Seeing the world from children's eyes!

Eye-Tracking used as a method to investigate the cognition of children on their way to school

AustriaTech is a…

- … federal agency owned by Austrian Ministry of Transport, Innovation and Technology (bmvit)
- … a neutral partner, coordinating between infrastructure operators, industry and governmental institutions and supporting in…

  - ITS, Urban Mobility & E-Mobility
  - Innovation, Implementation & Deployment
  - Analyses and Studies
  - Support in the development of the Austrian Position
  - Support in the Implementation of Regulations
  - Cooperation between Governments, Cities and Transport & Mobility Provider, Start-ups and R&D

Background

The objectives of the funding programme **Talents** are aligned to:

- **Increasing the interest of children and adolescents in research, technology** and innovation and deepening their relationship to science and technology by actively engaging in the projects.
- **Gender equality** throughout the project, **targeted response of girls and young women**,
- The **networking of (pre) school education institutions and business and research partners** based on innovative topics from science and technology.

Walk Space Mobilität

RETTER & Partner Ziviltechniker Ges.m.b.H.
Ingenieurkonsulenten für Bauwesen, Kulturtechnik und Wasserwirtschaft

Department For Media & Economics
ifh st.pölten

The Project

Division into 3 areas

- Planning and development:
  "My way, your way“
- Public Relations:
- “Operation Zebra“
- Research:
  "I see something you cannot see“

General project objectives / content

- **Impartment of basic knowledge** on vision-field-research, perception and behavior of children
- Identifying problems in the **sensitive school environment** and on school paths, **road safety work**
- **Awareness of adults** and especially parents with regard to the "visions" of the children
- Introduction into directives and standardization for public space and road design
  → Road and traffic - what is behind it?

Planning & Development

Field research

with fun

Planning & Development

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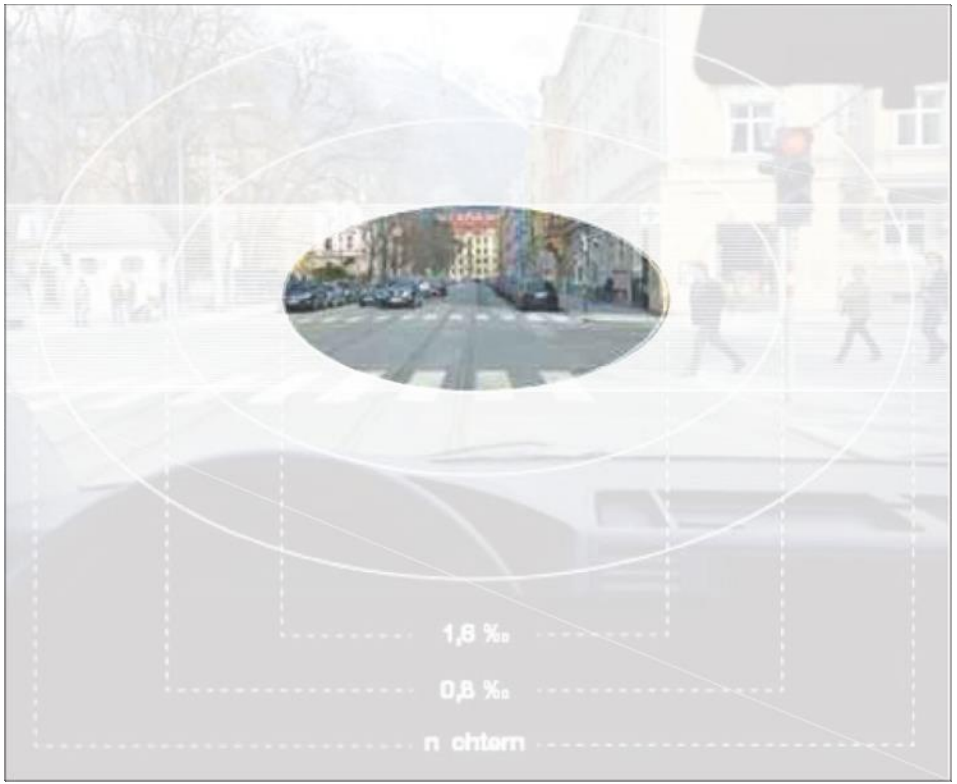
Operation Zebra



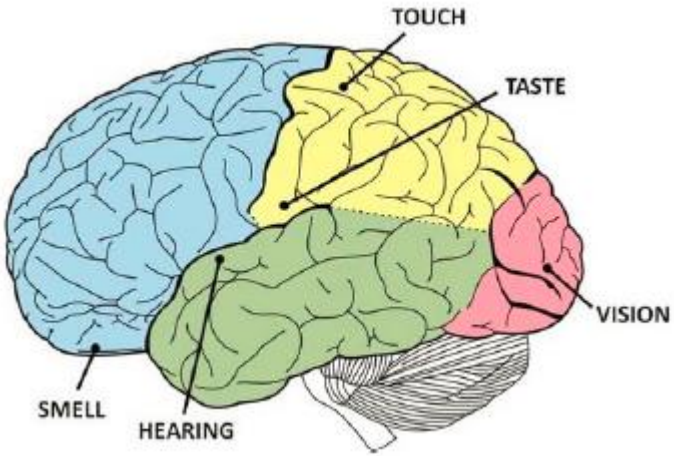
0,8‰ are aproximately

or

Operation Zebra

I see something you cannot see

AROUND 80% OF OUR INFORMATION IS PERCEIVED BY OUR EYES.



PERCEPTION DOES NOT ARISE BY SENSORY ORGAN, BUT IN THE BRAIN!

Keep in mind that children…

…assume that a car stops always in time. They can not know when the car reaches it.

…can not assess distance and speed as good as adults.

…process sensory impressions more slowly .

…can be distracted quickly.

…are too small to be able to see everything.

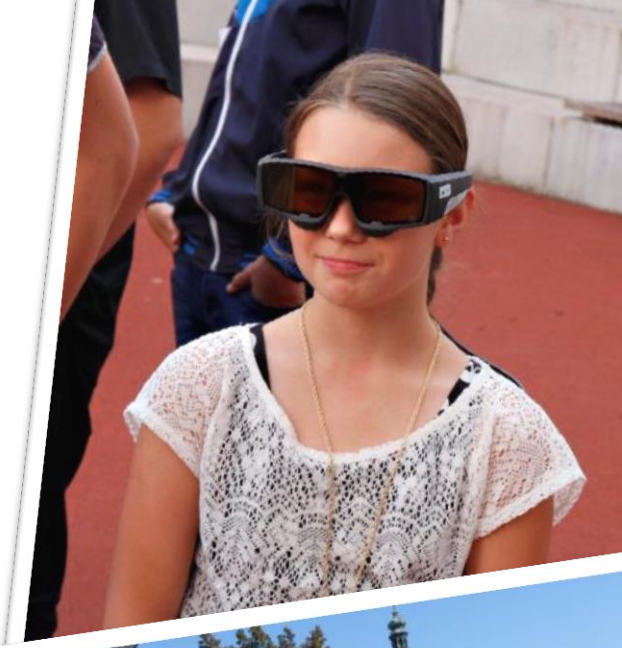
…take notice later on vehicles vehicles coming from the side (restricted field of view)

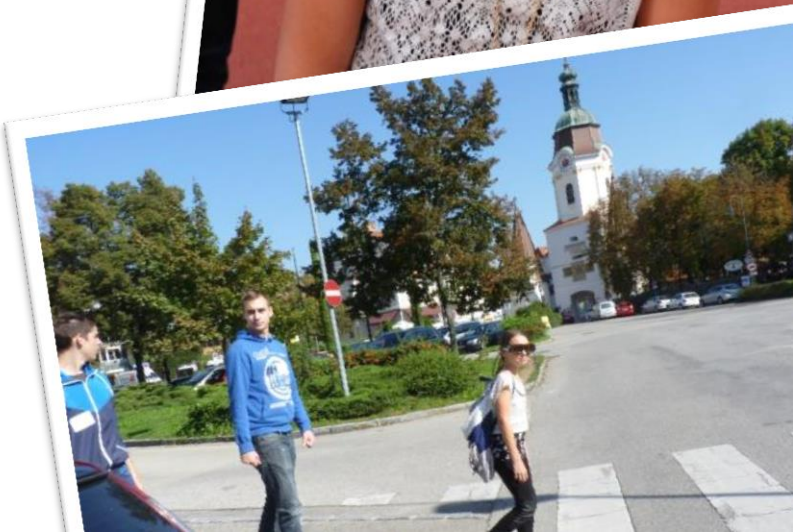
I see something you cannot see

A total of **41 pupils** at three elementary schools conducted tests with mobile eye tracking.

- Location A: 16 tests were held with an average walking time of 3:45 min
- Location B: 18 tests were held with an average walking time of 2:40 min.
- Location C: 7 tests were held with an average walking time of 2:50 min. (one walk was about 16 min.)
  Note: Walking time in the pedestrian zone was not rated)

The routes were selected very individually, a total of only two routes were tested several times.



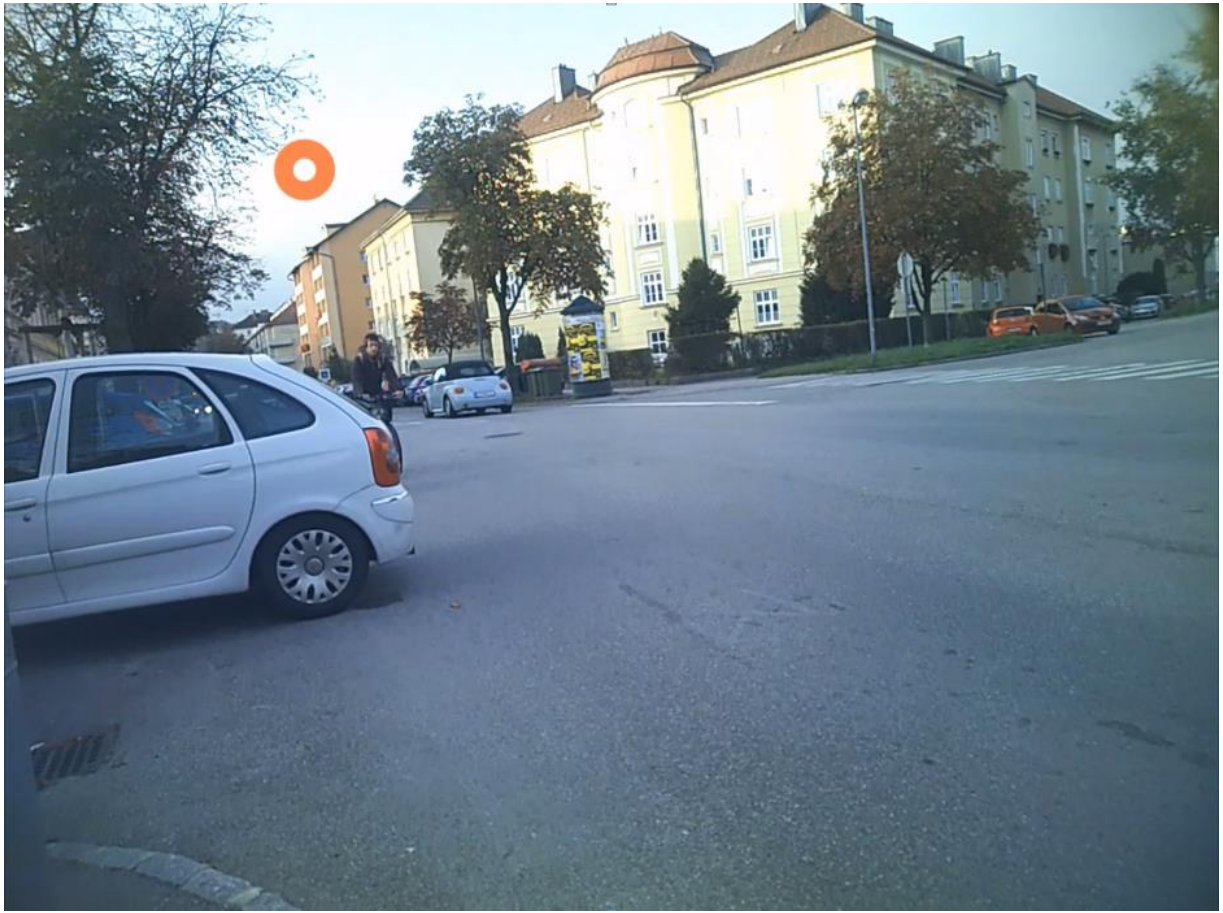


I see something you cannot see

Fixations:
- View resting
- Info can be perceived

Saccade:
- Eye-movement
- Information can not perceived

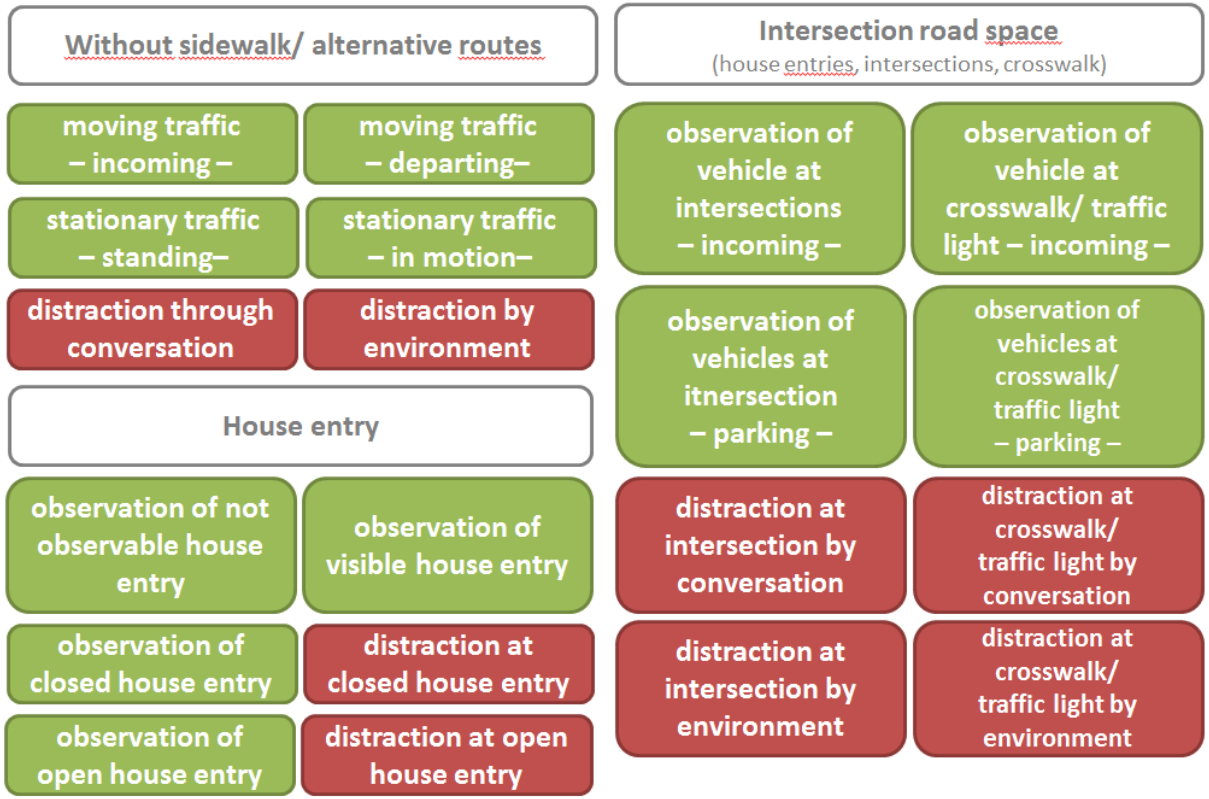
With Eyetracking can be measured where someone looks at, but not…
…what he or she perceives.
…why he or she behaved in a certain way.
→ Therefore we will do eye tracking and interview the pupils.



I see something you cannot see

The videos was evaluated on the basis of a coding arc. Five key areas were identified:

1. Attention on traffic rules
2. Hazard points on the way
3. Behavior of the children at sections without a walkway or in case of detour
4. Behavior of children at home entrances
5. Behavior of children at crossroads Road area (entrances, crossroads, crosswalks, ...)



Outcomes

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1) Attention on traffic rules

- **Every fourth child had to pass a barrier** in which the alternative route did not offer a walkway. **90%** of the children **did not look back before passing** the barrier.
- **Every second child had to pass a crossroad**, in doing so **every third child forgot to look** at least left and right once.
- **Every tenth child gets distracted by other people**.
- **90% of the children have to cross a street**. While doing so every tenth child does cross the street diagonally.
- More than half of the children have to pass a pedestrian crossing, while doing so **every tenth child does not look to the left and right**.
- All children are using the pavement if available. (Only one track does not offer a pavement)

2) Hazard points on the way

In total **only every fifth path was barrier free**, including moving and built obstacles along the way as well as visual restrictions. The most frequent barriers determined are:

- **On every fourth test route** moving barriers are blocking the pathways. Mostly waste containers and parking cars, followed by bikes. (Note: on the day of testing garbage collection took place in the area)
- On 15% of the paths **built obstacles** are causing bottlenecks along the pavement area.
- **Every tenth test track had visual restrictions at crossings** or else traffic signs when looked at from a children's perspective.

Outcomes

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3) Behavior of the children at sections without a walkway or in case of detour

40% of the children are facing passages without pavements along their routes or rather have to choose an alternative route without a pavement.

- **88% of the children have to pass parking cars on paths without pavement.**
- About **every second child has to mind passing cars**
- **Every fifth child is confronted with opposing traffic** (moving traffic incoming).
- **Two children get distracted by the surrounding** of the routes without pavement.
- **One child gets distracted by a conversation** on a route without pavement.

4) Behaviour of children at home entrances (driveways)

88% of the children pass driveways on their way, at maximum even 14 along one tested route. All together every second child gets distracted by open as well as closed driveways. Closed driveways even distract 90% of the 18 children. If the entry is open every third "distractible" child gets inattentive. The ranking is based on the frequency of the behaviour:

- Almost **every second child passes** by **closed driveways**; **83% of the children observe closed driveways.**
- **Every fifth child passes** by **opened driveways**; **every second child observes open driveways**.
- **Every third child observes even secluded driveways**, indicating that the children know their routes well.

Outcomes

5) Behavior of children at crossroads Road area

90% of the children had to cross at least one crossroad.

- About **every second child observes incoming vehicles at crossroads**, including each about one half at pedestrian crossings or traffic lights or rather crossroads.
- About **every third child observes stopping vehicles at crossroads**, especially pedestrian crossings or traffic lights, only occasionally at road crossings.
- With exception of one child, **none of the children get distracted** at crossroads, pedestrian crossings, traffic lights, by talking to another one or the envoronment.
- In total almost every second child gets distracted at crossing roads, when passing driveways or at passages without pavement.
- Short moments of inattention at closed driveways are most frequent.

CAUTION! Your parents are driving around here!

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