the two systems. In this case, sharing of artefacts, goals and actions between by mathematics teaching and workplace appeared through the simulation of the workplace activity in the classroom.

4. Conclusions

The presented case study indicates the nature of interaction between the activity system of workplace and the one of science and mathematics teaching. We address these forms of interaction by focusing on two dimensions: the process by which the teacher attempted to integrate workplace into her teaching and the factors that supported this integration. As regards the process of integration, we notice teacher's attitude in terms of familiarizing herself with the workplace context and her actions in terms of engaging students in modelling activities, familiarizing them with the corresponding professional contexts and assigning them a professional role and task. Modelling is a process that triggers teachers' interest and as Wake (2015) argues it operated as a means of building connections between mathematics teaching and workplace. This process was adopted by Katerina who engaged students in mathematizing workplace situations such as identifying geographical maps' scaling and viewing modelling embedded in a process of simulating authentic workplace practice in the classroom. Her students engaged in workplace working with authentic contextual or scientific representations such as diagrams of sun's route or geographical maps and assigned them a professional role (i.e. seismologist) and a task (i.e. to find the epicentre of an earthquake) strongly related to the workplace practice. On the other hand, her collaboration with teachers from different disciplines in the PD group in co-designing a task was definitely a supportive factor in constructing an activity through interaction between workplace and mathematics teaching activity systems. The initial idea of a geology teacher was the basis for Katerina to extend her experiences. Her teaching experiences of geography supported a smooth integration of the workplace practice of a seismologist in her classroom teaching of mathematics. Based on the existed material, she inquired further the rules of the workplace underlying mathematics teaching. This supports recent research findings that acknowledge workplace as a fertile ground for science and mathematics teachers' collaboration (Potari et. al. in press).

Van der Valk, T. (Utrecht University), Mooldijk, A. (Utrecht University), Duifhuis, P. (Hogeschool Utrecht) — Practice-based presentation on personal dimension

Educating physics educators in Surinam: the NiNaS project

Monday, 17:30-14:45, Room KA 102

1. Introduction

The secondary school physics curricula in Surinam, a small country (500,000 inhabitants) in South America and a former Dutch colony, are based on the Dutch syllabi and textbooks from the seventies, the time of the independence. So the curriculum is outdated. In general, physics teaching in Surinam, as in other developing countries (O-saki, 2004) can be characterised as frontal, teacher centred and abstract, using few contexts from daily life. It does not reflect the experimental character of physics, does not use computer-aided methods and is not sufficiently geared to the needs of nowadays Surinam society and students' future studies (Nextgen, 2016).

At the start of the project, the Surinam government, aiming at modernizing the junior and senior physics curricula in the near future, planned to introduce new textbooks in September 2015. The Surinam Institute for Teacher Education (IOL) contacted the Freudenthal Institute of Utrecht University and the Archimedes Institute for teacher education in the Netherlands to start a two-years project, called New Physics in Surinam (acronym NiNaS). Funding for the project was supplied by the UTSN, an organisation for cooperation between Surinam and the Netherlands. In January 2015, the project was launched and it

will last until January 2017. The aim of the project is to educate the educators in Surinam that will prepare the physics teachers for implementing the new textbooks.
In our presentation, we will highlight the personal dimension: the roles of politicians, administrators, teacher educators and teachers in the project. The central question of the paper is: 'what are the conditions for a cooperation project between a developed and a developing country that aims to educate the educators for a successful curriculum change?'
The presentation format we will use is an oral presentation about the project and the research connected, followed by a discussion.

2. The design of the project

Like in other reform/professional development projects (see e.g. O-saki, Ottevanger, Uiso & van den Akker, 2002), four groups participate in the project. First, the group of Surinam teacher educators who will prepare the physics teachers in the schools how to implement the new physics textbooks. Second, two experienced physics teacher educators from the Netherlands, who educate the educators. Third: the group of Surinam teachers that has to implement the new curricula and methods in their classes. And fourth, a commission that guides the project, consisting of school principals, representatives from the Surinam university and from the Ministry of Education.
A significant contributor to the project is the Project Advisor. This is a Dutchman with roots in Surinam, who was a physics teacher and curriculum developer in the Netherlands. After his retirement, he moved to Surinam and has become an advisor at the Institute of Teacher Education IOL. He has been the locomotive of the project proposal. He has linked the IOL to the Dutch Universities and has many contacts in the Ministry and in the educational field.
Along with the project, the Surinam Ministry was supposed to prepare new physics curricula for junior and senior secondary school: to develop new examination syllabi and to provide new textbooks to be used for the implementation of the new curricula.
The project is planned in three parts. The first part (January – July 2015) is to select the educators for the new curriculum and to train them in pedagogical content knowledge and skills in Utrecht. An implementation plan was to be written.
In the second part (July 2015 – August 2016), along with the introduction of the new textbooks, the Surinam educators, coached by the Dutch project members, train the teachers in implementing the textbooks.
In the third part (September 2016 – January 2017), a plan for further implementation will be developed in order to ensure that the results of the project should be consolidated and developed further.
Along with the three parts, Utrecht University has planned to investigate to what extent the project reaches its aims, by means of questionnaires and classroom observations.

3. The first part of the project: a good start

The project started with a visit of the Dutch project members to Surinam, to the Teacher Education Institute, to schools and to the Ministry of Education. Everybody was enthusiast and expressed to intend to cooperate. To relate the Surinam teachers to the project, a short teacher conference was organised by the Project Advisor, in which the IOL staff and the Dutch partners explained the plans for the curriculum change. The teachers expressed to support the project and to be happy with the approach, as some earlier efforts to change the curriculum had failed.
After this visit, the Project Advisor composed the 'implementation group', headed by a IOL staff member. As IOL physics staff was too small (three persons), four experienced junior secondary education teachers were invited to join.

These seven teachers came to Utrecht and were trained in new methods. These methods include Predict-Observe-Explain (White & Gunstone, 1992), Think-Share-Discuss, handling misconceptions, demonstrations, practical activities for the classroom, using concepts for developing understanding and motivation and other activities that support argumentation (Osborn et al., 2004).
In July, the Dutch project members came to Surinam. They trained the Implementation group members. At a two-day conference the Implementation Group started educating the physics teachers, using the new textbooks. The conference was opened by the Minister of Education, who fully supported the project and promised that the new textbooks would be present in October 2015. The implementation could start!

4. The second part of the project: redesign because of financial problems in Surinam
Unfortunately, in the summer of 2015, the Surinam government declared that Surinam had serious financial and problems. The Minister decided that there was no money to buy the new physics textbooks. The implementation of the new curricula had to be postponed to an unknown date. As a consequence, the project plan had to be adapted. At the same time, the IOL – physics staff was reduced to two persons.
The project was redesigned in a discussion between the implementation group, the Advisor and the Dutch teacher educators. The main adaptations were:

- the goal of the project was confined to educating the educators, the members of the implementation group, to be prepared for training the Surinam teachers at the moment that the textbooks would be available
- that group was extended with four senior secondary school physics teachers
- all teacher members of the implementation group would test some new methods in their classes, however using the old textbooks
- to support them, (1) the teachers would be paid for their time investment by the project, not anymore by the Ministry; and (2) they would be supplied with modern apparatus, in particular a beamer, to be used in their classrooms.

These adaptations were broadly supported, but it cost a lot of time for the new plan to be approved by the financer of the project, UTSN. In March 2016, the plans were approved and now, the project can progress. At the time of the conference, the project will be further underway and results will be reported.

5. Some preliminary conclusions

A first main conclusion is that the present of a person like the project advisor, who knows the ins and outs of both the developing country (i.c. Surinam) and the expertise providing developed country (i.c. the Netherlands) is crucial for a good design of a cooperation project and for getting the project approved by the financer.

A second conclusion is: the project, the funding organisation and the project members have to be flexible as political and economic circumstances may change during the project period, urging a change in the project design.

A third conclusion is that the educators being trained do not need to be exclusively the teacher trainers from a teacher training institute, but can as well be experienced teachers in the schools who can be the 'advanced adopters' in the curriculum change.

A fourth conclusion is: the educational approach we applied, did change the way the advanced adopters and teacher trainers teach. Whether this means that they can educate their colleagues in implementing new methods is not clear yet.

A fifth conclusion: concrete successful new activities in the classroom motivate students as well as teachers.

Van der Valk, T. (Utrecht University), Kleijer, C. (Utrecht University), Michels, B. (Utrecht University) — Practice-based presentation on structural dimension

Scaling-up in a secondary/higher education STEM network: U-Talent

Tuesday, 15:45-16:45, Room KG4 222

1. Introduction

At the 2014 Educating the Educators' conference, we reported about the scaling-up in the Dutch talent development programme called Junior College Utrecht (Van der Valk, Tromp & Kleijer, 2015). In the years since, the programme has broadened and got a new name: U-Talent. This paper relates to the main conference topic structural dimension, finding an answer to the question: how can the structure of a regional secondary/higher education network be effective in scaling-up talent development in their participant schools?

2. Scaling-up the number of U-Talent Academy participants within the schools

In 2004, Utrecht University started a programme, called Junior College Utrecht (Van der Valk, van den Berg & Eijkelhof, 2007), aiming at STEM talent development with students (Taber, 2007)

and professionalization in schools. Since then, it has developed towards being a regional network of secondary schools and two universities, Utrecht University and Hogeschool Utrecht.

From 2004 to 2013, about 100 motivated students grade 11/12 students a year from 25 schools participated in the programme at the UU campus. About 50 STEM teachers participated in the connected teacher programme. For reasons of scaling-up, the programme design was changed, as was reported in Van der Valk et al. (2015). The main changes were:

- the grade 11/12 student programme, now named 'U-Talent Academy', got a campus part and a school part
- U-Talent student programmes for grades 7 to 10 were added
- the U-Talent teacher programme supports teachers in developing their school programme
- a new, 'lighter' Connection programme was started along with the existing Ambition programme.