

Heterogeneity and the Use of Technology in the Primary English as a Foreign Language (EFL) Classroom

1. Introduction

To date, the relationship between difference and equality in schools represents a field of tension that occupies the macro level (the level of the system, e.g. Ministry of Education) and the meso level (the level of a single institution, e.g. school) and is also by no means broken down at the micro level (the level of teaching, e.g. English lessons). In the German educational discourse, their relationship and the significance that equality and difference have in the school system are discussed under the terms *Homogenität* (homogeneity) and *Heterogenität* (heterogeneity). Budde (2012, p. 532) explains that *Homogenität* describes the equality of characteristics in comparison. In contrast, *Heterogenität* describes the differences between characteristics, persons or artefacts in relation to a criterion. As a key topic for school and teaching, *Heterogenität* in particular refers to social categories as well as to the different performance levels of students (Budde, 2013, p. 7; Trautmann & Wischer, 2020, p. 219; Walgenbach, 2017, p. 12).

Heterogeneity is a complex phenomenon. *Socio-cultural heterogeneity* (*soziokulturelle Heterogenität*) deals primarily with the issue of social inequality in the education system. It uses the categories of gender, ethnicity and milieu (Budde, 2012, p. 527). Attributes such as migration experience, pre-knowledge, sex, disabilities, interests, age, socio-economic background, pace of learning, and motivation (Giesler, Schuett & Wolter, 2016, p. 64) can be assigned to the categories of socio-cultural heterogeneity. In contrast, *performance heterogeneity* (*Leistungsheterogenität*) focuses on the different learning conditions of pupils and asks, for example, how both weaker and stronger learners can best be supported (Budde, 2012, p. 527).

The differences discussed in these two “arenas of discourse” (Jahn & Lux, 2009, p. 11, German original text translated by the author), namely socio-cultural heterogeneity and performance heterogeneity, are fundamentally intertwined. Differences in performance have always carried traces of socio-cultural categorisations, just as socio-cultural categories go hand in hand with views about performance-specific potentials of certain groups (Budde, 2012, p. 533). For this reason, Walgenbach (2017, p. 65) describes their relationship as “interdependent”. She suggests assuming not only interdependencies between categories of heterogeneity but also interdependent

categories. That is, when we pedagogically conceptualise social categories such as gender, disability, social milieu, ethnicity, or nation, we already structure them heterogeneously in themselves. In fact, pupils never belong to only one category (e.g. gender, social background), but may differ in many aspects at the same time (Trautmann & Wischer, 2020, p. 222). Budde (2013, p. 13) argues, though, that the question of how differences and the hierarchies associated with them are processed in schools and classes is often lost from view.

This chapter deals with teaching and learning English as a foreign language (EFL) in heterogeneous classrooms. Therefore, it moves from a general view on socio-cultural and performance heterogeneity at German schools to the micro-level of English lessons. Finally, it provides a literature discussion on the potential of technological tools to deal with heterogeneity in the classroom and how these tools can help us to support foreign language learning in ways that cater for the different needs of learners.

2. Heterogeneity at school

In everyday pedagogical life, the dimensions of heterogeneity, e.g. gender or ethnicity, seem to be almost naturally given (Hummrich, 2017, p. 161). In fact, however, the concepts of heterogeneity and homogeneity are both constructed through social negotiation processes (Budde, 2012, p. 533; Dirim & Mecheril, 2018, p. 19). With reference to Bublitz (2003), Dirim and Mecheril (2018, p. 23) emphasise that no naturally given meanings can be attached to the categories of heterogeneity. The categories are produced in discourse. Thus, they have no original essence or core meaning beyond or prior to their linguistic and social construction. In other words, heterogeneity and homogeneity only emerge in processes of perception and comparison that are based on implicit or explicit standards or references (Budde, 2013, p. 8, see also Trautmann & Wischer, 2011; Bohl, Budde & Rieger-Ladich, 2017; Walgenbach, 2017). One example of this are educational standards. Since these standards specify what teachers should teach, and which skills pupils should have acquired afterwards, they expect the greatest possible homogeneity of a heterogeneous group of learners (Eisenmann, 2019, p. 30). However, heterogeneity is not simply brought into schools from the outside by the learners. Following Budde (2013, p. 15), the educational field rather produces difference and equality through its own social acts of construction because it refers to categories of difference, e.g. in interactions, spatial arrangements, symbolic expressions, or artefacts. Examples include the extent to which learners receive individual support, the spatial separation of pupils, or the assignment of marks.

In fact, as it has been noted by some authors (e.g. Ur, 2012, p. 272; Eisenmann, 2019, p. 28), there are no homogeneous classes in school. The idea of homogeneity in our school system is only fiction (Tillmann, 2008, p. 38). Rather, the opposite is true. Pupils are different in many ways. Hummrich (2017, p. 161) explains that we refer to a heterogeneous group of pupils when children of different sexes and social backgrounds, but also of different talents, abilities and aptitudes, learn together. This includes learners' linguistic backgrounds (Eisenmann, 2019, p. 16) and language com-

petencies (Eisenmann, 2019, p. 28). Butler (2019, p. 481) emphasises that there are even essential differences among pupils of the same age group. For instance, the children differ in their cognitive, socio-cognitive, and linguistic development. Moreover, pupils develop individually in different domains. Thus, a learner may be more developed in a specific cognitive area but less developed in a social area. As a result, children come together that differ in their preferred working methods, their social behaviour and their individual level of competence (Legutke, Müller-Hartmann & Schocker-von Ditfurth, 2015, p. 50). This is especially true for primary classrooms. According to Müller-Hartmann and Schocker-von Ditfurth (2011, p. 12), heterogeneity is “the constituent feature of primary classrooms” (emphasis in original).

Graumann (2002, p. 11) puts forward that an answer to dealing with heterogeneity can be found in internal differentiation. The goal is to design lessons which do justice to the individuality of all children. As a matter of fact, the discourse on how to deal with heterogeneity in the classroom is not new. As early as 1850, Karl Ferdinand Schnell (p. 84) claimed “to take reasonable account of the sex, temperament, intellectual talent, age, and educational level of the pupils” (German original text translated by the author). Diehm (2020, p. 11) summarises this challenge by pointing out that:

“School pedagogy has [...] continuously dealt with the relationship between individualisation and group reference, with questions of external and internal differentiation, the creation and facilitation of equal opportunities and fairness, differentiated performance assessment, the reduction of social disadvantage through education, and the pedagogical and conceptual possibilities of integration and inclusion of individual children or groups” (German original text translated by the author).

Hence, heterogeneity is a distinctly multi-layered phenomenon. Bates (2019, p. 462) notes that the increasing diversity of pupils poses great challenges for all teachers – and for all learners, that should be added. Let us take a look at the challenges of heterogeneity in the English classroom and how the use of technology can help us to deal with them in foreign language learning.

3. Teaching and learning English in heterogeneous classes

The heterogeneity of the pupils in a class is naturally also reflected in lessons teaching English as a foreign language (EFL) (Trautmann, 2010, p. 11; Giesler et al., 2016, p. 65). Moreover, in the EFL classroom, pupils may differ not only in their learning background and experiences (e.g. nationality, spoken languages, previous experience of speaking English) but also, as mentioned above, in their current proficiency related to a range of abilities and speaking skills (Goh & Burns, 2012, p. 173), and in their personal characteristics (Ur, 2012, p. 273).

According to Doff (2016, p. 2), with regard to the EFL classroom, “central categories of difference” (German original text translated by the author) can be identified. In addition to language and culture, performance is consistently mentioned as a major

feature in the various categories of heterogeneity (Decristan & Jude, 2017, p. 109 f.; see also Trautmann, 2010, p. 3). As was pointed out earlier, it is not only the pupils who add heterogeneity to the classroom situation. Through classroom interaction, teacher orientation, and ideas about performance, schools can contribute to the production of differences as well (Budde, 2017, p. 13). Thus, a school committed to individualisation inevitably increases the differences between children as it emphasises individual performance potentials (Budde, 2013, p. 9 f.).

However, the heterogeneous pre-requisites of students can be of great value for their learning process. The literature on foreign language learning (e.g. Ur, 2012; Legutke et al., 2015; Haß, 2018; Eisenmann, 2019) has highlighted the importance of supporting learners in their personality and enabling them to engage in active learning processes. Therefore, we need to consider their respective starting points and pre-conditions and thus not prescribe the same content to everyone at the same time, to the same extent, and at the same level. As Cameron (2010, p. 1) notes, successful English lessons are harmonised to pupils' learning needs. They are learner-centred and do not waste the pupils' individual learning potential.

In addition to differences in performance, the socio-cultural heterogeneity of the pupils should also be taken into account in foreign language learning. Each child can contribute their own experiences to the learning process. Yet, the literature on EFL still seems to be reserved about this topic, although Schäfers (2009, p. 42) points out that the differences between children can be a motor for successful learning. This involves turning away from learning in lockstep. Her opinion is in line with the requirements of the 2016 primary school curriculum for English (*Bildungsplan der Grundschule – Englisch*) in Baden-Württemberg, and the updated version for English starting from grades 3 and 4, issued in 2020, which call for individual learning and the use of different learning channels (Ministerium für Kultus, Jugend und Sport BW [KM], 2016a, p. 3; 2020, p. 4). Primary school education aims to address the various interests and strengths, potentials and talents, pre-requisites, starting points, and supportive needs of children through individualised teaching (KM, 2016b, p. 19). In addition, further alternative forms of teaching, such as collaborative, differentiated, project-based, and personalised teaching are required. Especially for English classes, Doff (2016, p. 1) points out the difficulty of supporting and stimulating as many learners as possible, regardless of their different cognitive, emotional and motivational characteristics. For EFL teachers, the differences between pupils pose practical challenges to the design of effective language lessons and good teaching (see also Chilla & Vogt, 2017; Eisenmann, 2019). However, foreign language didactics still do not offer a well-founded theory or concrete concepts of how to approach a heterogeneous group of learners (Giesler et al., 2016, p. 65). This could be due to the fact that the individual English learning process in primary schools has not been addressed for a long time (Böttger, 2010, p. 6). Thus, there is a need for further research in this area. This chapter's next section will show that the use of technology can provide opportunities to overcome this difficulty and to support teachers in creating differentiated lessons that meet their learners' requirements, e.g. in individualised settings.

4. Using technology in heterogeneous primary classrooms

Primary school children have different socialisation contexts. Their media behaviour is accompanied by socio-cultural differences and social inequalities. Researchers on media socialisation have been aware of this for a long time (Niesyto & Junge, 2020, p. 299). Young learners' media-related pre-requisites are diverse and complex, especially since they also depend on the individual development and interests of the children (Irion, 2016, p. 25). Consequently, primary schools need to cater for learners equipped with very different knowledge, experiences, and media at home (Müller, 2020, p. 110). This phenomenon is referred to as the *digital divide*, i.e. "social stratification due to unequal ability to access, adapt, and create knowledge via use of information and communication technologies (ICT)" (Warschauer, 2011, p. 5). Fotos and Browne (2004, p. 7) suggest that the digital divide may also manifest at a higher level, as a hegemonic phenomenon "between technological haves and have-nots."

Kaliampas (2019, n. p.) summarises the challenges associated with the digital divide and learning in heterogeneous classes. For example, he points to different digital skills and the unequal access to various devices. This reinforces the differences that already exist and thus augments the digital divide. Kaliampas further argues that bridging the educational gaps is essential and that schools have a major role to play in this. According to Hobbs (2010, p. vii), they need to foster digital and media literacy, i.e. "a constellation of life skills that are necessary for full participation in our media-saturated, information-rich society". In doing so, schools can help their learners to become independent and contribute to reducing social inequality in the classrooms. Blume and Würffel (2018, p. 9) explain that using technology in class is not only suited to individualise and differentiate but also to support learner autonomy in highly heterogeneous settings. They put forward that teaching and learning with technology

"further each individual's ability to, in the future, identify, select, and appropriate technological tools that reflect their competencies and needs. Such autonomy, moreover, reflects the digitally-informed contemporary expectation of learners to be active participants in constructing their own learning environment."

Thus, digital learning environments potentially create more freedom for learners, e.g. by training pronunciation, simulating English-speaking contexts, or facilitating real communication and interaction. However, since each and every classroom culture is different (Breen, 1999, p. 53), there is no one-size-fits-all formula to work with when using technology. For this reason, Mayer (2005, p. 9) underlines the importance to choose a learner-centred approach, i.e. to ask how digital media can be adapted to enhance pupils' active engagement with learning. Additionally, Hampel (2019, p. 104) points out that students could map their own learning if only we offer them a choice of learning pathways. A shift towards a position where the learners, and not the teachers, are at the centre and in control of their learning process would thus be possible (Fotos & Browne, 2004, p. 7). Therefore, language teaching literature has recommended that, if learners' heterogeneity and individuality are to be taken seriously, open forms

of teaching and learning are required. Wiater (2017, p. 40), for instance, reports that teaching in open settings is characterised by activating and action-oriented methods in which the teacher takes on a double role. Namely, as a planner and organiser of the learning tasks and as a learning counsellor and helper during the pupils' active learning activity. Wiater (2017, p. 46 ff.) suggests that digital media can help generate highly individualised and personalised learning plans for each pupil. In fact, several authors have pointed to the enhanced opportunities that multimedia learning environments offer for individualisation. Van Merriënboer and Kester (2005, p. 80 f.), for instance, underline that the performance-based principle of individualisation "typically takes differences between learners into account by selecting learning tasks in such a way that the task difficulty and/or the available level of support is adjusted to the learner." Hence, in the next section, let us take a look at technology in the young learners' foreign language classroom.

5. Technology and English language learning in the primary classroom

According to the *Bildungsplan*, foreign language learning at school aims to equip learners to communicate in the target language (KM, 2016a; 2016b; 2020). Therefore, certain competencies such as reading, writing, speaking, and listening are required. As mentioned above, Edelenbos, Johnstone and Kubanek (2006, p. 149 f.) also point out that young learners may benefit from technology-enhanced learning, for example through oral interaction, feedback, pronunciation and strategy-development.

There are many ways in which digital technology can support the English as a foreign language (EFL) learning process. Warschauer (2004) puts forward that the integration of multimedia and internet in 21st century classrooms has not only led to a change in English teaching paradigms and the view of language but also to a change in the principal use of technology and language learning objectives. With the help of digital media, students participate in authentic discourse and take agency over learning. They no longer communicate merely to practice their language skills (Warschauer, 2004, p. 22). For in the EFL classroom, technology can provide access to diverse sources with the help of which "the child-like learner can pick and choose, reject or linger, and consolidate or change" (Breen, 1999, p. 59 f.; see also Hampel, 2019, p. 104). Technology can support even young pupils in the early stages of foreign language learning to develop their oral language competencies and communication skills (Pellerin, 2014, p. 9; Legutke et al., 2015, p. 97). Eisenmann (2019, p. 114) argues that both EFL students and teachers are usually familiar with the use of digital media as they are essential to their lives. This is why technology could become a key tool to foster young learners' foreign language learning processes, not least because of the possibilities for differentiation and individualisation that adaptive and customisable software allows for.

However, to do justice to the heterogeneity of the EFL learners, Ur (2012, p. 276) suggests balanced teaching and varied lessons. This includes allowing children to learn at their appropriate pace and level and providing them with individual learning support. As a result, classes can be less teacher-centred, with a higher degree of student activity. Eisenmann (2019, p. 114) suggests that with the help of digital media, learning processes can be better individualised and differentiated “also because of adaptable and adaptive software and Internet, through self-selected materials, and students choosing their own learning approaches.” Especially in task-supported lessons, technology and digital material can offer new ways for foreign language learning even to a heterogeneous group of young children (Pinter, 2015, p. 124; see also e.g. Warschauer, 2004; Müller-Hartmann & Schocker-v. Dittfurth, 2011; Whyte & Cutrim Schmid, 2014; Pellerin, 2014; Legutke et al., 2015; González-Lloret, 2016; Haß, 2018). In EFL learning, the use of technology helps control the scope and complexity of tasks and language support. Technology can promote individualisation, adapt to learning environments, increase pupils’ control over task management, and provide immediate feedback (Kaliampou, 2019, n.p.). This removes social barriers that might otherwise put communicative pressure on learners.

6. Conclusion

As we can see from the discussion, the concept of heterogeneity – and how to deal with it in schools – is complex and multi-layered. It moves in an area of tension, it is difficult to grasp and it requires further clarification. Otherwise it runs the risk, according to Budde (2012; 2017), of degenerating into a pure “container term” (German original text translated by the author) or a “fuzzy concept” (Budde, 2017, p. 14). We need a holistic view of heterogeneity in order to prevent this and to achieve an appreciative approach to pupils’ differences and their capacity for foreign language learning. Budde (2012, p. 528) argues that schools perceive socio-cultural heterogeneity, but then usually only transfer it to the question of how learning can be organised under the condition of heterogeneity. Mostly, the view of heterogeneity in school has positive connotations and is depicted as an “opportunity” (Walgenbach, 2017, p. 27), i.e. a desirable way of dealing with the pupils’ differences. In such a setting, as Hummrich (2017, p. 167) suggests, educational inequalities are reflected in performances. In language learning, as in any other subject, these performances show up in the classroom, i.e. at the micro level, since this is where the learners’ individual foreign language development takes place. Despite the relevance of the topic for teaching and learning, foreign language didactics seems to be reluctant to discover the subject area of heterogeneity (Chilla & Vogt, 2017, p. 63).

In this chapter, the author has further discussed the potential of technology-enhanced teaching as well as task-supported language learning and teaching (TSLT) as possible solutions to deal with heterogeneity in the classroom. If knowledge is always subjectively constructed and learning is always individual, the children’s learning processes in a heterogeneous classroom are inevitably so different that learning

arrangements must be based on the children's individual pre-requisites (Trautmann & Wischer, 2011, p. 31). Since TSLLT and the use of technology offer potential for differentiation, they are well suited to address learners' personal pre-conditions. Individualisation, as Kutty (2018, p. 51) points out, is already conceptually embedded in task-supported learning. The use of technology allows for individual learning that varies in speed, level and quantity (Ur, 2012, p. 238). Thus, pupils get the chance to explore their communication skills themselves (Legutke et al., 2015, p. 95). However, especially in primary school, digitally enhanced learning needs to take into account the differences in children's language acquisition and their different levels of digital literacy, and to include the developmental aspects within the group (see Kammerl, Dertinger, Stephan & Thumel, 2020, p. 41f.). If this is the case, combining digital technology with a task-supported language learning and teaching (TSLLT) approach offers a great opportunity to meet the heterogeneous needs of learners in the English as a foreign language (EFL) primary classroom.

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