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*Publication date:*  
2015

*Document Version*  
Peer reviewed version

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*Citation (APA):*

Hansen, Z. N. L. (2015). Active learning in Engineering Educations– also for special needs students. Poster session presented at Exploring Teaching for Active Learning in Engineering Education (ETALEE 2015), Kgs. Lyngby, Denmark.

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# Active learning in Engineering Educations– also for special needs students

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## ABSTRACT

*Keywords* – Special needs, active learning, large classes.

Please indicate clearly the type of contribution you are submitting: \_\_\_\_ hands-on, \_\_\_\_explore, \_\_\_\_X\_\_\_\_poster.

## Background

Active learning focuses on students doing activities and thinking about the activities they are doing (Bonwell and Eison, 1991). Key elements of this are to question and explore a topic. This is often done as a group activity.

Statistically, engineering educations have attracted students with special needs particularly within the autism spectrum. This is often due to the fascination with repetitions and numbers that people on this spectrum often have. Students with these kinds of special needs taking University classes are often challenged in two main ways by this approach:

- a. The idea to challenge or debate an issue can often make these students feel uncertain as they don't know what the "right" answer is; what they are supposed to come up with.
- b. Working in groups, or doing any group activities, can make these students feel uncertain as humans, unlike numbers, can seem unpredictable and uncontrollable.

In this poster I would like to encourage a debate regarding how we can create the most learning environment not only for regular students but also for students with special needs.

## Explanation and set-up

It is important when teaching large classes that an active learning environment is created for both regular students and students with special needs. This is not something that will happen on its own and it is an element of teaching at University level which is often overlooked. However, to do this the teacher needs the tools and resources to pay special attention to these students, without losing overview of the learning progress for the regular students.

## Results

From my teaching I have found there are four main elements essential to balance ensuring an active learning environment for regular students and ensuring a safe and stimulating environment for special needs students:

1. Education for teachers regarding the different needs that different special need students can have. It is vital that teachers feel they are properly prepared for this challenge and that they realize that every special needs student is different.
2. Talk to the special needs students. Find out what they feel they can cope with and what they feel is too much. Acknowledge their limitations but don't hold them back
3. If doing group activities it can be a good idea to explain to the regular students the needs of the special needs student; after agreement with the special needs student.

## REFERENCES

Bonwell, C.; Eison, J. (1991). Active Learning: Creating Excitement in the Classroom AEHE-ERIC Higher Education Report No. 1. Washington, D.C.: Jossey-Bass