Critical skill of teaching: learning the cognitive and emotional states of our students during class

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Abstract

There has been an increased reliance on prerecorded lectures as a source of learning in place of live lectures in higher education. However, we must appreciate that our students send countless intended and unintended messages during class that relate to their cognitive and emotional states. Shaping productive learning experiences requires understanding their cognitive and emotional states by interpreting their statements, actions, and body language in real time. This can only occur with face-to-face instruction and makes it possible to tailor the class to the students’ needs. Becoming aware of the students’ cognitive and emotional state by listening and learning their body language is fundamental to teaching, as it will alert educators to cognitive effort and attention, surprise, or uncertainty, as well as a range of emotions, including confusion. Without an understanding of the students cognitive and emotional states, we lose our ability to structure conversations or to reinforce difficult concepts and important ideas in real time. We also lose our ability to adjust on the fly and modify instruction on the basis of the needs of our students. Thus, learning the cognitive and emotional states of our students during class is an essential skill of teaching and the critical means that a teacher uses to promote understanding and positive attitudes about education.

intrinsic motivation; pedagogy

The great teacher learns the cognitive and emotional states of their students during classroom instruction and shapes the learning experience, in real time, to promote understanding and positive attitudes about education.

Homeostasis is a core tenet of physiology and pedagogy. Maintaining physiological homeostasis requires continuous monitoring of body temperature, blood pressure, plasma glucose, and several additional physiological variables and then reacting to deviations from homeostasis using feedback to maintain physiological parameters within their normal range. Similarly, pedagogical homeostasis requires constant monitoring of the students’ cognitive and emotional states during class and responding to the current situation in real time. Specifically, shaping productive learning experiences requires interpreting learners’ statements, actions, and body language in real time (Fig. 1). This makes it possible to tailor the class to the students’ needs. When considering shaping the learning experience in real time, we must appreciate that our students send countless intended and unintended messages during class that relate to their cognitive and emotional states. Their actions, body language, and the way in which they engage provide clues about the effectiveness of the learning experience.

Consequently, educators must learn the cognitive and emotional states of their students during class. By learning the students’ cognitive and emotional states during class, the educator can alter the class, in real time, to address confusion, misunderstandings or, perhaps boredom associated with classroom instruction. It will also transform the class into a more personal and engaging experience and enhance understanding while promoting an interest and love for lifelong education.

Educators learn about the students’ cognitive and emotional states from listening to their questions and comments, as well as reading their intended or unintended body signals. Listening and responding to their questions and comments is critical; however, real communication is based on more than actual words. Real communication requires understanding the tone of the voice and body language. As examples, crossed arms or legs and slouching may suggest that the student is resistant to our statements or mentally or emotionally tuned out, and raised eyebrows or lack of eye contact may suggest discomfort or anxiety. The eyes are extremely important for communication as pupil size expresses emotional states and perception, while signaling whether the student is alert or bored. Thus, attentive listening to students and reading their intended or unintended bodily signals will alert educators as to whether students are alert and paying attention or disengaged and confused. Accordingly, becoming aware of the student’s body language is fundamental to teaching, as it will alert educators to cognitive effort and attention, surprise, or uncertainty, as well as a range of emotions, including confusion. Without an understanding of the students’ cognitive and emotional states, we lose our ability

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to structure conversations or to reinforce difficult concepts and important ideas. We also lose our ability to adjust on the fly and modify instruction on the basis of the needs of our students.

Although there has been an increased reliance on prerecorded lectures as a source of learning in place of live lectures in higher education, this approach does not allow for shaping productive learning experiences in real time. Similarly, the use of the Zoom webinar format, during which the audience joins to listen, learn, and ask questions only at the end does not allow for shaping productive learning experiences in real time because the host is unaware of clues from the audience. The Zoom webinar format is modestly improved with the Zoom meeting format. The Zoom meeting format, even with large classes, connects groups of people for discussion and collaboration, and the host is aware of clues from the audience. In any event, learning the cognitive and emotional state of our students and altering instruction during class based on what the teacher learns enhances understanding and promotes positive attitudes about education (1). Thus, in addition to content knowledge and pedagogical knowledge, faculty must obtain knowledge of the learner and his/her characteristics, in real time, to be effective teachers (2). Most university faculty members have detailed content knowledge. Many also have pedagogical knowledge. However, obtaining knowledge of the learner and his/her characteristics during class is a vastly underutilized approach to improving classroom instruction. Importantly, this can only occur with face-to-face instruction.

**DISCLOSURES**

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**AUTHOR CONTRIBUTIONS**

H.L.L. and S.E.D. conceived and designed research; H.L.L. and S.E.D. prepared figures; H.L.L. and S.E.D. drafted manuscript; H.L.L., A.R., and S.E.D. edited and revised manuscript; H.L.L., A.R., and S.E.D. approved final version of manuscript.

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