ABSTRACT. This article discusses project work in university mathematics education. The practice perspective is obtained as students and teachers from Aalborg University share their experiences. A theoretical framework is introduced. It includes the following key-terms: Problem-centered studies, interdisciplinarity, participant-directed studies, and the exemplarity principle. The contrasting of this theoretical conception of project work with the practice shows that the original notion of project work has been modified as a consequence of its encounter with practice. The modification can be perceived as both a success and a failure. To discuss this, different perspectives on project work in mathematics are suggested.

1. INTRODUCTION

This paper is the result of the discussions and reflections of three mathematics educators being in a particular place at a particular time. Our purpose in writing this paper is to describe and critique what may be considered an unusual practice in the teaching and learning of university mathematics and to make this practice accessible to other educational settings.

Based on an outline of how project work in mathematics is organised at Aalborg University, we sketch how it is perceived generally by students and teachers. These experiences are contrasted with some of the educational ideas which have led to the notion of project work. Finally, we suggest how to achieve different perspectives on project work in university mathematics education.

The paper is framed against each writer’s background: Ole Skovsmose is a teacher/supervisor who has been involved in this approach for several years, Iben Christiansen is both a student and teacher/supervisor within this educational practice, and Renuka Vithal is a guest supervisor from what is termed a ‘historically black university’ in South Africa.

2. RENUKA’S ARRIVAL TO AALBORG

Renuka: I was in South Africa when, together with the official information about my visit to Aalborg University, I received a booklet ‘Welcome to
Aalborg University Denmark', describing, among other things, the university and its work. The following passage caught my attention and aroused my curiosity:

Breaking away from the traditional university concept and the traditional lecture form, Aalborg University emerged in 1974 with a profile very much its own. The key concept in both research and teaching is interdisciplinarity and all studies are problem-centered and organised around group work.

All students work in project groups which function as work units. The groups normally consist of four to five students from a specific study programme. A supervisor is attached to each project group. Each semester students prepare a project report, the topic of which is in a given framework. Project topics may be suggested by students as well as by teachers.

The project work generally accounts for 50% of the study time and another 50% is devoted to courses. Some of the courses are related to the themes of the semester and others serve as direct support to the project work. At the end of each semester, the project is presented in a written report which is evaluated orally by the supervisor of the group and an internal or external examiner.

Project work institutionalised! I was immediately intrigued by the idea, and in particular about how university mathematics could be taught in this context. As a teacher educator, I was aware of what is referred to as a ‘project approach’ in school mathematics and particularly in primary school as well as in mathematics teacher education, but it was difficult to think about what such an approach would look like within the context of teaching and learning university mathematics. For someone educated and located in a largely ‘traditional’ educational environment, I was fascinated and interested to come to understand what was, for me, a radical approach – the commitment of an entire institution to project work! What could these key concepts, I wondered, of ‘interdisciplinary teaching’, ‘problem-centeredness’, ‘project topics’, ‘themes’, etc. mean when translated into the hard reality of university mathematics education?

On arriving in Aalborg, I was surprised at not being able immediately to identify the university. There were no large buildings, housing huge lecture halls, so characteristic of universities in South Africa. To unaccustomed eyes, the public residential buildings scattered about did not look remarkably different from the University buildings. I tried to locate the Department of Mathematics and Computer Science and found myself walking along corridor after corridor as I peered into offices and rooms with clusters of not more than three or four tables, some empty and some with no more than five or six young people – students? – working at computers, reading, writing on the chalkboards, drinking coffee, or engaged in discussion.

After settling into my office, I met with Iben. Almost immediately I asked “Do you really teach mathematics through project work?” – half expecting her to say no. But they did.