

# Using Gaze-Awareness Tools to Facilitate Joint Attention in Collaborative Learning Groups (Talk)

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We present the results of an eye-tracking study on collaborative problem-solving dyads (N=42). Dyads remotely worked on contrasting cases (Schwartz & Bransford, 1998) to study how the human brain processes visual information. In one condition, members of the dyads saw the gaze of their partner on the screen; in a control group, they did not have access to this information. Results show that this intervention helped students achieve a higher quality of collaboration ( $F(1,10) = 24.68, p < 0.001$ ) and a higher learning gain ( $F(1,40) = 7.81, p < 0.01$ ). Additionally we categorized each member of the dyad as “leader” and “follower”. We found an interaction effect between those two factors (experimental conditions and individuals’ status) on the total learning score:  $F(1,38) = 5.29, p < 0.05$ . Followers learnt significantly more when they could see the gaze of the leader on the screen. They learnt less when they could not. Interestingly, participants in the “visible-gaze” condition achieved joint attention more often than the participants in the “no-gaze” condition:  $F(1,30) = 22.45, p < 0.001$ . The percentage of joint attention was one of the only measures correlated with a positive learning gain in our study:  $r = 0.39, p < 0.05$ . This result was confirmed by a mediation analysis.

It is an established fact that joint attention plays a crucial role in any kind of social interaction. Our study not only provides evidences that its role is also preponderant in collaborative learning situations, it also shows that technology can enhance this process. We predict that in a near future, eye-trackers will become increasingly cheaper and widely available to a broad range of devices. As a result, it is primordial to study how collaboration can be enhanced by those tools.

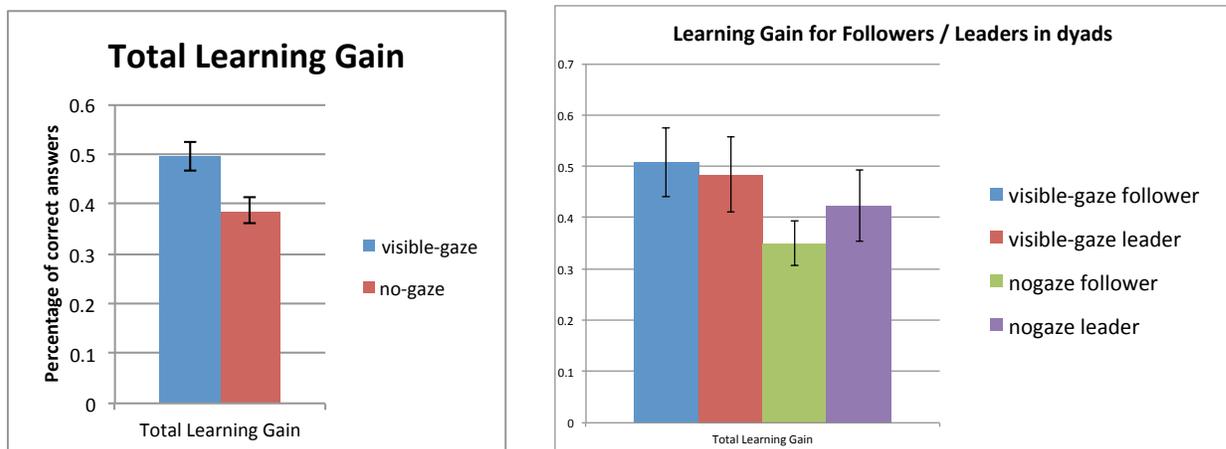


Figure 1: The total scores of the learning gain (main effect on the left; interaction effect with status of the group member on the right). Dyads in the “visible-gaze” condition could see the gaze of their partner on the screen. In the “no-gaze” condition, they could not.

## References

Bransford, J., & Schwartz, D. (1999). Rethinking Transfer: A Simple Proposal with Multiple Implications. *Review of Research in Education*, 24.