

Analyzing Concentration of Active Learning using Bio-Signals

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Keywords

Wireless measurement technology (IoT) (60060), Measurement and analysis of bio-signal (62010), Global PBL (09070), Development of educational contents (09010)



Research Topics

- Wireless bio-information measurement and analysis
- Development of multimedia educational contents and self-learning contents
- Global PBL learning contents, generic skill evaluation

Research Seeds

Research themes

- Analysis of concentration of objective learning using bio-signal
- Analysis of activation of objective learning using bio-signal
- Evaluation of practices and student skills of global PBL
- Environmental survey and analysis of students' subjective learning (development of learning tool)

Research seeds

The role of teachers is changing along with the change of learning style. As efficient learning support for students, improving the knowledge consolidation process engenders improvement of educational style not only for students but also for teachers. Knowing whether students are concentrating on classes can lead to improvement in learning efficiency. If this can be learned objectively nearly in real time, not through subjective evaluation such as questionnaire or posterior evaluation, then the lesson can be improved. Therefore, analysis is performed by measuring the skin electrical resistance (skin electrical reflection), number of blinks, head position information, electroencephalogram, and other phenomena as biological information of the student being studied. Using IoT technology, various biological information of students taking lectures in classrooms, etc., are gathered simultaneously and are analyzed by a server. Treated activity and inactivity during group work are used as big data.

Through the standard and implementation of the global PBL, a student develops planning, communication skills and plan execution ability. The PBL that is being conducted in the laboratory is a subject of engineering field, especially sequence control; the theme that the solution can evaluate concretely is the theme. We are continuing to investigate changes in generic skills not only by Japanese people in the same educational environment but also through experiences in a global environment and overseas PBL implementation.

By objective monitoring of the degree of concentration on a group basis, it can be expected to be effective for confirmation of the degree of concentration at the time of work at a factory, etc., seminars, and operation at workshops.

Related Technology

- Watch-type gaskin electrical resistance measuring device
- Simple electroencephalogram measurement system
- Sequence learning kit