

New perspectives in science education

Intrinsic Motivation in a Sub-Project Designed Microcontroller Course for Technical Secondary Colleges

Florian Stampfer Martin Huber

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Outline



Embedded System Education

Course Design

Intrinsic Motivaton

Study Design

Results and Discussion

Embedded System Education

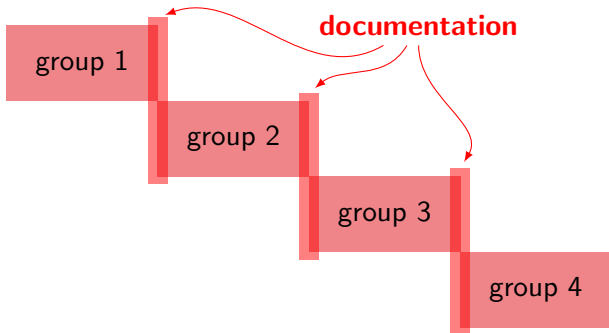


- didactics of teaching “Embedded Systems” (Grimheden & Törngren, 2005)
thematic, functional, exemplification, interactive
- Arduino platform: some case studies, e. g. (Jamieson, 2011)
 - ☹ real-time operating systems
 - ☹ software/hardware co-design
- Robotics: courses for undergraduate students
 - competition-based
 - different sub-projects → capstone project (Grover et. al., 2014)
 - pre-service teacher education (Chambers & Carbonaro, 2003)

Course Design



- fourth educational year (grade 12): laboratory course (controlling engineering)



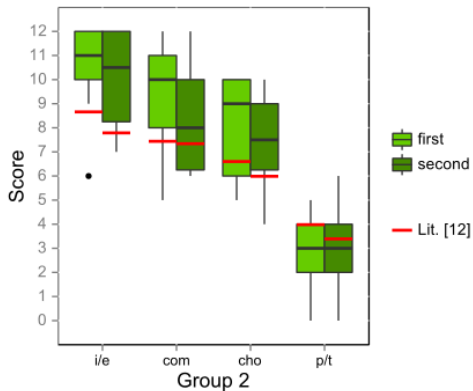
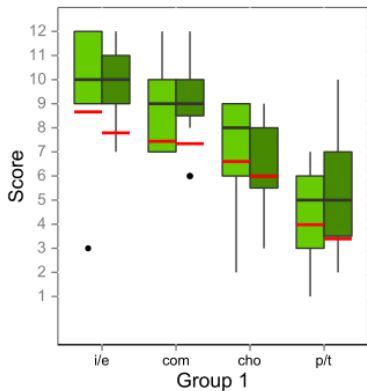
Intrinsic Motivation



- “Intrinsic Motivation Inventory” (Deci & Ryan, 2003)
- economic version: *short scale of intrinsic motivation* (Wilde et. al., 2009)
 - interest/enjoyment (i/e)
 - perceived competence (com)
 - perceived choice (cho)
 - pressure/tension (p/t)

The sub-project designed microcontroller course entails an ongoing high intrinsic motivation of students.

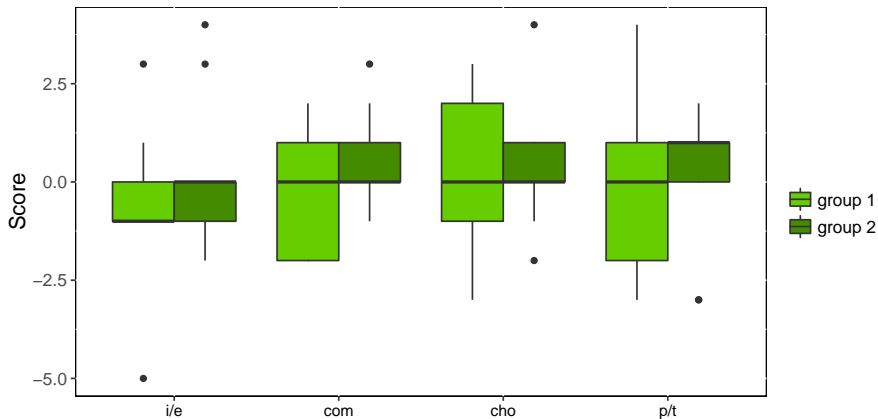
Results and Discussion



Results and Discussion



Difference between pre and post



Summary



- course design
 - Arduino & robotics
 - for high-school students
- evaluation
 - ongoing high intrinsic motivation of students
 - work in progress



THANK YOU FOR YOUR ATTENTION!

Different Classes

