

Heterogeneity in mathematics teaching practices: what understanding among teachers, what challenges and what solutions?

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Overview

RESEARCH DIRECTION

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ADMINISTRATIVE UNIT(S)

Faculté d'éducation
Département d'études sur l'adaptation
scolaire et sociale

LEVEL(S)

1er cycle
2e cycle
3e cycle
Stage postdoctoral

LOCATION(S)

Campus de Sherbrooke
Centre de recherche sur l'enseignement et
l'apprentissage des sciences (CREAS)
À distance/Télétravail
Déplacements possibles pour la collecte
de données

Project Description

To outline the research project, we will consider its components. First, we define the objectives on which the study is founded. We then set out the contexts of the study, highlighting the relevant problems and clarifying the theoretical background. The proposed methods for fulfilling the project's aims are also considered. The anticipated spin-off effects of the findings are then outlined.

RESEARCH OBJECTIVES

The main objective of this project is to study how primary school teachers take into account the different aspects of heterogeneity in their teaching practices in mathematics. The project includes four specific objectives:

- 1) to provide information on teachers' understanding of heterogeneity in math teaching in a variety of settings,
- 2) to analyse the teachers' self-reported challenges in addressing heterogeneity in their mathematics teaching practices,
- 3) to describe the ways in which teachers respond to the challenges of dealing with heterogeneity in their teaching practices, and
- 4) to analyze student math activity based on the teacher's responses to the dimensions of heterogeneity.

CONTEXT:

Educational systems are undergoing by socio-cultural and economic transformations that are generating a variety of heterogeneities in classrooms. Education systems attempt to overcome exclusions by promoting the integration of students with difficulties or with specific educational needs into regular school classes. However, the needs of some students are so pressing that they are placed in a special education or reception class.

Teaching mathematics in these contexts requires teachers to consider teaching practices that take into account heterogeneity. But pre-

service training does not prepare teachers sufficiently for this. As a consequence, they need to make adaptations to help their students to learn. In addition, current research fails to jointly take into account the different dimensions of heterogeneity (characteristics of students, knowledge and teaching). This project is motivated by the need to address this issue as a matter of urgency.

The research will be based on studies of heterogeneity from the mathematics education literature, in particular, in order to grasp its interlinked dimensions, and on teaching practices, in particular, in terms of components, phases and subjects on which the teaching action and class interaction are based.

DESIGN:

The research will be carried out over a 36-month period. To address objectives 1 and 2, an online survey will be carried out among 60 volunteer teachers in regular, special education and reception classes. It will be designed on the elements structuring heterogeneity and the related issues. For objective 3, an in-depth observation of 2 teaching sessions and interviews with 18 teachers as well as documentary material will be carried out. For objective 4, a document analysis of 36 students' work will be done. A content analysis of the teachers' discourse (objectives 1 and 2) and documentation (objectives 3 and 4) will be carried out, based on a corpus of written, audio and video data, and a mathematical and didactic content analysis will be conducted, covering the tasks, the teachers' interactions with the students and the students' mathematical activity (objectives 3 and 4).

FINDINGS:

The findings are intended to shed light on teachers' understanding of heterogeneity, the challenges they face, the solutions they offer in responding to these challenges, and students' task-induced math activity. The variety of settings, types of participants and types of situations will highlight both invariants and discrepancies in the findings. They will also provide pre-service and in-service training with tools for grasping the scope of heterogeneity and its effects on teaching practices and on student learning, in line with the extent to which it is integrated into pedagogical action. They will also enable teachers to consider and even renew their practices, and researchers to review the scope of heterogeneity in mathematics training, by highlighting possible innovative responses to these challenges.

Discipline(s) by sector

Sciences sociales et humaines

Didactique, Orthopédagogie, Psychopédagogie

Funding offered

Yes

87382\$ - Social Sciences and Humanities Research Council (SSHRC - Savoir)

The last update was on 27 August 2024. The University reserves the right to modify its projects without notice.