

# LEARNING CLIMATE IN RELATION TO CLIL AND DYNAMIC GEOMETRY



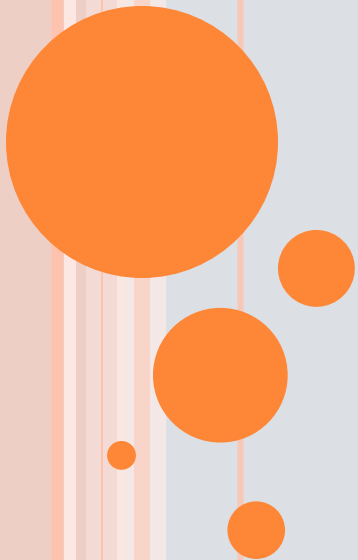
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**Helena Binterová**

# THE STRUCTURE

- **CLIL method**
- **Learning environment**
- **Teaching materials in CLIL lesson**
- **Aims**
- **Educational climate**
- **Contributions, problems**
- **Research evaluation and conclusion**

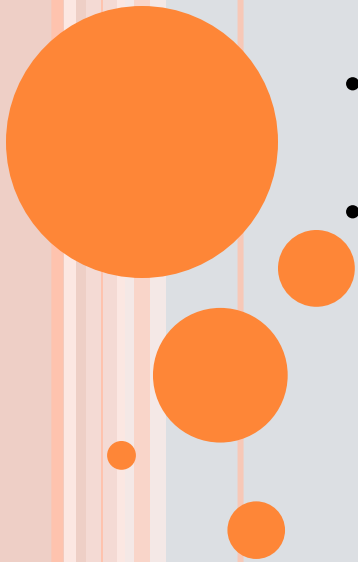
# CLIL method

- **Content and Language Intergrated learning**
- **According to Marshe (1994)**
  - **teaching of non-language subjects**



# ENVIRONMENT DESCRIPTION

- newly introduced teaching of mathematics in English
- the entire school involved, not only several classes
- research conducted with pupils of the 6th to 8th grades
- teaching in English once a week



# TOOLS USED IN THE CLIL TEACHING METHOD

- **Computers**
- **Interactive whiteboards**
- **Mathematical programs (GeoGebra)**
- **materials supplemented with native speakers' speech**
- **applets (playful tasks)**
- **animations**

# USING COMPUTERS AND INTERACTIVE WHITEBOARDS



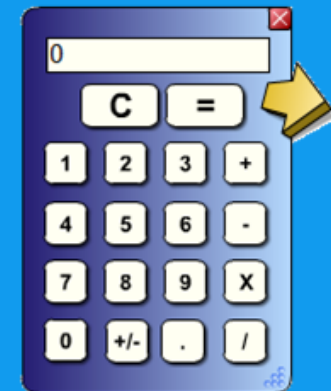
## Match the text and the number

- |  |           |
|--|-----------|
| ▶ One hundred fifty thousand thirty-three          | 358 000   |
| ▶ Three hundred fifty-eight thousand               | 305 108   |
| ▶ Three hundred five thousand one hundred eight    | 150 033   |
| ▶ Ten thousand forty-eight                         | 101 111   |
| ▶ One million two hundred two thousand four        | 24 064    |
| ▶ One hundred one thousand one hundred eleven      | 209 136   |
| ▶ Twenty-four thousand sixty-four                  | 10 048    |
| ▶ Two hundred nine thousand one hundred thirty-six | 1 202 004 |



# THE REAL LIFE EXAMPLE

What is the current exchange rate of the crown to the euro?  
 How much money (CZK) do you need?  
 Use a calculator to complete the table.



Euro	1	2	5	10	20	50	100	200	1000
Price									

## Multiplying decimals by 10, 100, 1000 ... ?

When we multiply the decimal by:      We insert the decimal point:

ten                       $2,156 \cdot 10 = 21,56$

hundred               $2,156 \cdot 100 = 215,6$

thousand               $2,156 \cdot 1\ 000 = 2\ 156$

one place to the right

two places to the right

three places to the right



# Match the image and the text.



perpendicular bisector

angle bisector

segment between two points

parallel line

ray

intersect two objects

perpendicular line

circle with centre through point

angle with given size

circle with centre and radius

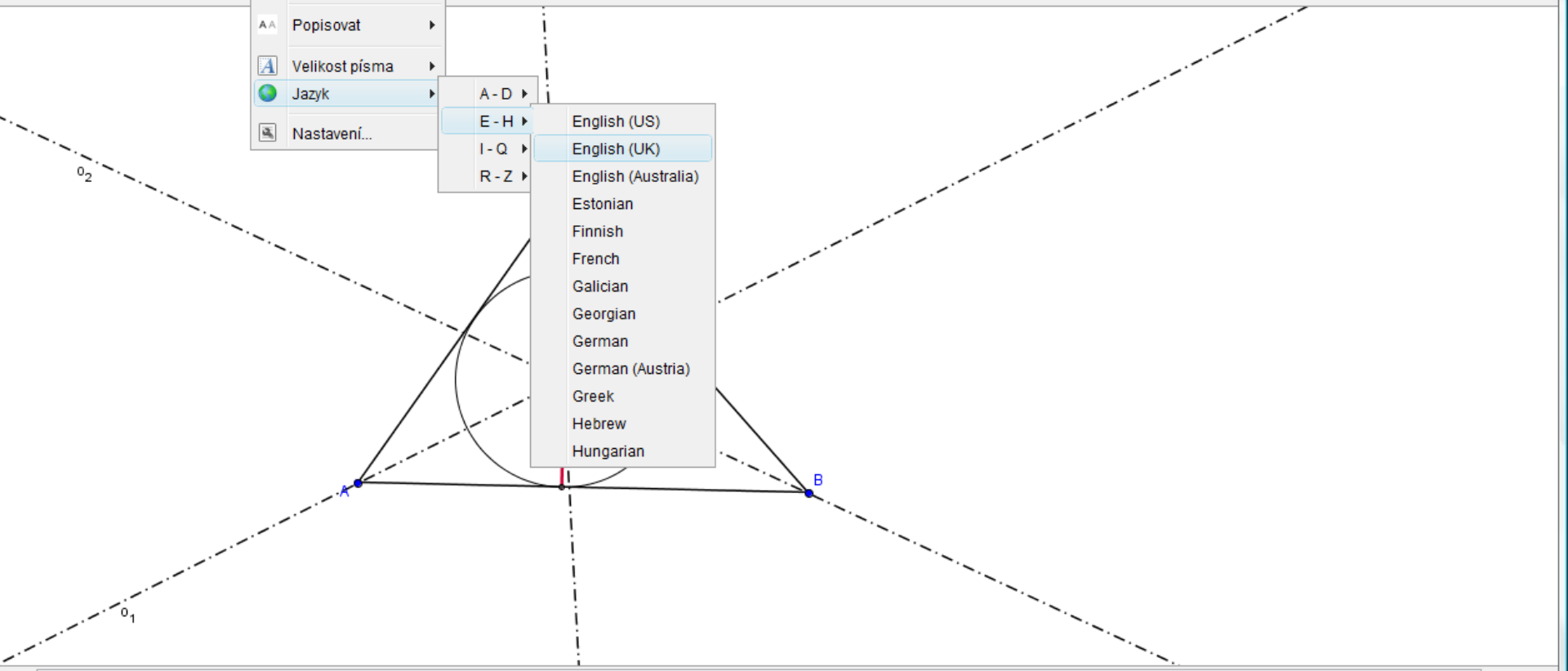
segment with given length from point





Algebraické popisy ▶  
Přichytout body ▶  
Zaokrouhlování ▶  
Popisovat ▶  
Velikost písma ▶  
Jazyk ▶  
Nastavení...

ABC a=2 Ukazovátko  
Přesun nebo výběr objektů (zrušit klávesou Esc)

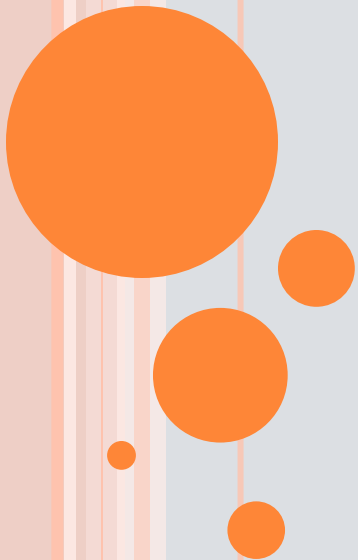


# DEFINITIONS

## LEARNING CLIMATE

**Mareš (2000, s. 242)**

**„Set practices of perception, experience, evaluation, and response of all actors in the school in relation to what happened at school, or has been happening, or will happen in the future.“**



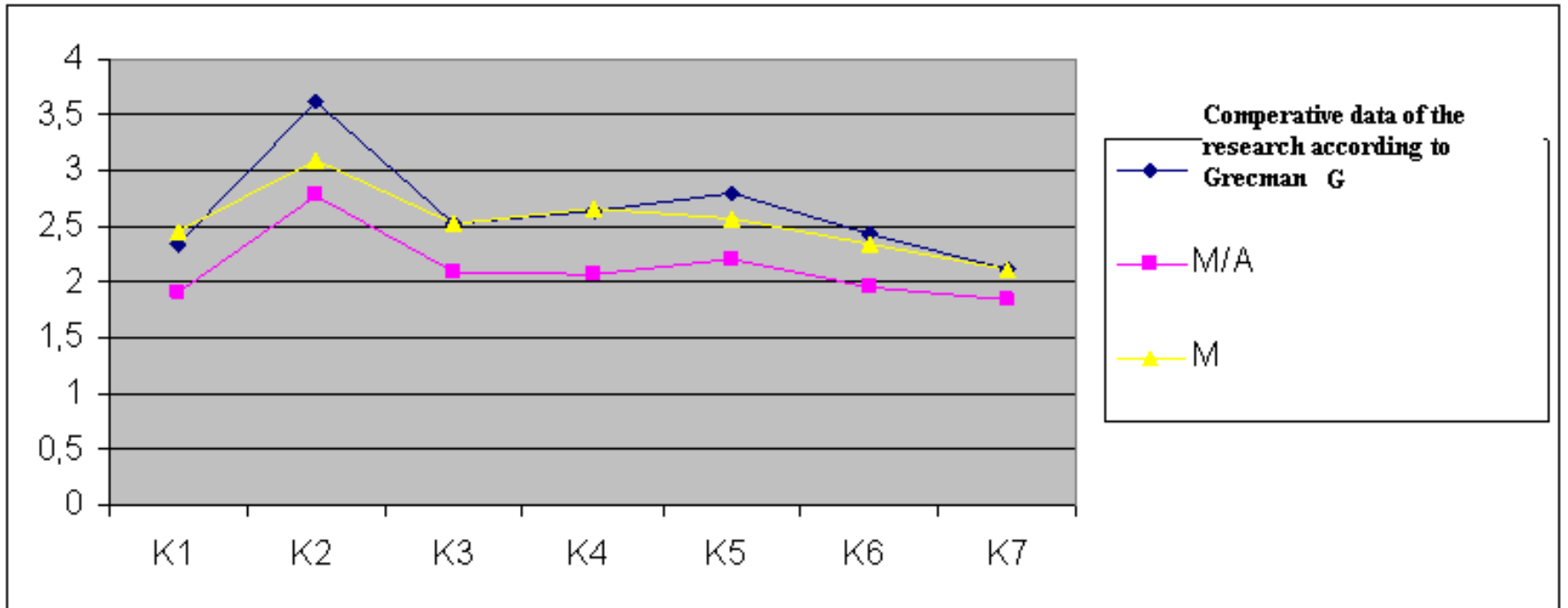
# DEFINING OBJECTIVES

- **To describe the change in the climate of learning mathematics in connection with the introduction of the CLIL method and using computers (GeoGebra, interactive whiteboard, Excel, applets...)**

Statements	Number	Evaluation 1 to 5	Statements	Number	1 to 5
I can tell my opinion to the teacher without being afraid	74		The teachers' classes are interesting and they do it with enthusiasm	86	
I have to explain my opinions	75		The teacher explains us how and where to apply what we have learned	87	
There are clear rules for work in the classes	76		The teacher tells us in which professions the things we learn can be applied	88	
I have to fulfil my tasks accurately and reliably	77		The teacher uses visual aids and examples	89	
Tasks are continuously checked	78		The results of my work in the classes are fairly evaluated	90	
Tasks are adequate to what we have learned	79		I feel good before tests	91	
I have no problems with preparing for school at home	80		Tests examine how I understand what we were taught	92	
I can apply my good ideas in the classes	81		We work in groups when working on tasks	93	
The teacher is supportive when I am interest in something in the subject	82		We are supported to discuss processes of fulfilling tasks in the classes with classmates	94	
When I am not able to finish tasks in the classes, the teacher helps me	83		We are asked about our knowledge before moving on to new subject matter,	95	
When I finish tasks sooner than others, the teacher gives me more work	84		The teacher appreciates my study success	96	
Classes also takes place outside the school	85		The teacher deals with teaching subject matter, keep up the topic	97	
			The teacher keeps my attention in a way of teaching	98	

<b>CATEGORY (average value )</b>	<b>Grecman</b>	<b>M/A</b>	<b>M</b>	<b>deviation M/A from G</b>	<b>deviation M from G</b>	<b>deviation M/Aj from M</b>	<b>p-value M/Aj and M</b>
<b>K1 (enthusiasm)</b>	2,33	1,92	2,46	0,41	-0,13	0,54	0,000002
<b>K2 (unconventional methods of teaching)</b>	3,62	2,77	3,09	0,85	0,53	0,32	0,003735
<b>K3. (teacher's support in pupils)</b>	2,52	2,08	2,52	0,44	0	0,44	0,000211
<b>K4 (teacher's fairness )</b>	2,64	2,06	2,65	0,58	-0,01	0,59	0,000004
<b>K5 (advisability of learning)</b>	2,8	2,2	2,57	0,6	0,23	0,37	0,000671
<b>K6 (adequacy)</b>	2,43	1,96	2,34	0,47	0,09	0,38	0,004794
<b>K7 (concerns clarity)</b>	2,11	1,84	2,12	0,27	-0,01	0,28	0,003732





GRAPH



# BENEFITS X PROBLEMS

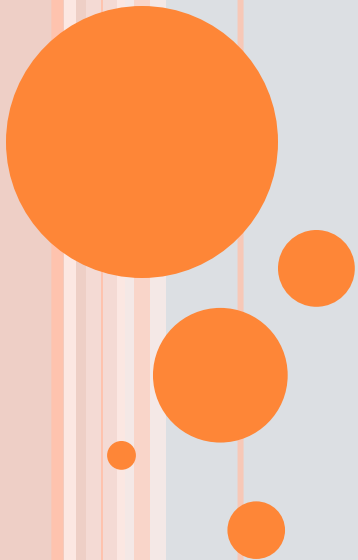
- extended opportunities to learn and practically use a foreign language
  - increased motivation
  - increased self-confidence
  - better involvement of pupils in the classes
- ❑ insufficient number of qualified teachers
  - ❑ teachers' concerns (cannot speak a foreign language)
  - ❑ difficult to evaluate



# EVALUATION AND RESEARCH CONCLUSION

## **Questionnaires**

- During the project the climate of teaching mathematics has changed due to differences in teaching styles and implementation of CLIL method.





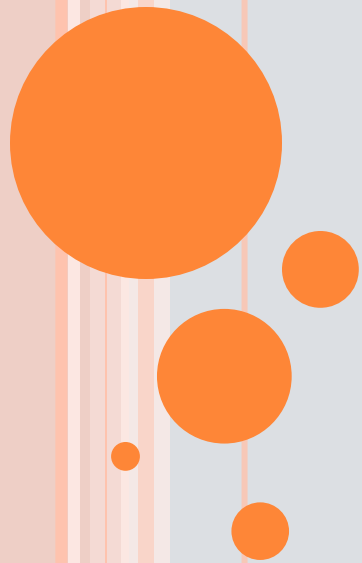
# CONFIRMATION

- the climate of learning mathematics in English is different than in Czech
- based on the research of the climate of learning and the evaluation by pupils, teachers were perceived positively
- The results obtained cannot be generalized due to the small research sample



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**THANK YOU FOR YOUR  
ATTENTION!**