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# The SOS project and the results





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# SOS "Schule ohne Stress" (School without Stress): The partners









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## Secondary school: Haus im Ennstal









### **SOS: Classrooms**



Solid wood classroom

## Standard classroom







## **SOS: Classroom fittings**



	Solid wood classroom	Standard classroom	
Floor	Parquet, oak oiled	Linoleum with PUR sealing	
Ceiling	Fir, untreated	Plasterboards	
Corridor wall	Spruce, untreated	Plasterboard	
Other walls	Lime-cement plaster, gypsum plaster with interior emulsion paint	Washable interior emulsion paint	
Classroom cupboard	Stone pine / beech	Chipboard laminated	
Pin wall	Soft fibreboard with fabric	Soft fibreboard with fabric	
Lighting	light unit in stone pine	Louvered lights with specular reflector	
Curtain	Trevira CS	Trevira CS	

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# SOS: Material requirements solid wood clasrrooms



- Corridor wall: 33m<sup>2</sup> (spruce, untreated)
- Glued parquet: 63m<sup>2</sup>
  (oak, proActive)
- Wooden ceiling: 63m<sup>2</sup> (fir, untreated)
- Cupboards: 600 x 100 x 46 cm (beech / stone pine)
- Pin wall: 600 x 100 cm (soft fibreboard with fabric covering)







### **SOS:** Timeline

### Measurement period: approx. 1 year







### SOS: Study design



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 7 measurement times of approx. 1 day each (ECG measurements and questionnaires)

Basic measurement		Measurement times					
	Jul.08	Aug.08	Okt.08	Nov.08	Jän.09	Mär.09	Mai.09

• 4 classrooms

wood design	Standard materia	al
1st year class	1st year class	
2nd year class	2nd year class	

• 52 test person

wood design	Standard material		
n=28	n=24		







### **SOS: Measuring device and method**

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## AUSTRO-Mir 1991: Space measuring device Kymo with sensor jacket









## Sensor housing from Styrian wood









### Examples for analysis



Atmung Atmung 0.5 0.4 0.3 0.2 0.1 0 Frequenz [Hz] Vagusaktivität



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### **Examples for analysis**









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# Physiological results of the SOS study



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# 8600 fewer heart beats per day!









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# Physiological results of the SOS study



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# Social strain on school children from teachers remains stable

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### Conflicts and subjective quality of sleep

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# School marks and concentration performance

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#### • Heart rate:

.....decreases in waking state in the solid wood classroom group and increases in the control group

### Vagal tone (cardio-protective factor):

.....increases in waking state in the solid wood classroom group and decreases in the control group

.....remains the same in the night in the solid wood classroom group and decreases in the control group

### • Social strain on pupils from teachers:

.....remains the same in the solid wood classroom group and increases in the control group

### • School performance and concentration performance:

.....do not differ in the different types of classrooms, but fewer errors in the solid wood classsroom





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# Effects of the study results





- For the first time medical proof that wood as a building material has a positive effect on people's health
- For the first time the effects can be proven with data, facts and figures
- Specific arguments for communities (mayors) and many other decisionmakers (wood should be used in public buildings)

Argument for early measures: wood in schools as a preventive measure







# Unbeatable sales arguments for wood!

# Justification for possible additional costs!





# What do the results mean for the education systemy?



 Proof that in schools fitted with wood a more stress-free environment and study is possible:

- Aggression of school children sinks clearly

- Higher willingness to learn and fewer concentration errors
- Better quality of teaching due to fewer loud children

-Burnout danger for pupils and teachers will probably decrease









# Impressions from the wood classroom

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# Impressions from the wood classroom

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