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Interactions between pupils and their teacher in collaborative and technology-enhanced learning settings in the inclusive classroom

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HIGHLIGHTS

- This study examined the interactions between students and their teacher in an inclusive classroom.
- Interaction comprised many forms: non-verbal, verbal, emotional, and kinaesthetic.
- Five teacher strategies for enhancing pupils' interactions were identified.
- The main triggers for interaction were social intimacy, teacher strategies, and classroom facilities.
- Two main roles of laptops as triggers of interaction were identified.

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ABSTRACT

This paper analyses the interactions between pupils and between pupils and their teacher, and the teacher's strategies in an inclusive classroom while pupils enrolled at a primary school work collaboratively on laptops. Video observation data collected from 21 s-grade pupils, one teacher, and her assistant, along with qualitative questionnaire data collected from the teacher, were examined using inductive content analysis. The findings divide interactions into four categories—non-verbal, verbal, emotional, and kinaesthetic—and indicate that their interactions are triggered by the social intimacy, teaching strategies, feedback, and classroom facilities. The results are useful for teachers and teacher education programmes.

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1. Introduction

Teachers play a key role in designing learning that is equally beneficial for each of their pupils (Gómez-Zepeda, Petreñas, Sabando, & Puigdellívol, 2017; Smit & Humpert, 2012; Vaillant, 2011; Young, Mannix McNamara, & Coughlan, 2017). The provision of equal access to education for all pupils via appropriate pedagogies that meet the learning needs of the 21st century is one of the aims of many schools around the world (Bullen, Morgan, & Qayyum, 2011; Gabriel, Campbell, Wiebe, MacDonald, & McAuley, 2012). This article is based on an authentic collaborative learning case, in which laptops were used in the inclusive classroom.

Although research has paid attention to technology-enhanced collaborative learning (Fischer, Kollar, Stegmann, & Wecker, 2013; Iiskala, Vauras, Lehtinen, & Salonen, 2011; Janssen, Erkens, Kirschner, & Kanselaar, 2010), there is inadequate research on interaction within the inclusive learning context, and none on non-verbal, verbal, kinaesthetic, and emotional interaction in the inclusive learning context exists. The practical work presented here was one of the first investigations into how the non-verbal, verbal, kinaesthetic, and emotional interactions of pupils working together in a group on a laptop and pupils of two groups sharing task progress or results displayed on laptops in an inclusive classroom were initiated and triggered.

Past research has also confirmed the benefits of including pupils with special needs or challenges in general education programmes (Idol, 2006). While all pupils need some level of support (Hyvönen, et al., 2014; Lempinen, 2016), the number of pupils who need intensified support has been increasing rapidly in recent years. For

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instance, in autumn 2014 in Finland, 40,500 comprehensive school pupils received intensified support. This figure, which accounted for 7.5% of all pupils at this level, is 4.2% higher than the number who received these same services in autumn 2011. The proportion of pupils with immigrant backgrounds who receive special support is slightly higher than that of pupils with non-immigrant backgrounds (Statistics Finland, 2015).

Previous research has shown that inclusion does not always meet pupils' needs and requirements and that teachers may lack access to the resources and various other forms of support that enable them to provide high-quality teaching in an inclusive setting (Vaillant, 2011). However, teachers are increasingly being told to attempt to implement a democratic approach in the inclusive classroom (Tarr, Tsokova, & Takkunen, 2012), use varied teaching strategies, and diversify instruction in the inclusive classroom to enable them to meet a range of pupil needs, as well as achieve and maintain teaching quality objectives and educational outcomes (Jordan, Glenn, & McGhie-Richmond, 2010). Another study conducted in the field in Finland, Norway, and Sweden (Takala, Hausstätter, Ahl, & Head, 2012) has suggested that inclusion necessitates schools' development of new teaching techniques, including teaching methods that are suitable for a diverse range of pupils, thereby enhancing their learning experience (including what they learn from each other) and their feeling of being on the same level as their peers, enabling pupils to have full access to all learning resources and opportunities, and allowing for the strengthening of their social skills. Research has also shown that inclusive pedagogical approaches can take various forms (Florian & Black-Hawkins, 2011; Florian & Graham, 2014; McLeskey, Waldron, & Redd, 2012). There is an obvious need to put greater effort into researching how to improve the quality of inclusive pedagogy from both pupils' and teachers' perspectives. This study adopts the concepts of interaction, inclusion, triggers of pupils' interactions, and digital technologies. In addition to the above named concepts, a combination of inclusion, technology-enhanced collaborative learning and triggers aims for enriching the interactions of pupils working together in a group on a laptop or pupils of two groups sharing task progress.

By "interaction," we refer to the interactions that take place among the pupils themselves, as well as between pupils and teachers. These interactions can be interpreted based on how they occur, whether verbally, emotionally, kinaesthetically, and through the use of their senses. "Social interactions" are defined as events or episodes in which people attach meanings to a situation, perceive and interpret what others mean, and respond accordingly (Kielinen & Yliherva, 2010).

By "inclusion," we refer to differentiated instruction and the diversity of pupils within the classroom. Differentiated instruction is "an approach that enables teachers to plan strategically to meet the needs of every student" (Smit & Humpert, 2012, p. 1153). This concept is almost identical to inclusive pedagogy. The diversity of pupils refers to all the students within the inclusive classroom, such as gifted pupils, those with special education needs (SEN) or physical challenges, struggling pupils (Smit & Humpert, 2012), and regular classroom pupils. To this end, we maintain that inclusion makes great contribution to the promotion of effective interaction among group members (Forslund Frykedal & Hammar Chiriatic, 2018). According to the inclusion approach, the teacher responds to needs of all pupils. The teacher's personalized response to individual pupils contributes to an equal opportunity to all pupils and changes pupils' behaviour and position towards learning through an effective interaction with others (Young et al., 2017).

As an example, pupils are afforded to learn interaction and collaboration with others. Pupils can learn social and personal responsibility, skills about collaboration, skills about working in

teams or in small groups, interpersonal (Dede, 2010; Forslund Frykedal & Hammar Chiriatic, 2018), skills about positive interdependence, individual accountability, face to face promoted interaction and group processing (see Forslund Frykedal & Hammar Chiriatic, 2018). In addition, pupils can learn to relate to others, and manage and resolve conflicts (Dede, 2010). In a similar case as the present study, the teacher planned activity in advance, made material resources available prior lesson and was available all the time in the classroom for intervention (Young et al., 2017).

"Triggers" denotes the factors which can awaken and maintain the interest in interaction (see, e.g., Renninger & Bachrach, 2015). According to Määttä, Järvenoja, and Järvelä (2012) triggers are factors or events related to a group's interaction that influence its members' task involvement and the quality of their interactions. The literature also suggests that triggers are motivational factors from situational interest and may vary according to the characteristics of the learning environment or pupils (Renninger & Bachrach, 2015). Kangas, Siklander, Randolph, and Ruokamo (2017) concluded that in Finland and the Netherlands, the satisfaction of pupils in playful learning environments is dependent on the countries in which they are located, their classrooms, their ages, their overall satisfaction with their schools, and their satisfaction with their teachers. In this study, the triggers of interaction are the factors that positively cause pupils' verbal or non-verbal interactions with group members working together around a laptop or as two groups working around two laptops. Collaboration can be a trigger for interaction and successful collaboration requires interaction (Siklander, Kangas, Ruhalahti, & Korva, 2017). According to a recent systematic Sun, Siklander, and Ruokamo (2018), scaffolding, collaboration and perceived ease of use are the most efficient factors for triggering pupils' interest, which is important to take into account in the inclusive classroom as well.

"Digital technologies" refer to digital devices which have been created and used to enhance learning and interaction in educational settings. In this case study, mainly laptops were used. Pupils and teachers are seen as not only consumers but also producers of multimodal information and knowledge.

Technology-enhanced collaborative learning and inclusion signifies to pupil-centred approach and face-to-face interaction around the laptops (Kleine Staarman, Krol, & Van der Meijden, 2005). According to the inclusion approach, teacher arranges resources (e.g. laptops) that respond to needs of all pupils. Furthermore, pupils learn how to collaborate and interact with others. These include (1) participation in discussions, sharing with other group members, and evaluation of group work, (2) helping or mentoring each other in achieving group goals and encouraging each other's effort, (3) feeling of being a group member, trusting other group members and pursuing common goals (Forslund Frykedal & Hammar Chiriatic, 2018).

The aim of this study was to describe and analyse interactional learning situations in inclusive classrooms at Finnish primary schools, and laptops were used in collaborative contexts in these authentic settings. The focus of the present study was to describe and analyse the interactions among the pupils, as well as between the pupils and their teacher, and to interpret how they interact verbally, emotionally, kinaesthetically, and using their senses.

2. Curriculum-based justifications for choosing teaching methods, learning approaches, and technologies

The new Finnish National Curriculum, which was initiated in the fall of 2016 for the pre-primary and elementary levels, focuses on pupils' competencies, experiences, and involvement (Finnish National Board of Education [FNBE], 2016). Theoretically, learning is based primarily on collaborative and self-regulated learning

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