



# Fieldwork as teaching methoda field study using GPS

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## What is Fieldwork?

- Work of students outside the classroom
- Can vary in length part of or full lesson, half day, or longer
- May or may not include teacher
- E.g. live collection of data, observation, experiment, street survey ...
- Not frequently used



### Literature: Advantages/Disadvantages

Advantages	Disadvantages
Action-oriented	Difficult with large # of students
Reality-related	Organisational effort
Physical activities	Risk of injury
Self-responsible learning	Assessment is difficult
New method for most students	Students are not used to it
Several cognitive learning levels	Hard for students to concentrate
Often interdisciplinary	Hard to place in curriculum



## Case study 1: Description

- Using DK material "GPS geometry in the landscape", localized version, in German
- Two parts:
  - Measure a rectangular grass field in nature (walk the edges of the field and record the path, then use software to calculate path length)
  - 2. Create a geometric figure with GPS (think about ways of creating an equilateral triangle in nature, using only GPS, then try it out, record the path, and compare with ideal triangle)



### Case study 2: Participants and teaching units

- 13 classes, 223 students, 35 teachers
- Teaching units:
  - Instructions about GPS and transferring data to PC (using AT materials "GeoCaching" and "Aviation"): 2x50 minutes
  - 2. Field work part 1: 1x50 minutes
  - 3. Field work part 2: 1x100 minutes



#### Case study 3: Outcomes of teaching units, part 1





#### Case study 4: Outcomes of teaching units, part 2



40 m









## Case study 5: Questionnaires

- DynaMAT questionnaires (scale 1 4):
  - 1. Was the teaching material adequate?
  - 2. Did you know/learn all the technologies needed?
  - 3. Did the lesson change your attitude positively?
  - 4. (students) Did the lesson increase motivation?
  - 5./6. What did you like the most/least about materials
- Additional questions for teachers + students
  7./8. What did you like the most/least about fieldwork
- Additional questions for teachers only:
  9./10. Three biggest (dis-)advantages of fieldwork



#### Case study 6: Quantitative results

Scale: 4 (very much) - 1 (not at all)

	Teachers (n = 35)			<b>Students (n = 207)</b>				
	4	3	2	1	4	3	2	1
Q1	80	17	3	0	84	9	5	2
Q2	74	20	6	0	77	10	8	5
Q3	49	28	17	6	38	18	28	16
Q4					30	39	16	15



## Case study 7: Qualitative results

- Q5 Using GPS, practical example, real life
- Q6 Too technology-centered
- Q7 To work outside, not boring
- Q8 Too much work for a math lesson
- Q9 Real life (51%), motivating (37%), physical exercise (23%)
- Q10 time constraints (66%), discipline (37%), organization (29%)



## Conclusions

- Materials: very well accepted
- Fieldwork: Students liked it very much
- Fieldwork: Teachers gave ambiguous answers
- (Dis-)Advantages mentioned in literature only partially confirmed (but these are mainly from primary school level)
- More materials and studies needed at secondary school level



#### 3 years of work – they were worth it!

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