Supplementary Materials for

Inter-brain coupling reflects disciplinary differences in real-world classroom learning

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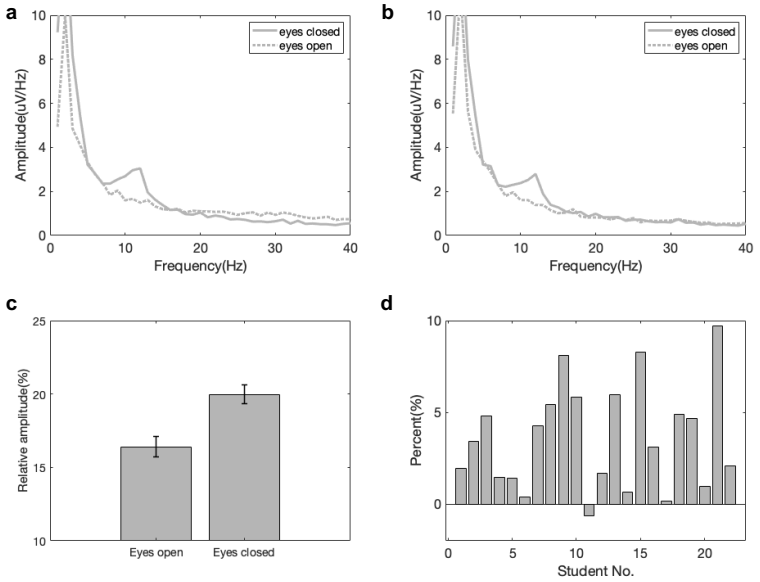
This PDF file includes:

Table S1. Statistics (Pearson's *p* values and permutation *p* values) in the correlations between inter-brain coupling and learning outcomes.

Chinese				
	theta	**alpha**	**Low-beta**	**High beta**
Top 2 students	0.202/0.163	**0.036/0.016**	0.263/0.046	0.645/0.489
Top 3 students	0.230/0.199	**0.024/0.010**	0.444/0.067	0.538//0.436
Top 4 students	0.347/0.279	**0.017/0.005**	0.612/0.096	0.415/0.364
Top 5 students	0.077/0.060	**0.030/0.010**	0.900/0.185	0.934/0.746
Top 6 students	0.186/0.148	0.061/0.020	0.754/0.105	0.932/0.768
All other classmates	0.534/0.258	0.665/0.322	0.347/0.824	0.420/0.204
Math				
	theta	**alpha**	**Low-beta**	**High beta**
Top 2 students	0.283/0.376	0.182/0.192	0.070/0.049	0.229/0.168
Top 3 students	0.861/0.791	0.102/0.125	0.056/0.040	0.854/0.560
Top 4 students	0.652/0.735	0.156/0.186	0.118/0.094	0.669/0.811
Top 5 students	0.795/0.824	0.075/0.087	0.448/0.367	0.533/0.877
Top 6 students	0.556/0.741	0.194/0.249	0.825/0.643	0.409/0.923
All other classmates	**0.0498/0.024**	0.270/0.130	0.512/0.253	0.578/0.281

Note. Correlations were regarded as significant only if both Pearson's *p* and permutation *p* are smaller than 0.05. All the *p* values were uncorrected.

Fig. S1.



The signal quality validation of EEG headbands in a 2-minute eye-closed/open task. Twenty-two students out of the same class volunteered to participate in this task. Students were required to open and close eyes for two minutes respectively when sitting in their classroom. Then, fast Fourier transform was conducted to compare the frequency spectral characteristics of EEG signals between conditions. **a,** The frequency spectra for a representative student at Fp1. The solid line represents the eye-closed condition, and the dashed lines represent the eye-open condition. **b,** The frequency spectra for the same student at Fp2. **c,** Relative amplitudes of the alpha band (8-13 Hz) in the eye-open and eye-closed conditions for all the students. Errorbar indicates standard deviation. The amplitudes were averaged across Fp1 and Fp2; **d,** Percent of relative amplitude differences (eye-closed minus eye-open) at the alpha band for each student. The amplitudes were averaged across Fp1 and Fp2.

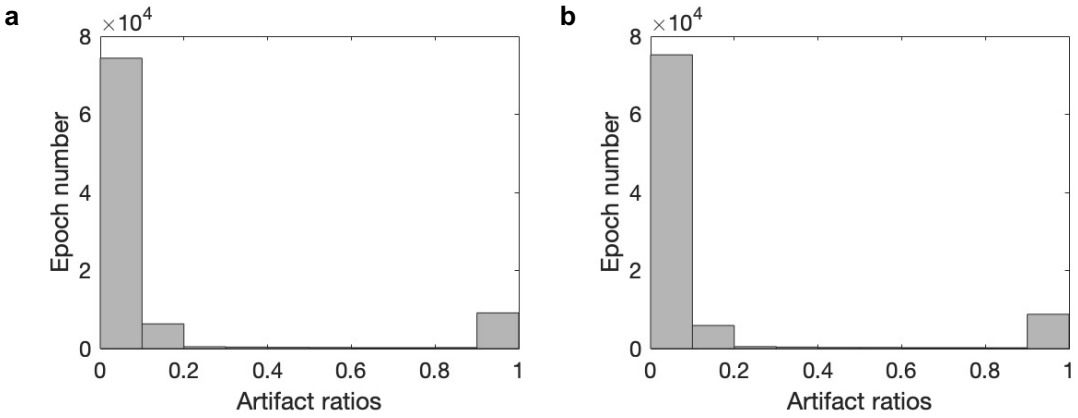


Fig. S2: The distribution of the artifacts ratios per epoch for (**a**) Fp1 and (**b**) Fp2. The ratios for saturated samples per epoch illustrated a 2-tailed distribution.

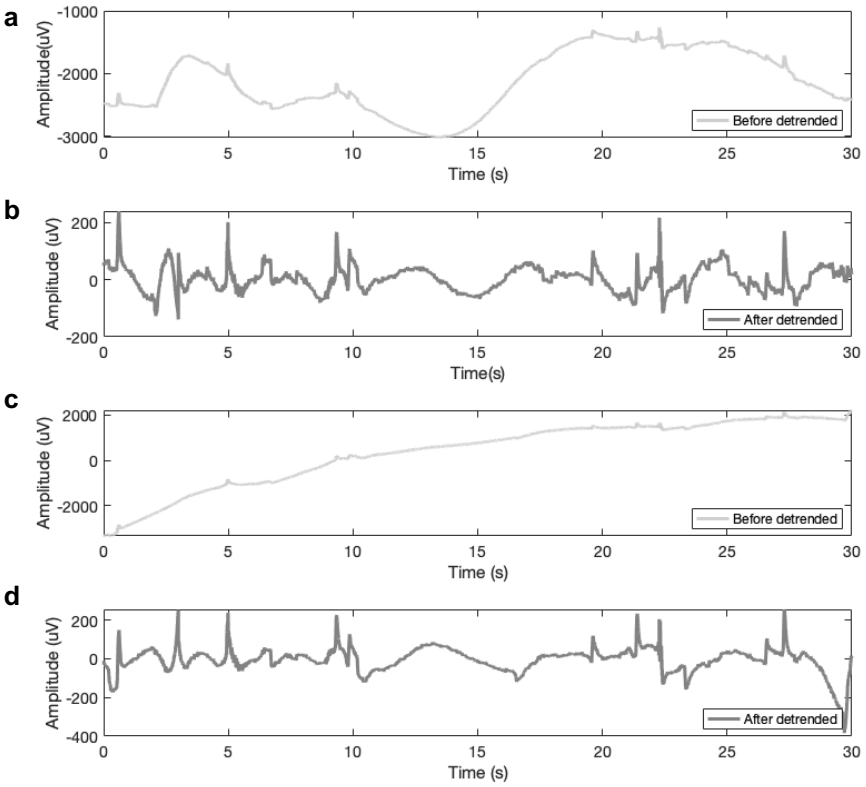


Fig. S3: An illustration of a representative EEG epoch before and after the detrending procedure with the Noisetool toolbox (**a, b**) at Fp1; (**c, d**) at Fp2. The lines with a lighter color indicated the condition before detrending. The lines with a darker color indicated the condition after detrending. The slow drift was removed after the detrending procedure.

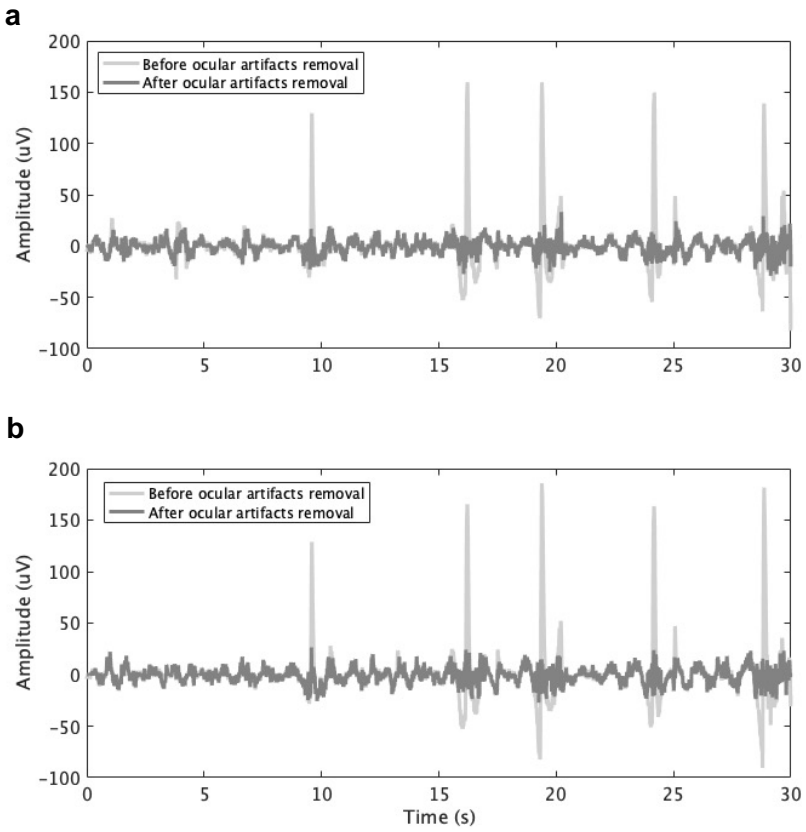


Fig. S4: An illustration of a representative EEG epoch before and after the ocular artifact removal procedure with the MSDL toolbox (**a**) at Fp1; (**b**) at Fp2. The lines with a lighter color indicated the condition before ocular artifact removal. The lines with a darker color indicated the condition after ocular artifact removal. The ocular artifact was removed after the procedure.

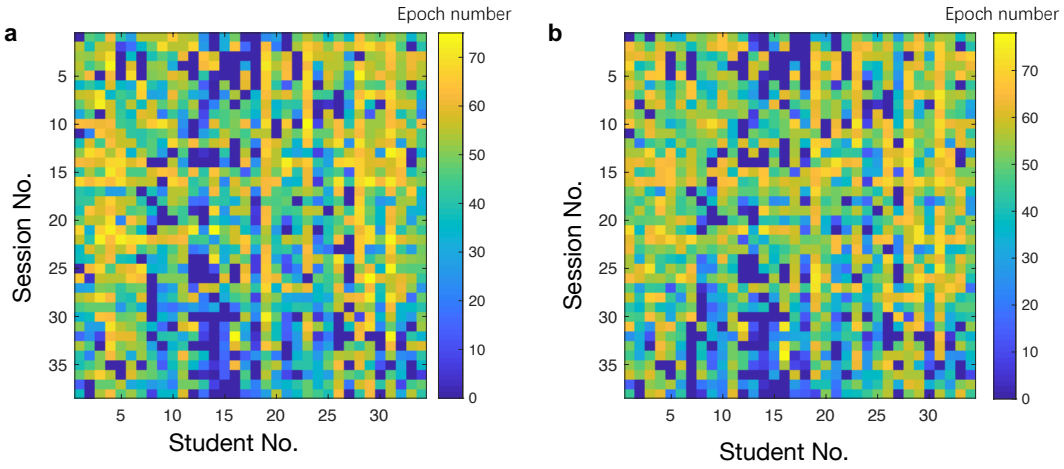


Fig. S5: The number of retained epochs per session per student (**a**) at Fp1; (**b**) at Fp2 after the preprocessing procedure. The colorbar indicated the number of retained epochs.