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Teachers' Self-Assessment Regarding the Teaching of Students with a Developmental Language Disorder

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ABSTRACT

In Norway, as in many other countries, developmental language disorders (DLDs) are a common challenge that greatly interferes with students' educational progress. In this study, teachers' assessed special educational needs (SEN) competence regarding DLDs was explored. Four hundred and thirty-three teachers working at dyslexia-friendly schools in Norway answered the questionnaire. The results indicated that assistive technology (AT), special needs education, and years of teaching are the determinants of teachers' assessed SEN competence regarding DLDs. Furthermore, with regard to DLDs, female teachers displayed higher competence than their male counterparts. The role of AT is crucial; therefore, we suggest that AT should be implemented in teacher education programs and in the education of SEN teachers. We also recommend that student teachers develop both theoretical and practical special needs competence during teacher education programs.

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KEYWORDS

Developmental language disorder; inclusive education; special needs education; teachers' assessed competence

Introduction

Inclusion and inclusive education are, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO), among the goals of most European school systems (UNESCO, 2017), and as emphasised by the Organization for Economic Co-operation and Development (OECD, 2016), working towards this goal means that inclusion needs to be addressed at the system level – for example, through governmental strategies and teacher education. In a meta-review, Mendoza and Heymann (2022) found that teacher education can positively influence student teachers' views of inclusion. Consequently, teacher education plays a significant role in bridging the gap between the vision of inclusion and teaching practices in schools by supporting the development of student teachers' competence to teach in diverse classrooms. The Norwegian school system is based on the principles of adapted and equal education, and comprehensive reforms have led to the discontinuation of segregated preschools and schools and the implementation of more inclusive educational facilities for students with special educational needs (SEN). This is explicitly outlined in the Education

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Act (1998), by which all school education, including the SEN structure, is established and regulated (Nordahl et al., 2018). However, many researchers are concerned that special needs education practice in Norwegian schools lacks functionality (Ainscow, 2021, Nes et al., 2018; Nordahl et al., 2018). For example, statistics from 2015 show that three times more students in Grade 10 than in Grade 1 were receiving special needs education, and this gap continued to widen in 2020 (Statistics Norway [SSB], 2021a, 2021b). The lack of qualified SEN teachers also appears to be a major challenge in Norway (Antonsen et al., 2020; Nordahl et al., 2018). Norwegian policy documents have highlighted the need for more research on how teachers perceive their competence regarding special needs education (Meld.St.6, 2019–2020). In general, teachers' assessments of their competence concern their feelings of being qualified in specific areas (OECD, 2014).

Our study focused on teachers' assessments of their competence regarding language development disorders (DLDs). Internationally, DLDs are a common challenge that greatly impacts students' educational progress, with an estimated prevalence of 3%–7%, depending on the definitions and the students' ages (Norbury et al., 2016). In Norway, about 4%–10% of students have a DLD as their primary difficulty.

Because dyslexia-friendly schools have committed to working to improve teachers' competence within this field, they are an interesting case to investigate. Therefore, the research question was formulated as follows:

How do teachers at dyslexia-friendly schools assess their competence regarding DLDs, and what explains this competence?

The aim of dyslexia-friendly schools is to promote inclusive and accepting environments in the areas of dyslexia, impaired learning in mathematics, and DLDs, as well as concerns with assistive technology (AT). To acquire dyslexia-friendly status, mainstream schools must apply to the Norwegian Dyslexia Association (Dyslexia Norway, 2021) and must meet 10 criteria. One of these criteria is that the school must ensure the enhancement of teachers' competence. Moreover, teachers are required to work systematically towards the goal of offering every student an equal opportunity to engage in learning and social participation (Valle & Tverbakk, 2021). However, teachers working at these schools are not required to have specialised formal teacher education.

The Norwegian Context

To obtain insights into the contextual conditions of Norwegian schools, the basic values, legislative frameworks, and principles for providing special needs education were scrutinised.

Roughly 636,250 students aged 6–16 years officially attend mainstream schools in Norway. Of these, approximately 8% need adapted education and have a statutory right to SEN support (Education Act, 1998; SSB, 2021a, 2021b). This support consists of individual facilitation and is included as part of mainstream school education; however, because only a small number of Norwegian teachers have SEN qualifications, special needs education is often carried out by unqualified teachers (Nes et al., 2018; Olsen, 2021). Considering this, it is also relevant to ask how the development of SEN competence is facilitated in teacher education.

Norway has three main teacher master education programs: the newly introduced five-year integrated primary and secondary teacher education master's programs (Grades 1–7 and 5–10) and the five-year integrated 'lector' program (Grades 8–13). The primary and secondary programs cover Grades 1–4, 5–7, and 8–10, which are Norwegian primary and secondary schools. Candidates who complete the five-year integrated lector master's program are qualified to teach at secondary and upper secondary schools (Grades 8–13). All levels of teacher education in Norway are delivered by universities, university colleges, and a small number of specialised colleges. Both the newly introduced five-year integrated master's program in primary and secondary teacher education for Grades 1–7 and 5–10 are governed by national regulations that stipulate minimum requirements for the contents of the programs (Norwegian Agency for Quality Assurance in Education [NOKUT], 2020).

Students who attend the five-year integrated master's program in primary and secondary teacher education (Grades 1–7 and 5–10) must take a minimum of 60 credits in 'pedagogy and pupil-related skills'. Students who choose to specialise in pedagogy may write their theses in profession-oriented pedagogy, digital education, or special needs education.

Special needs education bachelor's and master's degrees are provided by numerous university colleges and universities. For instance, one can choose a three-year bachelor's degree in special needs education, after which the master's degree can be selected. The master's in special needs education is a two-year program in which one can immerse oneself in a specialisation such as speech therapy and specific learning difficulties. Some programs focus on didactics and individualised solutions, and some are centred on inclusion, systems, and social relationships (Hausstätter & Takala, 2008). Applicants to the master's program in special needs education must have a pedagogic-related first degree, but it is not obligatory to have a bachelor's degree in special needs education specifically (Olsen, 2021). Therefore, students from a diverse range of undergraduate program are recruited into the master's program (Cameron et al., 2018). Consequently, students can pursue a master's in special needs education without having any qualifications in this field, having only a short introduction to this subject as part of the pedagogy curriculum in kindergarten and teacher education. Moreover, the preparation of teachers' SEN competence can be taken as a one-year specialisation provided in the form of continuing education for qualified teachers and kindergarten teachers.

Theoretical Framework

DLDs are defined in various ways, and it has been difficult to agree on common terminology (Bishop, 2014, p. 392). DLDs are a heterogenic, multifactorial phenomenon originating from the combined influence of genetic and environmental factors. However, the newly introduced term 'DLD' has gained recognition vis-à-vis diagnosing and referring to students with language difficulties (Bishop et al., 2017). DLDs, as used in the present study, can be applied to students who have persistent problems with language in the absence of specific biomedical conditions. It is important to note that dyslexia is a common comorbid difficulty for those with DLDs (McGregor, 2020). DLDs are related to difficulties with phonological, receptive, expressive, and pragmatic aspects of language, as seen in the context of a student's development. DLDs may also occur together with impaired social

interaction and behavioural difficulties. Additionally, DLDs are more common among children from socially disadvantaged backgrounds (Bishop, 2014; McGregor, 2020).

Teachers' Competence

According to Gotvassli (2013, p. 18), professional competence can be understood as the knowledge, skills, abilities, attitudes, and values acquired through education that make it possible to carry out tasks related to specific requirements and goals. In the present article, teachers' professional competence is defined as their ability to handle complex demands in a given context. In this sense, competence is situated and dynamic, and it includes the capacity to use and adapt theoretical knowledge and professional experience (Guerriero & Révai, 2017; Tverbakk, 2018; Valle, 2017).

SEN competence regarding DLDs includes specialised theoretical knowledge, as well as subject-specific knowledge linked to mapping students' DLDs, identifying students with DLDs, following up on students diagnosed with DLDs, and monitoring the social interactions between the student and teachers involved. To carry out specific tasks, specialised theoretical knowledge, as well as knowledge of the legislation that regulates SEN support, is required (Hanssen & Olsen, 2022). This knowledge can be utilised when planning and implementing a practice that is well adapted to individual students' needs.

Another aspect of the teachers' SEN competence concerns assistive technology (AT). In the Norwegian context, the concept of AT coincides with the way Cabero-Almenara et al. (2021) define information and communication technology (ICT) as resources and tools and devices (e.g. computers and computerised devices and low-tech devices such as pencil grip and text-to-speech software) that enable access to information and communication as well as support students' learning. AT has become a key factor in developing the education system in favour of inclusion and diversity (Montenegro-Rueda & Fernández-Batanero, 2022).

However, López Núñez et al. (2020) underlined that despite the increasing number of projects on AT, minimal research has been conducted on this topic in the context of special needs education. Regardless, some studies have emphasised that AT plays an important role in facilitating students' motivation to learn, enhancing their autonomy and independence, and strengthening their language skills (Nordström et al., 2019; Svensson et al., 2021). For teachers to use AT in classrooms and develop the required competence that responds to the individual needs of students with DLDs, it is important for them to have access to AT and to be continuously trained in its use (Montenegro-Rueda & Fernández-Batanero, 2022).

Therefore, both specific theoretical knowledge and AT can be important aspects of teachers' SEN competence regarding DLDs, and these skills can be further developed through professional experience (Hutchinson et al., 2015; Valle, 2017). That experience plays a significant role in the assessment of teachers' competence has been documented in several studies, emphasising that having years of teaching experience has a positive impact on competence (Ladd & Sorenson, 2017; Papay & Kraft, 2015). Teachers' experiences may also regulate their relationships with students during classroom activities (Valle, 2017).

Several researchers have also emphasised that a teacher's gender and level of teaching may influence their assessment of their competence (Ferrer et al., 2016; Lagestad & Kippe,

2021; Paechter, 2019; Wollscheid et al., 2018) and should therefore be taken into account. Mjaavtn and Frostad (2015) found that teachers in primary schools assessed themselves as being more competent than teachers in secondary schools when teaching students with SEN.

Concerning gender, a study by Scior (2011) indicated that female teachers with higher education have a more positive attitude towards teaching students with SEN than male teachers. In addition, Mjaavtn and Frostad (2015) found that female teachers in secondary schools seemed to have a more positive attitude towards teaching students with SEN than their male colleagues. However, several researchers have claimed that there is no significant correlation between gender and a positive perception towards teaching students with SEN (Lagestad & Kippe, 2021; Paechter, 2019).

Design and Method

To examine the research question, we applied quantitative data analysis from a cross-sectional study using a questionnaire to examine teachers' experiences of their competence in teaching students with DLDs. The questionnaire also included questions about the teachers' gender, educational level, years of experience teaching, school level, and whether they were educated in SEN. Prior to participating in the study, the teachers were fully informed about the protocol. The teachers gave a voluntary and written agreement to participate in the project. Ethical standards were followed in accordance with the guidelines of the Norwegian National Research Ethics Committees (2016), and approval to use the research data and conduct the study was given by the Norwegian Centre for Research Data.

Participants

The participants were teachers from dyslexia-friendly schools in Norway. Statistics indicate that the study population size was approximately 2,500, and all teachers at these schools were invited to take an electronic survey. From this cluster, 433 teachers answered the questionnaire, and 385 (293 women and 92 men) had valid data according to all the variables included in the analysis. This gave a response rate of 17%, which can be seen as limited. However, we argue that the teachers randomly participated in the survey. This argument is supported by the fact that the distribution in terms of the gender, education level, subjects, and teaching experience of the participants reflects the natural distribution among teachers at dyslexia-friendly schools in Norway. Years of teaching experience varied from 1 to 43 years (mean 16, $SD = 9.6$). The teachers' education level varied: three years of teacher education (5%), four years of higher education (23%), five years of higher education (50%), and a master's degree (17%). Most of the teachers were educated as primary school teachers (55%) but were also educated as preschool teachers (5%), educated as subject teachers (13%), or had a practical pedagogical education (23%). The teachers taught the following subjects: Norwegian (55%), mathematics (42%), English (36%), social science (36%), religion (32%), science (28%), physical education (25%), and other standard subjects taught in the Norwegian school system.

Procedures

A questionnaire was developed in collaboration with the professional committee of the Norwegian Dyslexia Association. The response range was determined using 5-point Likert-type scales coded as '1 = very bad, 2 = bad, 3 = medium, 4 = good, and 5 = very good'. Three questions were formulated in accordance with the research question: (i) How would you assess your competence regarding mapping students' DLDs? (ii) How would you assess your competence in identifying students' DLDs? (iii) How would you assess your competence regarding follow-up on students diagnosed with DLDs? These three questions were used to produce a global factor score called 'DLD' (ranging from 1 to 5). Questions about gender (male and female), special needs education (with or without), and experience (0–10 years of teaching at schools, 11–20 years of teaching at schools, or more than 20 years of teaching at schools) were also included in the questionnaire. Finally, the teachers were instructed to indicate whether they mainly worked in primary school (Grade 1–7, ages 6–13), secondary school (ages 14–16), or upper secondary school (ages 17–19).

The questionnaire was distributed online. The Norwegian Dyslexia Association distributed the link to teachers working at dyslexia-friendly schools. The questionnaire took approximately 30–45 minutes to complete. The data were gathered from September 2020 to November 2020. The questionnaire also consisted of open questions to elicit the participants' deeper understanding of the topic.

Analysis

To address the research questions, the analysis was carried out in two steps. In the first step, evidence of construct validity and reliability for the DLD construct was obtained through confirmatory factor analysis (CFA) of a reflective model, whereby DLD was operationalised by mapping DLD, identifying DLD, and following-up DLD items that were measured on a 5-point rating scale. CFA was performed with the lavaan package (v0.6–7; Rosseel, 2012) for the R Statistical System using the robust maximum likelihood estimator. The indices comparative fit index (CFI), Tucker – Lewis index (TLI), root mean square error of approximation (RMSEA), and squared root mean residual (SRMR) were used to assess the goodness of the model fit. Values of CFI and TLI above 0.90 and RMSEA and SRMR below 0.08 were indicative of factor validity (Marôco, 2021). Construct reliability was assessed using an ordinal Cronbach's α and McDonald's ω as implemented in the package semTools (v0.5–6; Jorgensen et al., 2022) for the R Statistical System. Values of α and ω above 0.8 were indicative of good reliability. Items and variables descriptive statistics were obtained with the package skimr (v2.1.4; Waring et al., 2022). Regression of DLDs on independent variables and analysis of invariance were performed with multiple group structural equation modelling using the lavaan package. Weak, strong, and structural invariance were tested by a set of models with increased constraints on factor loadings, loadings plus intercepts, and loadings plus intercepts plus regression coefficients. Nonsignificant χ^2 differences between constrained models were indicative of non-statistically significant differences between groups (Marôco, 2021).

Table 1. Teachers' Assessments of Their SEN Competence Regarding DLDs in Schools.

Teachers' responses	Very bad	Bad	Medium	Good	Very good
Competence regarding mapping students' DLDs (%)	1.2	11.5	40	39.3	8
Competence in identifying students with DLDs (%)	0.5	11	41.5	39	8
Competence in following up on students diagnosed with DLDs (%)	0.9	10.1	43.8	37.9	7.3

Table 2. School Level and Reported Level of Competence Regarding DLDs (Very Bad = 1, Bad = 2, Medium = 3, Good = 4, Very Good = 5).

School level	Reported level of competence Mean	Standard deviation	N
Primary school	3.5	0.7	227
Secondary school	3.3	0.7	103
Upper secondary school	3.4	0.8	57

Results

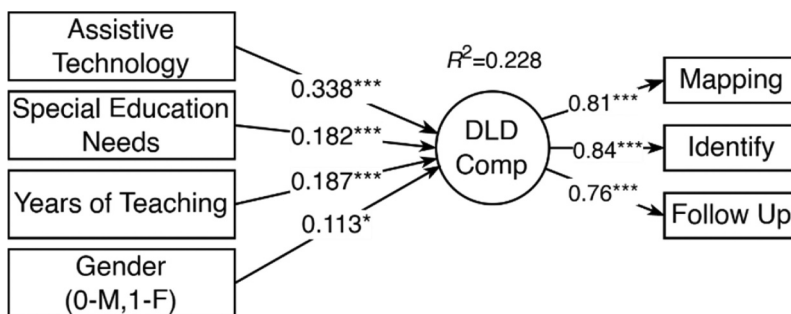
The descriptive statistics are presented in Table 1 (counting good and very good, bad and very bad). Forty-six percent of the teachers assessed their SEN competence regarding DLDs in schools as good or very good, while 11.7% of the teachers assessed this competence as bad or very bad. Furthermore, Table 2 shows that teachers at primary schools reported a higher level of competence related to DLDs than teachers at lower secondary schools.

Evidence for the Validity and Reliability of the DLD Measure

Factor loadings for mapping DLD, identifying DLD, and following-up DLD were 0.86 ($p < .001$), 0.91 ($p < .001$), and 0.80 ($p < .001$), respectively. The DLD model had CFI = 1, TLI = 1, RMSEA = 0.000, and SRMR = 0 (saturated model). There was good evidence of DLD reliability, as assessed by ordinal $\alpha = 0.891$ and $\omega = 0.842$.

What Explains SEN Competence Regarding DLDs?

Figure 1 illustrates the regression of SEN competence regarding DLDs on the explanatory variables AT and special needs education (0=No, 1=Yes). The overall fit of the model was

**Figure 1.** Explanatory Variables of SEN Competence Regarding DLDs (Model $R^2 = 0.228$, $p < .001$, $n = 410$).

good (CFI = 0.988, TLI = 0.978, RMSEA = 0.046, and SRMR = 0.021), explaining 22.8% of the SEN competence regarding DLDs ($R^2 = 0.228$, $p < .001$). Analysis of invariance among the three schooling levels (1 = basic, 2 = lower secondary and 3 = upper secondary) revealed both strong measurement invariance ($\Delta\chi^2(4) = 6.374$, $p = 0.173$) and structural invariance ($\Delta\chi^2(2) = 1.045$, $p = 0.593$). Overall, the strongest explanatory variable of perceived competence regarding DLDs was AT ($\beta = 0.338$, $p < .001$), followed by special needs education ($\beta = 0.182$, $p < .001$) and years of teaching experience ($\beta = 0.187$, $p < 0.001$). Regarding DLDs, female teachers showed higher SEN competence than male teachers ($\beta = 0.113$, $p < 0.021$). The effect of AT was twice as strong as the special needs' education and years of teaching effects, being consistent among the three school levels.

The values shown are the standardised coefficients (either regression or factor loadings). *** indicates $p < 0.001$. Correlations between explanatory variables ranged from 0.04 to 0.18.

Discussion

The research question in the current study revolved around investigating how teachers at dyslexia-friendly schools assessed their SEN competence regarding DLDs and what might explain this competence. Our results showed that nearly half of the teachers assessed their SEN competence regarding DLDs in school as good or very good, and further calculations of the results in Table 1 showed that 11.7% of the teachers assessed this competence as bad or very bad. This suggests that on the one hand, many teachers at dyslexia-friendly schools have achieved the main principle (goal) of capably mapping, identifying, and following up on students with DLDs. On the other hand, almost 12% seem to lack this competence. Consequently, a large number of students may be at risk of not receiving adequate learning support. We therefore argue that the Norwegian school system should work to improve teachers' competence regarding DLDs. Our results are in line with those of McGregor (2020), who highlighted a lack of awareness regarding DLDs among many teachers.

Furthermore, as illustrated in Figure 1, our results clearly show that AT is by far the strongest variable that explains teachers' SEN competence regarding DLDs. This indicates that teachers assess AT as being the key aspect of their SEN competence regarding their ability to support and teach students with DLDs. Our findings are consistent with those of Arhipova and Sergeeva (2015), who stressed that to increase the quality of SEN support, it is important for teachers to receive adequate training in AT. Therefore, to support students with DLDs, it is essential to develop digital classroom cultures that facilitate learning environments that motivate students to use AT in an appropriate manner (López Núñez et al., 2020). As Montenegro-Rueda and Fernández-Batanero (2022) pointed out, the incorrect use of AT in learning environments may have a negative effect on students' academic performance, their communication skills, motivation for learning, and social participation.

Based on our findings, teachers' special needs education is the second explanation for their DLD competence. One possible reason for this is that these teachers have specialised theoretical knowledge regarding mapping and identifying students' skills and following up on students, and this probably increases their assessed competence within DLDs. This is in line with Hutchinson et al. (2015), who emphasised that theoretical knowledge is

highly correlated with teachers' confidence. However, Norwegian researchers have argued that student teachers in Norway's newly introduced master's-based teacher education program receive few opportunities to obtain SEN competence in their education and seem to have insufficient competence when it comes to developing inclusive learning environments for students with SEN (e.g. Antonsen et al., 2020).

The descriptive analysis of the findings further showed that teachers in primary school reported having higher competence regarding DLDs than teachers in secondary and upper secondary schools. These results are consistent with those of Mjaavatt and Frostad (2015), who highlighted that teachers in primary schools assessed themselves as being more competent than teachers at secondary schools regarding teaching students with SEN. One possible explanation for this difference could be that teachers in primary schools are educated on how to teach basic language skills and are thus generally better prepared to teach students with DLDs. The difficulties that students with DLDs face coincide with many of the characteristics of beginner readers because many students with DLDs have difficulties with the phonological, impressive, expressive, and pragmatic aspects of language (Bishop, 2014; McGregor, 2020).

Another explanation for why teachers in secondary schools assessed themselves as being less competent than teachers in primary schools may be that the teachers' requirements for academic competence, including the mastery of relevant theories, increase over time as students mature (Brændvang, 2023, s.14); therefore, as students need to learn more sophisticated, high-level language skills, there is a need for teachers to have in their toolkits the strategies and skills to focus on these higher-level skills rather than on the indispensable basic skills which are the requisite building blocks fostered in primary school. Thus, these teachers' competence in basic skills, and, accordingly, their ability to identify and follow up on students with DLDs, may decrease. Our argument is supported by research showing that compared to those in primary schools, far more students in secondary and upper secondary schools receive SEN support (Haug, 2016; Nordahl et al., 2018). This evidence is confirmed by Norwegian statistics, which show that almost three times as many students in Grade 10 received SEN support compared with students in Grade 1, and this difference is increasing slightly (SSB, 2021a). We find this development worrying because, to a large extent, SEN support is provided by teachers without SEN competence (Hannås, 2018; Tveit & Cameron, 2016) or, even more seriously, by assistants who lack the requisite education to teach (Haug, 2016). For instance, figures from the system for registration of information about primary and secondary education in Norway (GSI) for the 2021/22 school year show a total of 46% more hours used for SEN support when assistants are involved compared to what is reported as teacher hours for special needs education with educational staff (Norwegian Directorate for Education and Training, 2022).

One consequence of this development may be that students with DLDs do not receive the adaptive education to which they are entitled per the Education Act (1998). Although students with DLDs have a statutory right to SEN support (Education Act, 1998, Section 5–1; SSB, 2021a), there are no specific requirements regarding teachers' competence to teach these students (Arnesen & Simonsen, 2011; Befring, 2016; Groven, 2013; Haug, 2016). This can be considered a jurisdictional weakness because the teachers in this context do not have the requisite legitimacy or authority to deliver quality teaching (Ainscow, 2021; Hausstätter & Vik, 2016). In addition, this deficiency might be due to

the increased number of special schools and segregated special groups for students with SEN. This is a paradox because the Norwegian system seeks to focus on inclusion, equality, and participation (Nes et al., 2018; Olsen, 2021).

Based on the results of our study, the third explanation related to teachers' SEN competence regarding DLDs is years of teaching. Other researchers have also found that teachers' SEN competence develop as their years of teaching experience increase (Hutchinson et al., 2015; Ladd & Sorenson, 2017; Papay & Kraft, 2015). As knowledge achieved through experience can be viewed as important for developing professional competence (Hutchinson et al., 2015; Valle, 2017), we argue that student teachers need practical training in working with students with DLDs to be sufficiently prepared to encourage equal participation and provide high-quality teaching for this group of students when they enter the teaching profession. However, student teachers in the newly introduced five-year integrated primary and secondary teacher education master's programs in Norway receive marginal practical training to obtain this SEN competence during their education (Antonsen et al., 2020; NOKUT, 2020). As a result, the lack of practical training may constrain student teachers' ability to develop the competence required to teach in diverse classrooms.

The findings in the present study also indicate that teachers' SEN competence regarding DLDs could be explained by gender, as female teachers displayed higher competence than male teachers. Our results are, to some extent, in line with previously reported research by Mjaavatn and Frostad (2015), who emphasised that female teachers seem to be more confident than their male counterparts. It is therefore possible that our findings could be caused by gendered expectations regarding males and females. Previous research on gender roles in professions has pointed towards this phenomenon (Lagestad & Kippe, 2021). Paechter (2019) also emphasised the importance of understanding the gender regime of professions. However, research exploring whether gender-homogeneous teaching staff have an impact on students' learning outcomes has indicated that professional competence is more important than gender (Bakken, 2008; Cho, 2012). Wollscheid et al. (2018) drew similar conclusions.

Strengths and Limitations of the Study

The present study has several strengths. This was likely the first study to be undertaken in Norway regarding this specific research area. Furthermore, we presented evidence of the validity and reliability of the DLD measure, which is a prerequisite for valid inferences regarding this construct. Thus, the findings of the present study may also be relevant to education and practice in other countries. Nevertheless, the present study also has some limitations. Teacher competence was registered by the teachers' own answers, using a 5-point Likert scale. In general, 5-point Likert-type scales are commonly used in questionnaire studies, and the five answer options—two at each end (very bad and very good) and one in the middle (medium level), along with the option between the middle and each end (bad and good) – are generally used when assessing competence. Data quality, internal consistency, and discriminative validity suggest that the 5-point scale version should be used in future research (Østerås et al., 2008). The questions about teachers' competence in DLDs were related to mapping, identifying, and following up on students with challenges within this field. These questions had high face validity. However, more questions measuring concrete knowledge related to competence might have been preferable. The ability to generalise the

findings was limited because of the uniqueness of the sample and the lack of a random selection of participants. However, owing to the large sample size and the fact that the data probably provide a representative sample of teachers at schools in Norway – an argument that is supported by the teachers' gender, education level, and years of teaching experience – we argue that the findings are somewhat generalisable. Furthermore, the research questions were not designed for other studies nor validated by their results but, rather, were developed in the current study. However, we highlight that all the questions used in the present study have high face validity (Holden, 2010) and provide new and more nuanced knowledge of Norwegian teachers' competence in DLDs – an area with limited research – construct validity, and reliability. Finally, from a critical point of view, one may argue that teachers' self-reported competence is limited compared with measurements of their actual competence within the field. However, Hutchinson et al. (2015) showed that teachers' perceived competence predicted general sense of efficacy scores according to greater knowledge, greater experience, and greater confidence related to teaching such students. Furthermore, knowledge, experience, and confidence were highly correlated in their study.

Conclusion

In sum, our study indicated that SEN competence in terms of AT, special needs education, and years of teaching appears to be essential for teaching in diverse classrooms and that AT is the strongest variable explaining teachers' SEN competence regarding DLDs. Thus, the role of AT in teachers' SEN competence is crucial, and we therefore suggest that AT should be implemented in teacher education programs and in the education of SEN teachers. As there has been minimal research on AT in special needs education, we recommend further investigation of this topic.

Furthermore, our study showed that female teachers assess themselves as being more competent than male teachers with regard to teaching students with DLDs. This may be an indication of gender roles and expectations in professions. However, as discussed, teachers' competence in terms of formal education and professional experience seems to be more important than gender. Knowing that Norway is one of the leading countries in promoting gender equality and diversity, we suggest that research on the coherence between gender and teachers' competence should be conducted.

Finally, we strongly recommend that to provide the adaptive education that students with DLDs require in accordance with the Education Act (1998), student teachers in teacher education programs should develop SEN competence regarding DLDs in terms of specialised theoretical knowledge and SEN practice during their education.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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