


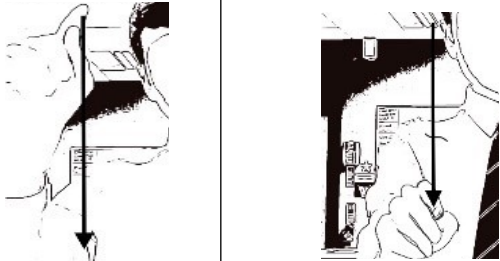

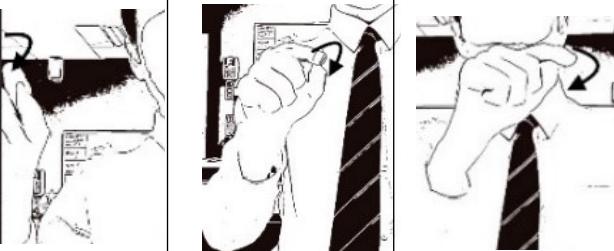


## Table 4: Supplementary Material

*Student verbal utterances mapped against accompanying gestures. Case 1 example illustrates the cooperative use of speech and gesture.*

CASE 1			
Verbal Utterances	Gesture Description	Gesture Type	Gestures
1. "So, $NH_3$ , also known as ammonium... is shaped.... so the N is the top.."	Student 15 points in mid-air.	Deictic	
2. "...3..."	Student uses two hands, palms facing, to make a triangular shape, as if imitating the pitched roof of a building.	Iconic	
3. "... you've got H.."	Dragging forwards out of plane.	Deictic	
4. "...H..."	Dragging downwards within the plane.	Deictic	
5. "...H..."	Dragging backwards into plane from the first.	Deictic	
silence	Student makes small circles in air with finger tip in line of plane, out of plane, into plane.	Deictic	

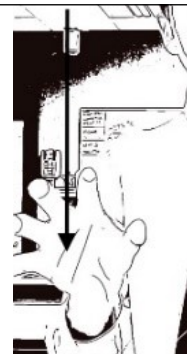
## Table 4: Supplementary Material

*Student verbal utterances mapped against accompanying gestures. Case 1 example illustrates the cooperative use of speech and gesture.*

6. "So they're all on the bottom half, just due to the eh, general structural... difficulties within the chemical world...so..."

*Student uses one hand with spread fingers and gestures a dragging downwards motion in air from a higher starting position.*

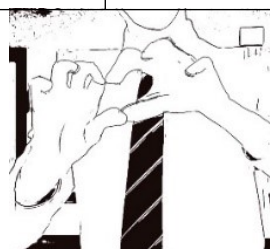
*Deictic-Iconic*



7. "You've got N and then 3 Hs on the bottom, which of course will be trigonal pyramidal..."

*Student uses both hands to form a triangular shape.*

*Deictic-Iconic*



8. "...instead of tetrahedral which has one at the top..."

*Student points upwards in mid-air.*

*Deictic*

