

Effect of Teacher's Behavior on Students' Concentration Level

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Abstract

During lectures at universities and the like, teachers must devise ways to keep students concentrated and to ensure that they understand the taught material. However, even if this is the teachers' intention, it does not necessarily mean that the students are actually concentrated; the way teachers teach or the lacking interest of students can negatively affect their level of concentration. In fact, teachers cannot easily determine whether their students are concentrated during the lecture. In this study, we analyze the relationship among the students' concentration level, study material, and teacher's behavior. We provided nine one-hour Python programming classes in person; the students were asked to wear electroencephalographs to measure their brain waves while the lecture was recorded on video. We measured the concentration levels of the students based on their brain waves (i.e., the amplitude ratio between the beta and alpha waves) and their time differentials. Subsequently, we investigated how their concentration levels changed according to the study material and teacher's behavior. We discovered that the students' concentration levels are higher when the teacher is talking than when the students are having tests. Their concentration level increases when the teacher looks at them (i.e., away from the blackboard) or asks a student to answer a question. Based on these results, we present suggestions that help teachers maintain the student's concentration levels high during lectures.

Keywords: Concentration level, electroencephalograph, alpha and beta waves, teacher's behavior, study material