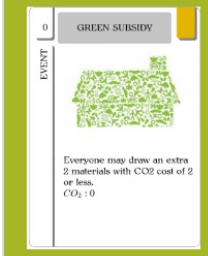
We are investigating what influences communities to choose specific materials when designing buildings and we decided to do this through an interactive game. The defining factor of this game is a CO_2 counter: as more materials are in play to build structures, the CO_2 count increases each turn. As CO_2 reaches certain thresholds, disaster events get more destructive and once the 'tipping point' is reached, the game ends!



- Materials will have **3 - 4 evolutions**, each requiring the previous material stage.
- Each evolution adds on to the **strength** of the last, alongside the **CO_2 cost!**
- The **WEAKNESS** refers to what disasters will have the worst effect on the material if used in a structure, whereas the **RESISTS** shows what disasters the material is the strongest against. The higher the stage of the material, the more they can resist and the less they are weak to!

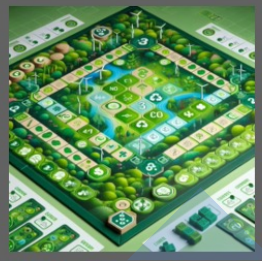
Disaster Cards: These are destructive events that can damage of destroy part of a structure. They also have a specific type of damage. For example, this hurricane disaster inflicts force damage!
The tier of these disasters depends upon the amount of CO2 in play: once certain thresholds are reached, the level of damage will increase dramatically!





Event Cards: players can play these to gain an advantage or to disadvantage other players. This Green Subsidy event lets each player draw environmentally friendly cards, which places every player in a better position. Other cards could be used to forbid materials or even cancel another action card, allowing both cooperative and competitive strategies, similar to real life!

AI DEVELOPED ASPIRATION IMAGES



DiVERSiTY NETWORK VIP

Some students at the University of Bath have reported a lack of sense of belonging. Being a student diversity group, our aim is to understand the underlying causes of this issue, to generate debate, and to take steps to enhance diversity.

Highlights from our social event:

- Got to hear students' experiences with diversity at the University of Bath.
- Chatted with students from diverse backgrounds.
- Discussed what students want to see in the future from the Diversity Network VIP.

BWB: Semester 1 2024-25

Hardware

OASIS Development Kit (ODK):
Circuit design completed:

- **Sensor interface circuitry**: Connects up to 8 analogue sensors, 4 SPI devices, 4 I2C devices, and 4 PWM devices using analogue multiplexing.

Development progress:

- Circuitry and PCB layout designed in **Altium Designer**.
- Bill of materials and manufacturing specifications finalised.
- Design sent to **PCBWay** for manufacturing (expected January 2024).

Next steps:

- Order additional components for assembly and testing.
- Test manufactured boards using **temperature and turbidity sensors**.
- Begin developing analogue sensor circuitry for the **pH sensor**.

Saline Supernova Progress:

- Transferred schematic from **KiCAD to Altium Designer**.
- Fixed layout and circuit issues from last year's GDBP.

Next semester goals:

- Manufacture and test the updated design.
- Research and integrate **UV disinfection tubes** for the prototype.
- Explore **energy recovery devices** for improved efficiency.

Challenges:
Timeline for building and testing prototype additions remains nuclear.

Finance

Fund Allocation and Management:

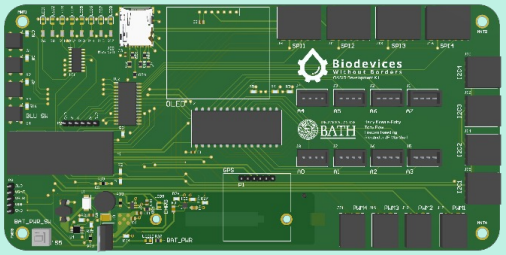
- Distributed funds effectively across **sub-teams**.
- Implemented a **detailed component order sheet** to formalize and track expenditures systematically.

Secured Internal Funding:

- Budgeted the financial support needed from internal funding
- Obtained financial support through the university's **VIP allocation** to kickstart initiatives.

External Funding Planning:

- Currently identifying and preparing for **external grant applications** and other funding opportunities tailored to the team's needs.



Biodevices
Without Borders

Sensors

Onboarding New Members:

- Provided training sessions to new team members on **sensor fabrication techniques** and **testing methodologies** to ensure seamless integration into ongoing projects.

Software

Bug fixes and feature enhancements:

- Updated and optimised the app to reduce bugs.
- Added a **test page** to improve functionality and user experience.

Key features added:

- **User registration**: Enables users to create accounts for personalised experiences.
- **Location randomisation script**: Provides randomised locations for diverse user testing scenarios.
- **Heat map with live data**: Displays real-time data visually for better monitoring and insights.

Backend improvements:

- Restructured the file system for **faster data analysis,** improved **efficiency** and maintenance codebase.

Outreach

Collaborations with NGOs:

- Connected with Mirella Di Lorenzo, who is facilitating partnerships with NGOs in Brazil.

Engagement with new contacts:

- **Connecting with UoB academics: Helena Lake** and **Barbara Kasprzyk-Hordern** to introduce them to the project, ensuring alignment with the new CDT team
- Established partnerships with other **VIP teams** to foster interdisciplinary collaboration.

Potential field testing visits:

- Initiating plans for a possible field visit to **Bangladesh**
- Conversing with **BART** to gain more insight into water quality testing

Industry engagement:

- Contacting potential sponsor companies from the Water Wastewater & Environmental Monitoring (WWEM) Conference following invite.

Social

Team Bonding Activities:

- Organised team-building events to strengthen collaboration and morale, fostering a supportive and cohesive working environment.

Widening Participation And Access To The University of Bath

By Young People from Somerset and West Wiltshire

WHY?

The University struggles to recruit students from low income families and wants to tackle this issue. In particular, there are very few "commuter" students at the University.

THE AIM

To assess the potential to attract local students and assess if it is worth investing in local bus routes for potential commuter students.

WHAT WE DID

Last year, identified schools in the region who could send more students to Bath.

This year, discussed ways to gather information from different groups and compared our Access and Participation Plan (APP) to Bath Spa's plan to see if it is a problem unique to our University.

WHAT WE FOUND

We found that Bath Spa has different support systems in place for these students and concluded that it may be a problem more specific to us.

HOW?

We plan to submit an ethics application and interview staff and students in the identified local schools.

We also plan to run a focus group with current "commuter" students here at the University. In addition, we hope to explore ways in which the University can support incoming and current "commuter" students.

NEXT STEPS

We plan to talk to our identified schools and teachers about what the biggest obstacles to higher education at Bath are and how we can make it easier.

Furthermore, we plan to speak with our pre-existing "commuter" students about their experience and support from the uni.

Undertake a more detailed comparison of our APP and Bath Spa's APP.

VIP - Carers Centre Carbon Reduction Journey

Cares for ≈
20,000
carers in BANES

Saves the NHS
£46 million
a year

Main Objectives

Data Collection & Implementation

Collecting internal data to set the reduction goals, such as:

- Vehicle Mileage: to analyse the employees and carers travel habits & deduce the consequent emissions.
- Energy usage: to find the baseline numbers, identify problem spots, and track improvements.

By using:

- Thermal modelling: using the Zebra modelling tool for estimating heat transfer in the building.

To optimise the suggested solutions: Heritage double glazing, internal multilayer foil insulation, solar PVs, battery, water source heat pump, and more.

Analysing Case Studies

Building a database of existing solutions namely in listed heritage buildings to identify gaps and potential opportunities to optimise the efficiency of the retrofit and find new ways to measure their success.

Fundraising & Awareness

Exploring different avenues of funding while raising awareness on the Carers Centre's mission. These include:

- Public and private grants and schemes.
- Public events like the Bath Half marathon.

1 year
Installation of double glazing, foil interior glazing, and landscaping elements

2 years
Installation of solar PVs, and infrared panels

Installation of WSHP and a battery that will work in tandem with previous installations

NET ZERO 2030

Collect data and optimise solutions, making the Carers Centre a model for retrofitting

University of Bath VI
Experience questionna

Any Questions?

Please complete our post-survey questionnaire

CENTRE FOR LEARNING & TEACHING

VIP @ University of Bath

Vote for your top poster:
Mentimeter code **8554 5502**