

Written Language Characteristics in Dyslexia: A Case Study



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Presentation Overview

- Introduction and a brief description of dyslexia
- Research aim, methodology and data
- Key findings of the study
- Concluding remarks

INTRODUCTION

- The ability to read and write is one of the most important factors for achieving academic success in school.
- To acquire knowledge, children need to read words correctly, understand what they read, write words accurately, and express their thoughts clearly and coherently.
- Reading and writing involve both decoding and understanding printed materials. Word decoding activates different brain functions, including visual and auditory processing, as well as the orthographic, phonological, and semantic systems (Çaylak 2010).

INTRODUCTION

- While some children acquire reading and writing skills without much difficulty, others face long-term challenges.
- **Dyslexia** and **Specific Language Impairment (SLI)** are developmental communication disorders that affect a significant portion (approximately 7–10%) of the school-aged children (Ramus et al. 2013).

Specific Reading and Writing Disorder – DYSLEXIA

- **Dyslexia** is one of **the most common specific learning disorders**, constituting about 80% of all cases of learning difficulties (Sahoo et al. 2015; Sofologi et al. 2022).
- Dyslexia emphasizes **difficulties in learning to read, spell, and write** despite adequate intellectual capacity, educational resources, and social background (Bree et al. 2010).
- Studies show that children with dyslexia may also have problems in semantics, syntax, and discourse (Catts et al. 2005).

Specific Reading and Writing Disorder – DYSLEXIA

Children with dyslexia have poor phonological processing skills which involve perception, encoding, and storing of verbal information (Bishop, Snowling 2004; Catts et al. 2005; Bree et al. 2010; Ramus et al. 2013), e.g.:

- are **poor at phonological awareness** tasks such as phoneme manipulation (Joanisse et al. 2000; Catts et al. 2005);
- have **poor verbal short-term memory** as measured by tasks such as digit span and non-word repetition test (Snowling 2000; Chiat 2015);
- are **slow at rapid automatized naming tasks**, which index speed of access to familiar lexical items and their phonological representations (Wolf, Bowers 1999).

Research aim, methodology and data

- **Aim** – To analyze the **written language characteristics** of a Lithuanian child diagnosed with dyslexia.

Cf.: '**Dysgraphia**' and '**specific learning disorder in written expression**' are terms used to describe those individuals who, despite exposure to adequate instruction, demonstrate writing ability discordant with their cognitive level and age (Chung et al. 2020).

- **Methodology** – A longitudinal case study. The child was diagnosed with dyslexia at the end of 1st grade (at the age of 7) by specialists at the Psychological-Pedagogical Service.
- **Data** – Collected over a two-year period and consists of the child's written work (8 notebooks and 2 exercise books) from the first and second grades.
- Qualitative analysis.

Results

- Universal features of dysgraphia
- Language-specific features of dysgraphia

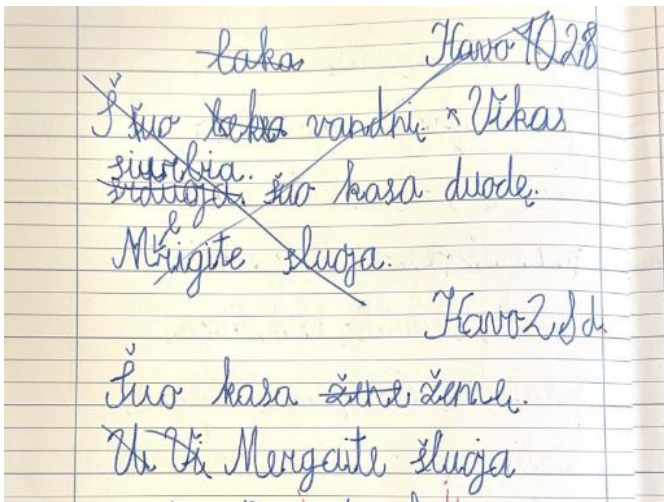
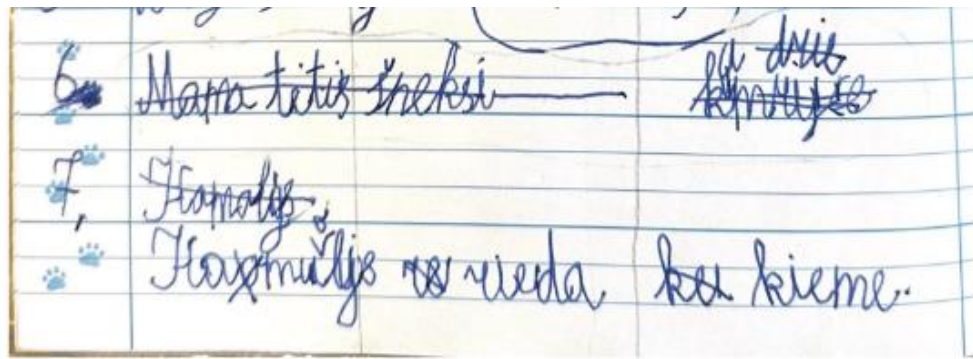
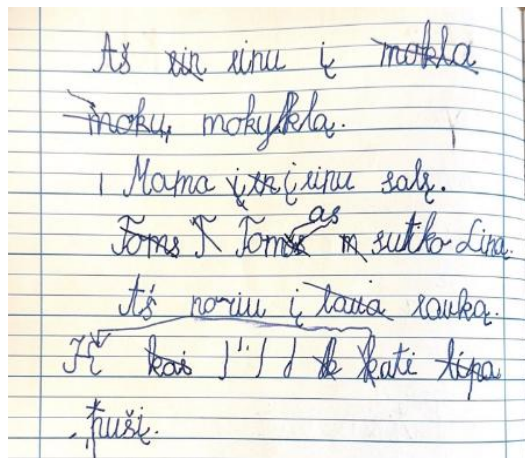
Universal Features of Dysgraphia (1)

- Messy notes
- Poor handwriting (illegibility, inconsistent letter size and spacing)
- Children with dysgraphia often struggle with forming letters consistently and legibly. Their writing may be difficult to read even when they try to write neatly (Berninger & Wolf, 2009)
- Difficulty starting writing tasks; frequent self-correction and crossing out of words or letters

Examples of Grade 1



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Examples of Grade 2

At ti tylia * tylia ramu namu
 is tylia per pamokas.

Jeigu būtų, kad tai būtų, kaip...
 iškvietimų... de...
 baimi...

1. kseni... veitai.
2. Kad... gimi...
dukrytė? gimi...
3. kad...
4. laisvė... mediu.

Telefonas
 Smilte išvyko į Angliją, su
 autobus. Mer
 Tyla
 Išlipo iš autobuso Smilte.
 Tvyko į Angliją.

Voverė
 Daili buvo toji voverė. Jos
 didelės, stiprūs ir ilgi,
 švelnus. O tos gražumėlis – plati,
 žilstelėjusi prieš

Universal Features of Dysgraphia (2)

Numerous mistakes

- The writing sample contains a large number of errors, including spelling and grammatical mistakes (Kunhoth et al. 2024).
- Some types of mistakes are both universal and language-specific.

Examples of Grade 1



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[111] žolite. Niset ja upėtis
 III lista. trisk šakel šakelė
 ✓ III Trakēt nūlxo. Kūškis
 I šako ir nūlxo.
 Ok 23kl.

Titis pūko masina. Doms mōr 0111
 valē. Ozis tūi' tūis. As pagau
 žūvi. Vistis lase skā.
 žūvi.
 19 klaidų.

Kojus mokosi mokioloje.
 Uki Zetato pili. Šmelo
 dežeje. Židvis. Tūi kamine.
 Ž Jūroje plūpkāse
 livi šil šp laivi. piške
 aušgona meči. M

Examples of Grade 2



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Močiutė aušrina dangų, vėjaitė,
ančiū karvė. Pilnka kėsi makinys.
Miške ma dars kėvilks. Arklidys
gėvena dangų arkliu. Tėčio gėvė
radėmė vėjais. Po lietaus
lauke dars dang balus. Būgėtekys
galima sėsti bėgiu. Moklos kėme
matu dang medžius.

Miške dang sniegas. Pučia žvaidis
vėjas. Tė tankos eglės. Lingvojė žalės
pušys. Šakos liksta nuo sniego. Lėvėgė kėvėis
šaltys ir bėda. Tėkėlė eina eigulys žūlis
su vaikais. Jie rogutėmis tēp žėmė
grūdus morkų ir. Štai ir eidiš! 19 kl.

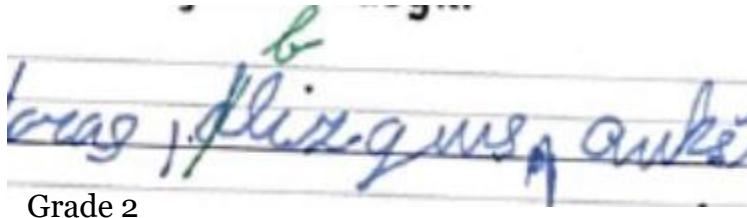
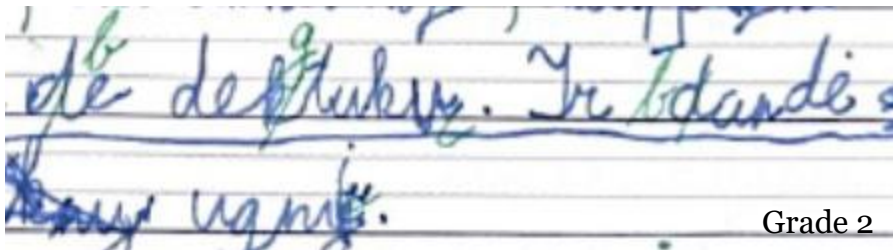
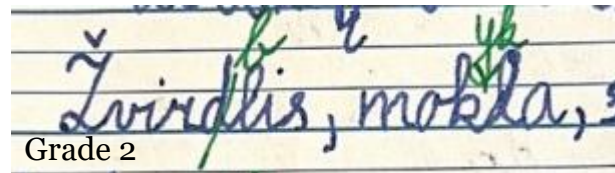
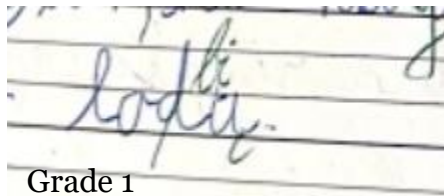
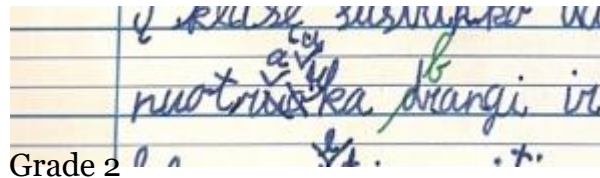
Naktys pūstė. Saugkėse dars sniegas.
Kėnėsia sėalbos kėvėkos. Nėgali rati
maisto. Kėnė sėtiųs ir užmigo.
Rytas atšauliova. Kėiskė. Jie nėmė
kėsti sniegas. Jie kojėtėspasiekė žėmė.
Tėlindė rūgė žėlmenys. Kėiskėvėkėlė
ir kėvėkos patė ir kėvėkos patė kėvėkos ir
kėvėkos ir gėlėvėdė dėda.

Universal Features of Dysgraphia (3)

- One of the common signs of dysgraphia (especially in children) involves confusing visually similar letters, such as: *b* and *d*, *p* and *q*, *m* and *n*, *u* and *n*, *g* and *q*.
- These letter reversals are often linked to difficulties in visual-motor integration and visual-spatial processing (British Dyslexia association).

Substitution of consonants based on visual resemblance

- **d**rangi (= **b**rangi)
- žvir**d**lis (= žvir**b**lis)
- **d**lizgus (= **b**lizgus)
- **d**e (= **b**e)
- **d**andė (= **b**andė)
- **d**eržų (= **b**eržų)
- lod**i** (= lob**i**)
- žvar**d**us (= žvar**b**us)
- gry**d**ukas (= gry**b**ukas)
- gry**d**ų (= gry**b**ų)



Other Universal Features of Dysgraphia (4)

- Word deformation
- Shortening of three-syllable words
- Neglect of standard punctuation rules
- Omission of vowel in words

These features were observed only in Grade 1 in our study.

Word deformation:

- Gitr (= gitara)
- Gyël (= gilė)
- Gktn (= gandra)
- Sagk (= saga)
- Mokr (= morka)
- Ums (= kurmis)
- Kis (= kiškis)
- Agël (= angelas)
- Odusa (= autobusas)

gra, pyktis, širdelė,
spina, kiš, diš dte, mede,
vėskl, piras, pragi,
pmaeg,
Gra, arklys, piristas, spyna, kiškis,
bite, yla, medis, varvėklis, pyragas,

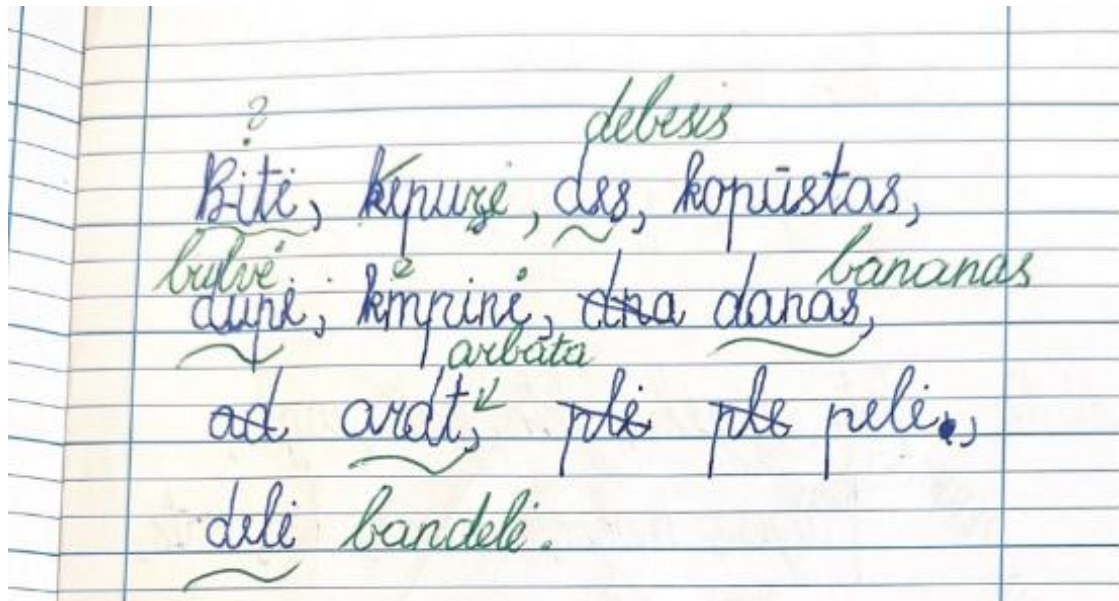
odusa autobusas

12 Eit, gyel, gkt, kat, sagk,
puga, mokr, s ums, kis, rats,
agel-agel. Ois 11.
Gitara, gile, gandra, katė,
saga, papuga, kormis, kiškis,
morka, raktas, angelas.

The word is so distorted that its meaning cannot be understood.

In some cases, the child wrote only part of a three-syllable or longer word – typically one or two syllables:

- danas (= bananas)
- des (= debesis)
- delè (= bandelè)





Neglect of standard
punctuation rules.

The child does not
segment the text
and omits full stops.

M^uoči^u su anūku
Al^uku^u įskėpė duong.
Pradejo ant stalo.
Su Suzi^uko visa
šim^u. sūirko k^uojo

paigati^u. sanu škanu
duona su p^uku.
Škanu ir su m^uti^u m^uduoni.

Ommision of vowels:

- spna (= sp**y**na)
- meds (= med**u**s)
- rags (= rag**u**s)
- mto (= m**a**to)
- stros (= stor**o**s)
- pils (= pil**i**s)
- siste (= ses**u**tè)
- ežre (= ež**e**re)
- gmta (= gam**a**ta)
- skrdome (= skrid**i**dome)

spna, kiš, diš dte, mede,

Titis pikoš mašina. Boms mto, re
vale. Ozis tvi' rguš. Aš pagu,

pils. i šos sešos
stros. ~~ma~~ Lagi

neša & koto. & lēti
mato ežre mato



- We suggest that these types of errors – observed only in the first grade and only rarely in the second – **may be among the earliest signs of dysgraphia** at school, appearing when the child begins learning to write.
- Later, by the end of first grade and in the second grade, these types of mistakes were no longer observed in our case.

Lithuanian-Specific Features of Dysgraphia

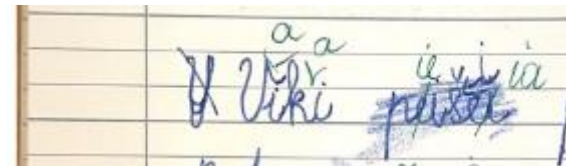
These features were frequently observed in both Grade 1 and Grade 2:

- Vowel clusters: substitution and omission
- Long-short vowel substitution
- Substitution of consonants based on phonetic similarity (voiced vs. voiceless) or visual resemblance
- Consonant palatalization – incorrect use of the soft sign
- Consonant clusters – adding a vowel between two consonants (CC → CVC)
- Errors related to grammar rules

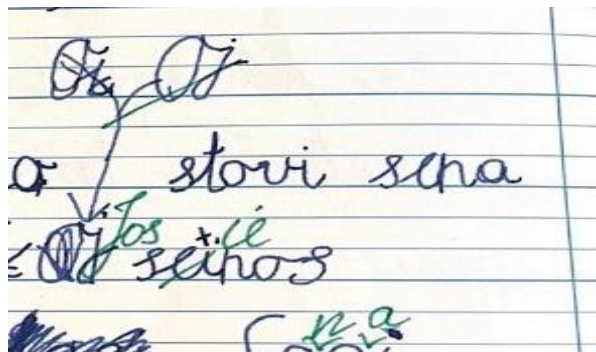


Vowel clusters: substitution

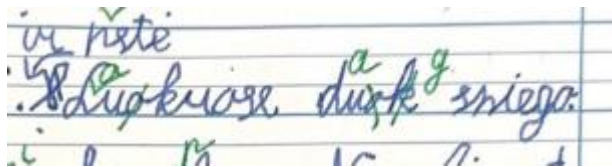
- ie-> ei: **pei**še (= **pie**šia), **se**inos (= **sie**nos), **ve**inas (= **vie**nas), **prei** (= **prie**)
- au -> uo: **plu**okia (= **plau**kia), nuotr**uo**ka (= nuotr**au**ka), **luo**kuose (= **lau**kuose) **duo**k (= **daug**)



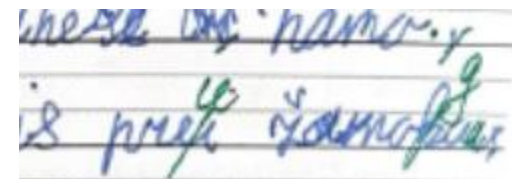
Grade 1



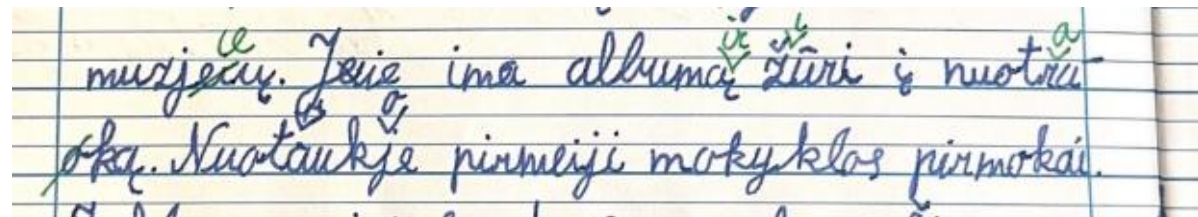
Grade 1



Grade 2



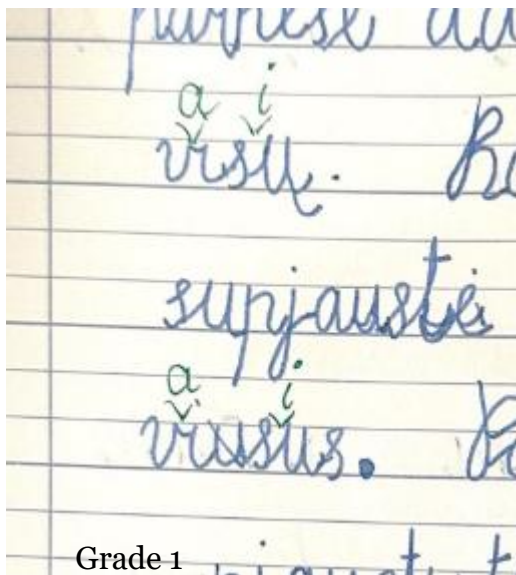
Grade 2



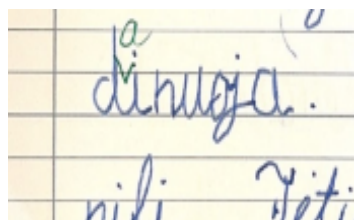
Grade 1

Vowel clusters: omission

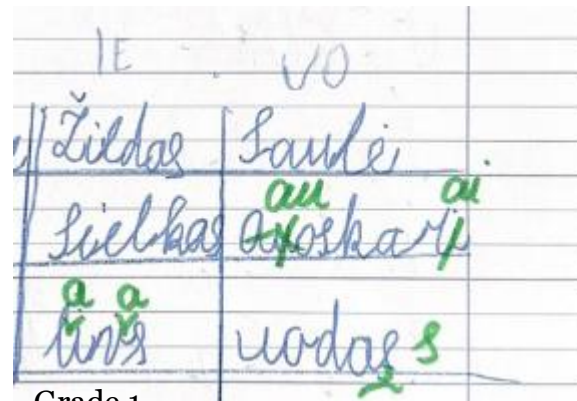
visus (= **v**aisius), livas (= **l**aivas),
 uoskari (= auskar**ai**), viki (= **v**aik**ai**),
 dinuoja (= **d**ainuoja), virotojas (= **v**airu**o**tojas),
 dinuoja (= **d**ainuoja)



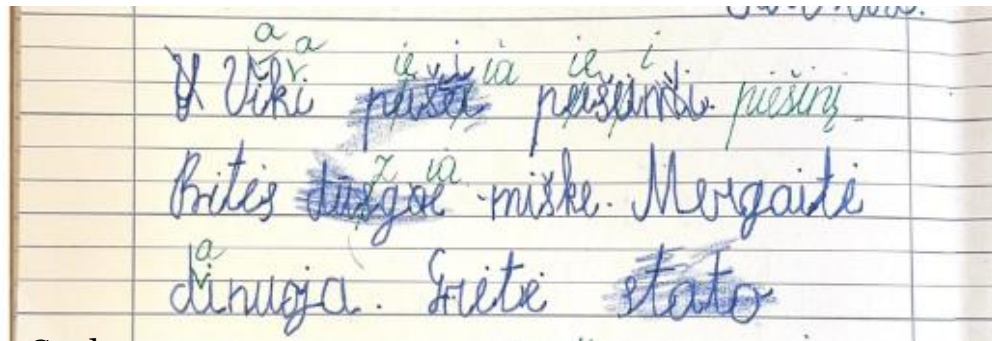
Grade 1



Grade 1



Grade 1



Grade 1

Long-short vowel substitution

- i-y: trauk**y**nis (= trauk**i**nis), py**l**i (= p**i**l*i*), saul**i**tė (= saul**y**tė), ož**i**s (= ož**y**s), til**u** (= t**y**lu), kn**i**ga (= kn**y**ga), kamul**i**s (= kamuol**y**s)
- u-ū: kr**u**mu (kr**ū**mu), nur**u**ko (nur**ū**ko)

, saul**i**tė, Džing**i**s,
raganin**i**kė, ož**i**s,

Grade 2



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Mašikinų pučia balnoma.
Traukynis važiuoja i gelbinkdiz
stati. Lego žmonės keša mašalagamina.
Bežidionė, stato pyli.

Grade 2

skaita kniga

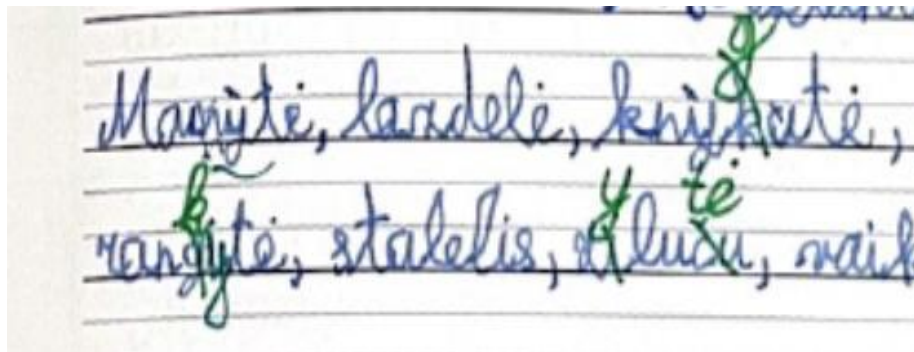
Grade 1

ijo per eina mē
Mišk, gražu ir tili.
ko kruonū tupi kiškis.

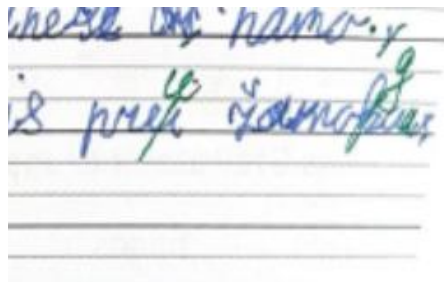
Grade 1

Substitution of consonants based on phonetic similarity (voiced <-> voiceless sounds)

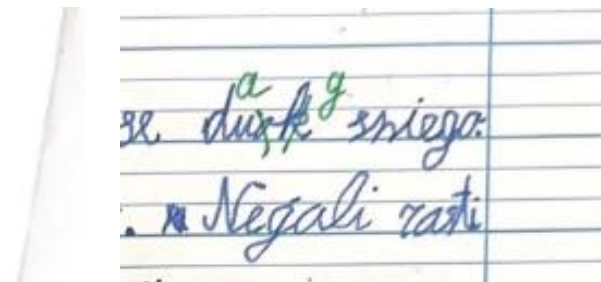
- duok (= daug)
- knykutė (= knygutė)
- žmokaus (= žmogaus)
- rangytė (= rankytė)
- dektukų (= degtukų)
- kaivi (= gaivi)
- kelpėjo (= gelbėjo)



Grade 2



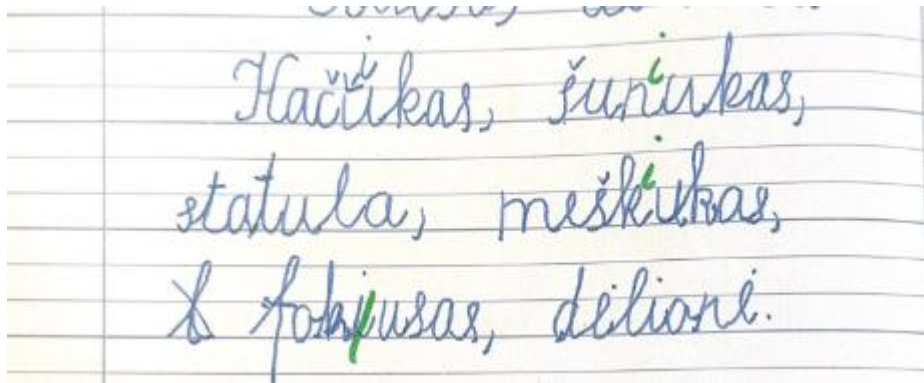
Grade 2



Grade 2

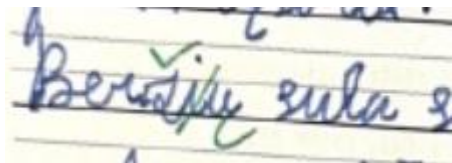
Consonant palatalization: incorrect use of the soft sign

- kač**u**kas (= kač**i**ukas),
šun**u**kas (= šun**i**ukas),
ž**ū**ri (= ž**i**ūri)
- fok**i**usas (= fok**u**sas),
berž**i**ų (= berž**ų**)



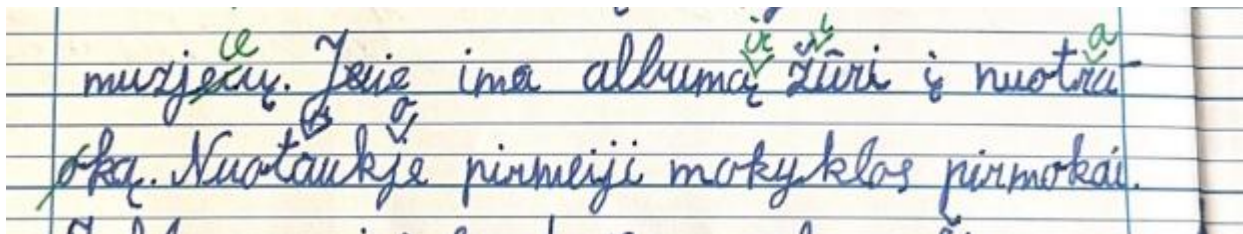
Kačikas, šunukas,
statula, meškukas,
fokiusas, delione.

Grade 1



Beržų žuola

Grade 2

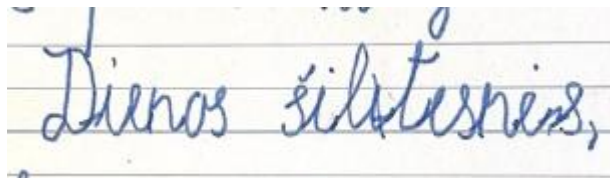


muziejų. Jais ima albumą žūri ir nuotrauką.
Nuotraukje paimęji mokyklos pirmokai.

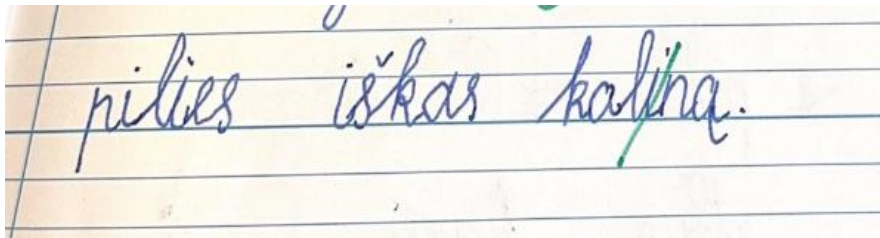
Grade 2

Adding a vowel in the middle of a consonant cluster

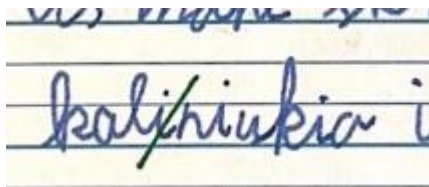
- me**š**ikinas (= me**š**kinas)
- ka**l**ina (= ka**l**ina)
- **k**urūmas (= **k**urūmas)
- ka**l**iniuko (= ka**l**iniuko)
- š**il**itesnės (= š**il**itesnės)



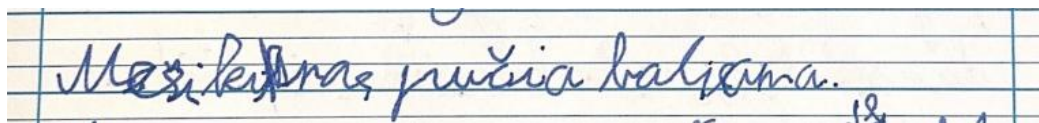
Grade 1



Grade 1



Grade 2



Grade 2

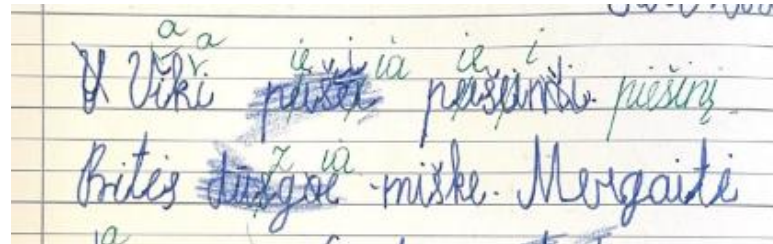
Errors related to grammar rules:

- Third person singular ending of verbs in the present tense
- Singular accusative case endings
- Plural genitive case endings
- Singular locative case endings

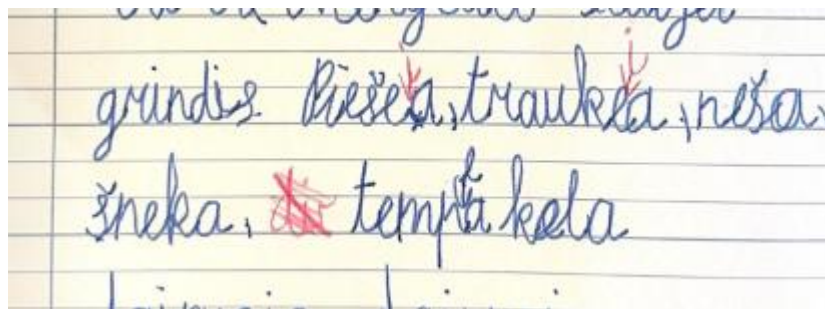
Third person singular ending of verbs in the present tense

- e instead of -ia:

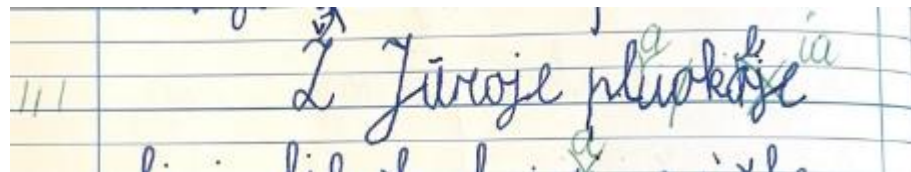
peiš**ea** (= pieš**ia**); trauk**ea** (= trauk**ia**),
pluko**je** (= plauk**ia**), leide**e** (= leidž**ia**)



Grade 1



Grade 1



Grade 1

Vākar drauge su žēma skraime
 i kēpanijā. Vēlā diē laukē pamēlā didelē
 kate. Man patinka lankytis žēnā parduotū
 vjē. i klatē atgē angļu kalbos bēdēt,
 mokytojas. Mokytoje tūti draugē Katryna
 i draugē i Loma.

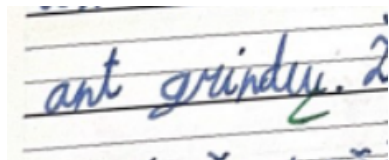
Grade 2

Mašikinas pūcija balstamā.
Izaukums ir vīriņa ¹² un gēl¹² ierakstis
stati. Lēgā izmēris neša māsā lāgāmā.
Borolīoni, stator pūti.

Grade 2

Plural genitive case endings

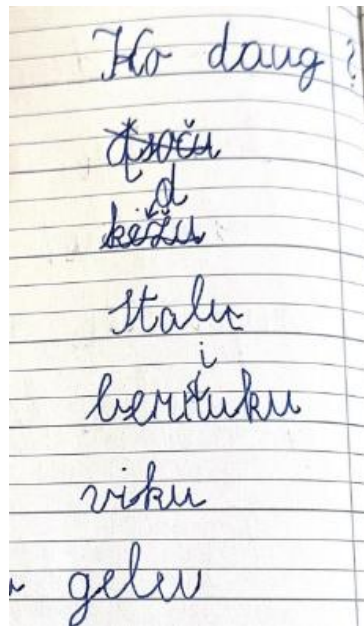
Stalu (= stalų), berniuku (= berniukų), grindu (= grindų), paukščių (= paukščių), degtuku (= degtukų), iš deržų ir klevu (= iš beržų ir klevų)



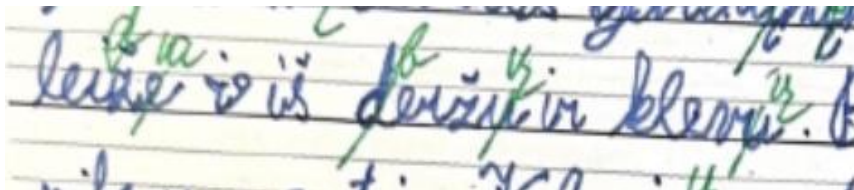
Grade 2



Grade 2



Grade 1



Grade 2

Singular locative case endings

danguja (= danguje)

žolėja (= žolėje)

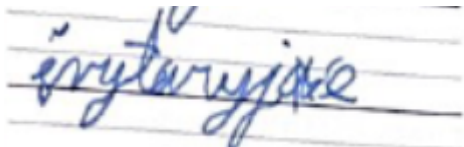
mokykloja (= mokykloje)

teatra (= teatre)

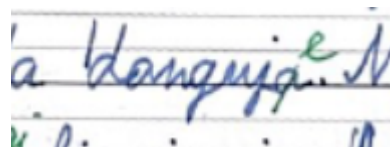
dėžei (= dėžėje)

švyturyja (= švyturyje)

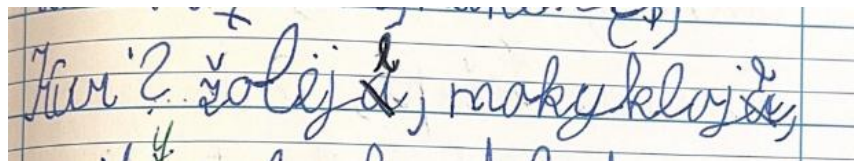
kuprinieja (= kuprinėje)



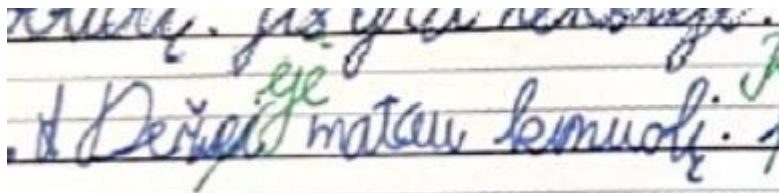
Grade 2



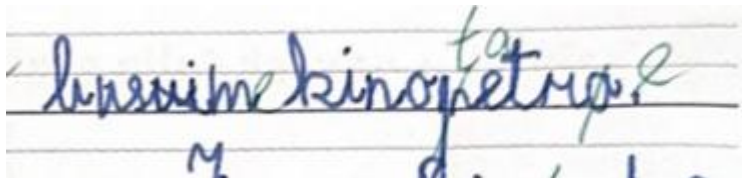
Grade 1



Grade 1



Grade 2



Grade 2

Concluding remarks

- **Early Signs at the Beginning of Grade 1:**
 - Messy handwriting
 - Word deformation – likely due to not hearing sounds clearly or not connecting letters with sounds
 - Difficulty writing multi-syllable words
 - Problems with phonological analysis – struggles to hear and recognize individual sounds
 - Unable to remember and apply grammar rules
 - When a spelling rule is required, the child fails to apply it and writes based on how the word sounds
- **Early identification of dysgraphia is crucial** for providing timely support and preventing academic frustration
- Teachers and parents should be aware of these signs to help children as soon as difficulties emerge
- **Further analysis is required**

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