



## Differentiated instruction in small schools

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### H I G H L I G H T S

- We examine the practice of differentiated instruction (DI) in small rural schools.
- Teachers differ in their practice, but only few uses DI on a daily basis.
- Two groups of teachers using DI can be distinguished.
- A high pedagogical team culture has a positive influence on a teacher's individual practice of DI.
- Students' achievement is not affected by DI.

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### A B S T R A C T

Rural areas in the alpine regions suffer from dwindling student numbers. Differentiated instruction (DI) could help improve the teaching culture by allowing instructors to better adapt to heterogeneous student groups. At the beginning of a combined research and school improvement project, a survey of 162 teachers and 1180 students was conducted to obtain an overview of the types of DI that are currently practiced. In addition, we examined the school conditions that supported the implementation of DI. This cross-sectional study demonstrates a difference in practices between teachers with more- and less-developed DI cultures, and it was determined that team collaboration that includes pedagogical topics enhances teachers' use of DI.

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### 1. Introduction

Alpine and subalpine regions have faced demographic declines that are threatening the survival of the regions' rather small schools (Meusburger, 2005). This phenomenon, however, is not unique to alpine regions as outcries about school closures can be heard throughout the rural regions. The dwindling population in these rural regions is a key problem for schools in the United States and Canada (Arnold, Newman, Gaddy, & Dean, 2005; Barley & Beesley, 2007; Wallin & Reimer, 2008), Europe (Hargreaves, 2009; Kalaja & Pietarinen, 2009; Leroy-Audouin & Suchaut, 2007), Australasia (Kearns, Lewis, McCreanor, & Witten, 2009; White & Reid, 2008) and in developing countries (Little, 2006).

A research team from 4 educational universities located in the alpine regions has been investigating the situations of small schools in Switzerland and Austria. The aim of the "Schools in Alpine Regions" project ([www.schulealpin.org](http://www.schulealpin.org)) was to provide substantive information that local and district authorities can use as a basis for

their decisions regarding the educational future in these areas. In addition, school leaders, teachers and parents should begin to engage in informed discussions regarding favourable conditions for teaching and learning in heterogeneous or diverse student groups. If small villages concerned about the decreasing population decide to maintain local school service, they may be forced to combine classes of different grade levels. This combination would produce increasing heterogeneity and require multi-grade teaching. Teachers are generally accustomed to working with a diverse population of students as children with immigrant backgrounds, learning difficulties or special needs often contribute to the heterogeneity of a class. However, many of the skills that are important for heterogeneous single-grade classes require a heightened emphasis in the context of the preparation of teachers for multi-grade teaching (Mulryan-Kyne, 2007).

One well-known teaching concept for addressing heterogeneity that has, to date, not been deeply researched is *differentiated instruction* (DI) (Tomlinson, 1999; Tomlinson et al., 2003). Our portion of the "Schools in Alpine Regions" project focused on teachers' actual instruction habits with regard to differentiation in the Eastern alpine regions of Switzerland. We also examined the way in which DI is embedded within the teaching culture of the

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school and its actors. Goddard, Neumerski, Goddard, Salloum, and Berebitsky (2010) demonstrated that leadership is vital to teachers' use of differentiated instruction; however, in this study, we not only consider leadership but also the role of a professional team culture in the implementation of DI. The results from this research have influenced the school improvement processes and have been instrumental in evaluating developments in the instructional practices of schools and teachers (see Smit, Humpert, Obertüfer-Gahler, Engeli, & Breuer-Brod Müller, 2011).

## 2. Differentiated instruction

### 2.1. Theory and concept

To cope with diversity, teachers must adapt their teaching. "Adaptive teaching is teaching that arranges environmental conditions to fit learners' individual differences" (Corno & Snow, 1986, p. 621).

A concept that is closely related to adaptive teaching, but is newer and more detailed, is differentiated instruction, an approach that enables teachers to plan strategically to meet the needs of every student. This concept is rooted in the belief that because there is variability among any group of learners, teachers should expect student diversity and adjust their instruction accordingly (Tomlinson, 1999, 2001; Tomlinson et al., 2003). The initial practical applications of DI involved gifted students, but the DI concept has also been well received in inclusive classrooms (Lawrence-Brown, 2004). Practitioners working with struggling students and students with special needs differentiated their instruction long before teachers with regular classes began to employ DI. In addition, research in the field of inclusion has searched for ways to manage mixed-ability classrooms. For example, Schumm, Vaughn, and Leavell (1994) developed a 3-level planning pyramid that permits individualised goals for students with severe intellectual disabilities. Recently, DI has become an interesting option for use in regular classrooms as well, classrooms where learning has become student-oriented and collaborative and where all students are successfully and meaningfully challenged (George, 2005; Subban, 2006).

The theory from the field of DI incorporates the following main characteristics of a differentiated classroom (Hall, 2002; Randi & Corno, 2005; Subban, 2006; Tomlinson, 1999):

- the teacher attends to students' differences,
- a formative assessment assists in identifying the next learning sequence,
- the teacher modifies content, process and products in accordance with the learners' needs,
- the teacher and students collaborate in learning process.

From Vygotskij (1978), we know that individuals learn best when they are in a context that provides a moderate challenge; Vygotskij refers to this environment as the "zone of proximal development". Learning tasks must be adjusted to each student's appropriate learning zone. Brimijoin, Marquissee, and Tomlinson (2003) suggest using (formative) assessment data to differentiate instruction when preparing students for state standardised testing. An assessment should be used as a teaching tool to extend rather than to merely measure instruction (Smit, 2009; Hall, 2002); therefore, teachers require high diagnostic competence. Diagnostic teaching lies at the centre of adaptive teaching, according to Houtveen, Booi, de Jong, and van de Grift (1999). Miller (1989) posits that the teacher's roles in a collaborative classroom include acting as a facilitator who creates a rich learning environment and functioning as a model for students. In this context, modelling serves to share with students not only what the teacher thinks

regarding the content to be learnt but also to engage the teacher in the process of communication and collaborative learning. The third role that Miller envisions for teachers is that of a coach. Coaching or scaffolding involves supplying hints to students, providing feedback to those students, redirecting their efforts, and helping them to use a strategy to learn the content (Collins, Brown, & Newman, 1989). Wang (1980) stresses the importance of teaching students to become self-directed learners in adaptive instruction settings by teaching students self-management skills. She also proposes the use of grouping to easily adapt school instruction to meet the individual differences of students. Both self-regulated student learning and explicit, direct and extended instruction to groups are crucial components of DI, especially for struggling learners (Tobin & McInnes, 2008).

In schools in German-speaking countries, there is a well-established tradition of teaching with differentiated and student-oriented learning forms, such as "jena-plan work" or "project work"; these forms are based on reform pedagogy, also known as *progressive education* (Trautmann & Wischer, 2009). Teachers in these countries distinguish between DI strategies that employ open, student-centred teaching methods and strategies that involve more structured forms that incorporate tiered learning tasks for different levels of competence. If a teacher's student's work (freely) in groups during differentiated learning sequences, then these groups are not fixed and, as a consequence, they may look quite different in the very next lesson.

Although teachers often accept the necessity of addressing learner variance in the regular classroom, they seldom plan or realise elements of DI to achieve that aim (Hootstein, 1998; Moon, Callahan, Tomlinson, & Miller, 2002; Tomlinson et al., 2003). If teachers do adapt their teaching, they typically are merely offering support for struggling readers (Baumann, Hoffman, Duffy-Hester, & Jennifer Moon, 2000). In other words, rather than viewing differences as a challenge to expand their teaching competencies, they judge differences to be problematic and view integrating these differences into lesson planning as a time-consuming task. Therefore, teachers' motivations to implement DI must also be considered.

This line of reasoning leads to the following research model of effective DI (Fig. 1), the main components of which are shared with a model described by Hall (2002). These components, or elements (Tomlinson, 1999), of DI can be viewed as part of a learning cycle. In practice, teachers should use each element flexibly, e.g., they may start with formative assessment prior to planning instruction. Our model illustrates two main tasks for teachers: planning differentiated lessons and assisting (groups of) students as they are working on individual or group tasks. Both components rely on formative assessment strategies, which provide teachers with the necessary information to modify their instruction as they guide their students to attain mastery, as defined by Bloom (Guskey, 2007).

Description of the components:

*Attitude:* The teacher has a more constructivist view of learning; i.e., each learner has unique needs, and the learner shares the responsibility for learning with the teacher. It is important for the teacher to pre-assess each student's knowledge and the plan for each student's individual needs and way of learning.

*Content:* The proximal educational goals must be aligned with the prior knowledge and learning profiles of the individual students or groups of students being taught. The teacher needs to clarify the final goals with examples of successful work from other students to illustrate these goals.

*Process/products:* Tasks must be aligned with these individual goals and student interests, and they must be structured to allow students to work at their own pace. The tasks should offer different ways to explore the educational content and allow varied products

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