Online learning continues to grow in popularity. However, with online learning, teacher observation and intervention are lost, creating a need for technologically observable characteristics that can compensate for this limitation. This study used eye tracking, galvanic skin response (GSR), facial expression analysis, and summary note-taking characteristics to monitor participants while watching and recalling an online video lecture. The links between these technologically observable psychophysiological responses and learning outcomes were investigated. Participants filled out a demographic survey, watched a 15-minute online video lecture about computer graphics, then were given 5 minutes to write a summary, followed by a 15 question quiz and, lastly, a survey about their experiences during the experiment. To analyze this multimodal data, quiz questions were matched up with time intervals in the lecture video in which the corresponding material was introduced. Survey results revealed self-reported attention and engagement to be correlated (r=0.615). Furthermore, self-reported interest in lecture material was correlated with attention (r=0.739) and engagement (r=0.876). GSR (range) for video sections corresponding to the quiz question with most correct answers (easy material) was significantly higher (p<0.05) than for material corresponding to the question with the most incorrect answers (difficult material). This suggests higher cognitive load for the difficult material. Eye tracking and GSR provide valuable information, yet with current technology they are not recommended for monitoring online learning as the requirement to remain still impacts natural behavior. Facial expressions may have been altered by initial instruction to keep still to gain accurate eye tracking.