



Multi-STEM

Multilingual voices in STEM education



The power of translanguaging in the content classroom

Mirona Moraru
Utrecht University

Werkconferentie Taalgericht de vakken in!
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Moraru, M., Bakker, A., Akkerman, S., Zenger, L., Smit, J., Blom, E.



Simona

- Simona is 13.
- Moved from Romania to the Netherlands 2 years ago.
- Home: Romanian with parents; mixes Romanian and Dutch with older sister.
- School: Dutch for learning and socializing.

Language & migration in education

- Mismatch home language (HL) & language of instruction (LoI)
- Schools often adopt a monolingual approach:
 - Strict language separation
 - LoI at school; HL at home
- Historical prevalence: approach → norm

Reasons behind a monolingual norm at school:

- Children should learn the LoI → academic success & social integration
 - Immersion model (*taalbad*)
 - Belief: using HL will negatively impact learning LoI, will lead to confusion
- There should be a common language at school
 - Belief: using HLs will lead to conflicts
- Reproduced at the level of:
 - policies, attitudes, pedagogical knowledge/training, structural conditions, practices

HOWEVER



Romanian
Dutch



Dutch

Simona inhabits two different life-worlds that are very little connected.
She experiences a discontinuity between home and school.

Challenges multilingual children with a migration background encounter at school

- “Double challenge” to learn content and Lol (DAT & CAT) (Karlsson et al., 2019)
- 5-8 years to master an additional language (CAT) (Schrijfgroep LPTN, 2017)
- Challenges comprehending instruction & expressing knowledge
- Perceived as lacking “language” & knowledge (Menken, 2013)
- Higher risk: tracked at lower levels, repeat classes, special education (Cataldo-Schwarzl, 2022)
- Internalize linguistic hierarchy HL/Lol:
 - Perceive HL as “lacking any didactic capital” (Van Der Wildt et al., 2015)
 - Perceive HL literacy practices as inferior (Daniel & Pacheco, 2016)

Language Oriented Content Teaching (LOCT)

Taalgericht vakonderwijs (TVO)

- Addresses some of the challenges multilingual students encounter
- Gap between students' *everyday language* and *school & subject language* (DAT vs CAT)
- Offers high-quality content teaching with explicitly formulated language objectives
- It supports the development from DAT to CAT using three pillars:
 - Contextualization of learning
 - Opportunities for language use in interaction
 - Language support

(Hajer, 2018; Hajer & Meestringa, 2022)

Language Oriented Content Teaching (LOTC)

Taalgericht vaakonderwijs (TVO)

- Language support pillar:
 - Monolingual approach (Dutch for teaching and learning)
 - Multilingual approach (Dutch and home language for teaching and learning)
- Multilingual approach:
 - Functional multilingual learning (Sierens & Avermaet, 2013; Hajer & Smit, 2022)
 - Translanguaging (Garcia & Li, 2014)

(Hajer, 2018; Hajer & Meestringa, 2022)

Translanguaging (and content teaching and learning)



What is it?



Benefits &
challenges



Practical examples &
good practices

Translanguaging

a **pedagogical approach** that draws on multilingual children's home languages and the language of instruction to support learning



Dutch, ~~NO~~ Romanian



Dutch AND Romanian

Monolingual norm in the classroom
Does not allow HL

Translanguaging in the classroom
Encourages HL alongside L0l



Examples of translanguaging

Language portraits

- Visual representations of students' languages
- What languages students know, how and when they use them, and how they feel about them – key!

More info: <https://multistem.net/nl/2024/de-kracht-van-taalportretten-leer-je-leerlingen-beter-kennen/>

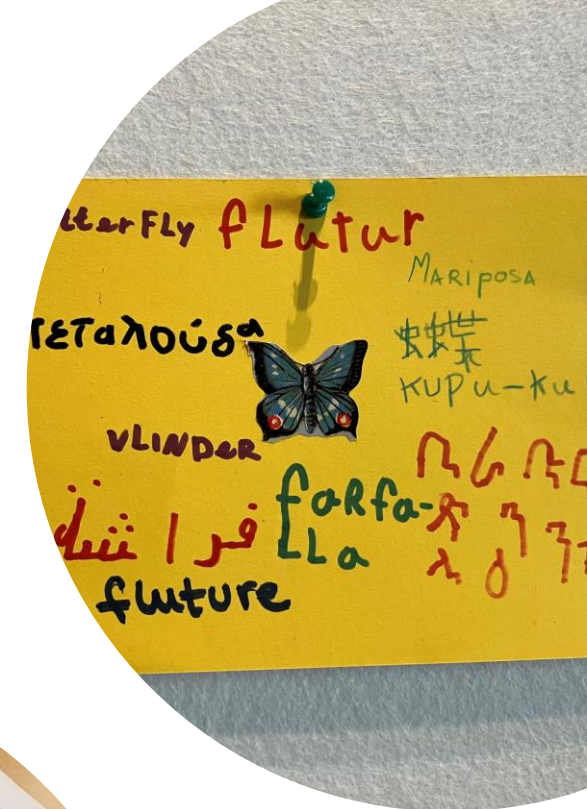
Activity: http://3mproject.nl/en/assets/activity-language_portraits.pdf

Examples of translanguaging

Translation

- Communicate with students
(SayHi)
- Translate instructions
- Translate key content vocabulary
(Google Translate, DeepL)
- Bilingual glossaries
- Multilingual wordwalls
display&discuss

Images: [Lianne Stolte, Multi-STEM](#)

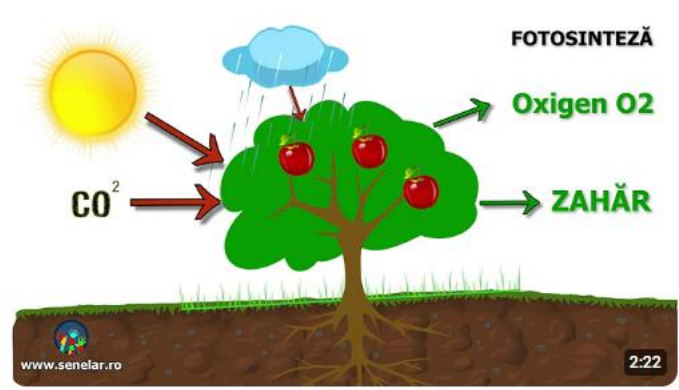


fotosinteza la plante romana

All Shorts Videos Unwatched Watched Recently uploaded Live



Antimony Science - Fotosinteza
50K views · 6 years ago
Antimony Science
Stibiu vă oferă o serie de videoclipuri educative cu teme interes



Fotosinteza
6.3K views · 2 years ago
SENELAR_Să învățăm altfel!
TESTAȚI-VĂ CUNOȘTINȚELE: 1. Ce este fotosinteza? 2. Ce part



Fotosinteza - Toate plantele au nevoie de lumina
2.3K views · 3 years ago
Enciclopedia
Fotosinteza este un proces utilizat de către plante și alte organi:

Examples of translanguaging

- Think in home language (and Dutch), answer in Dutch
- Brainstorm/take notes in home language (and Dutch), answer in Dutch
- Do research in home language (and Dutch), answer in Dutch



Examples of translanguaging

Peer interactions

- Language groups
- Peer brokering


What are the (content learning) benefits of translanguaging
for multilingual children with migration backgrounds?

Translanguaging **within and across Learning Settings**: A Systematic
Review Focused on Multilingual Children with a **Migration Background**
Engaged in **Content Learning**

Moraru, M., Bakker, A., Akkerman, S., Zenger, L., Smit, J., Blom, E. (submitted)

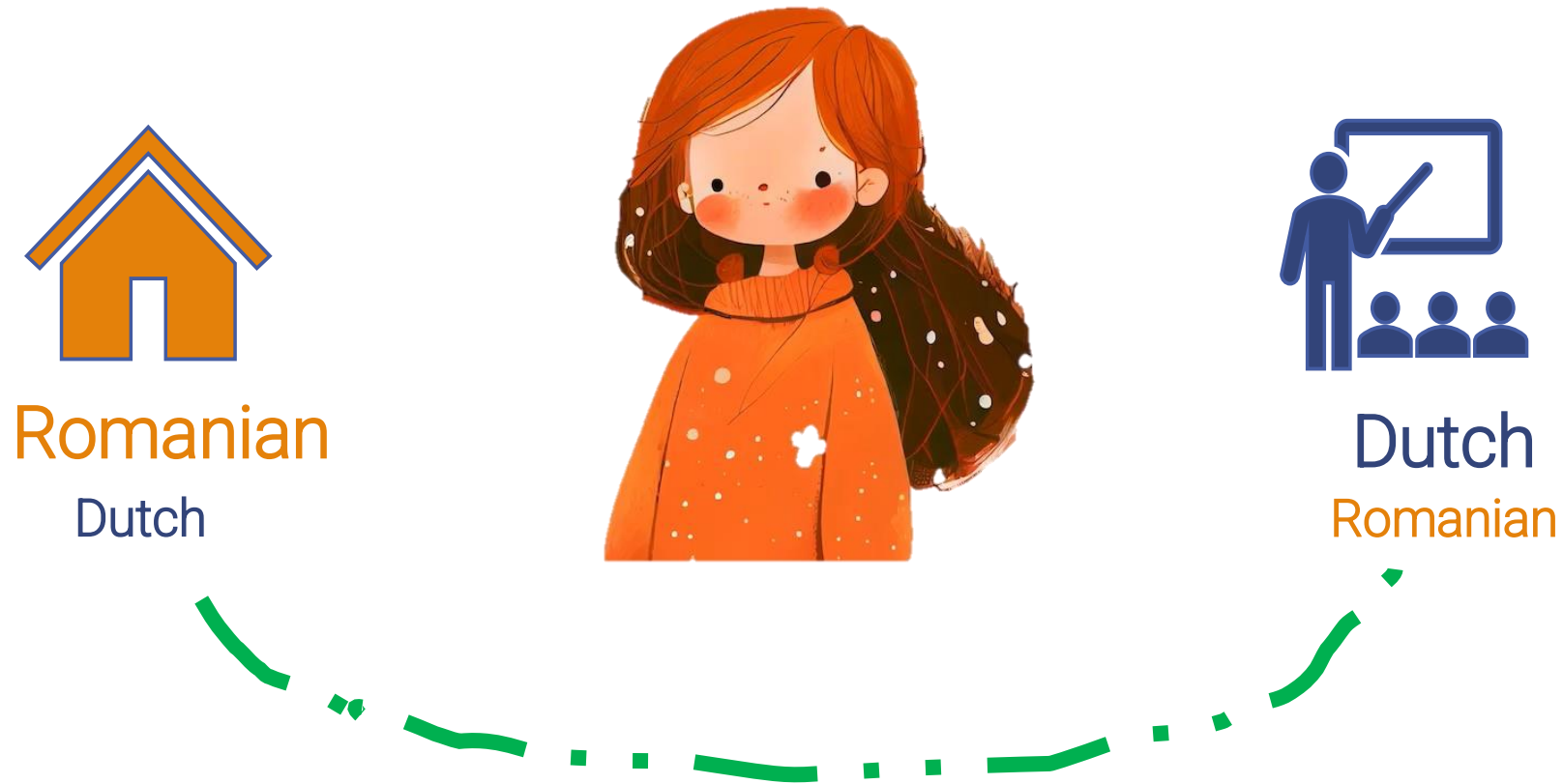


The review

- 94 studies
 - 84 in schools
 - 72 multilingual classrooms
 - Europe, North America, Australia
 - Subjects: Mathematics, Science, Technology, History, Social Studies...
- 

What does research say?

Translanguaging with home languages can generate continuity across learning settings for multilingual children



TLG bridges the gap between different “life-worlds” (home and school) where different norms and language use are at stake.

Benefits of translanguaging

- Supports content learning

- Examples: Dávila & Bunar (2020); Karlsson et al. (2019, 2020); Sierens & Ramaut (2018)

- Increase in participation and engagement in learning processes

- Examples: Cataldo-Schwarz (2022); Christensen (2022); Kakos (2022)

- Strong socio-emotional role

- Examples: Carbonara & Scibetta (2022); Menchen & Sánchez (2019); Ticheloven et al. (2021)

- Promotes social justice

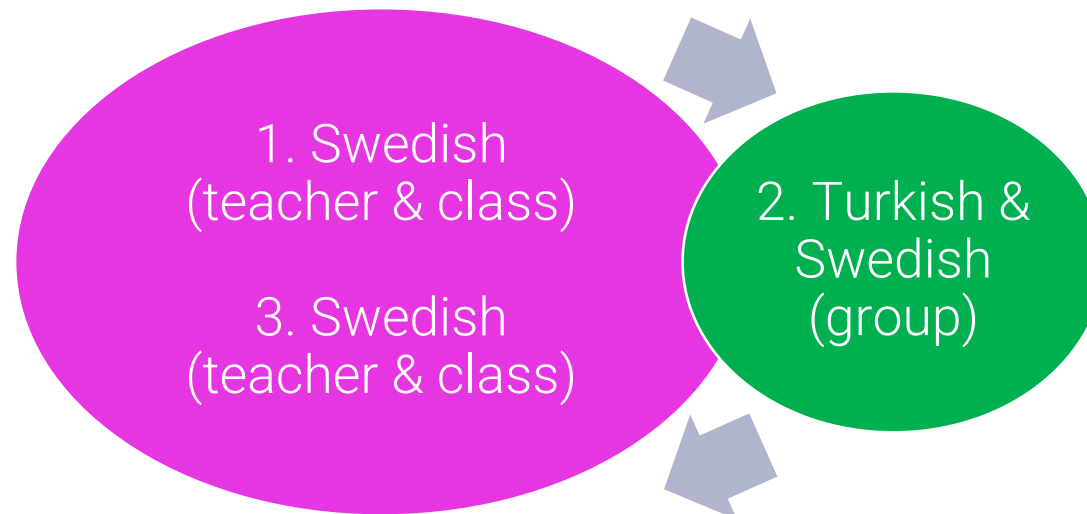
- Examples: Afitska (2020); Le Pichon et al. (2021); Muller et al. (2019)

Benefits of translanguaging: Content learning

- Comprehension → access to curriculum & instruction
 - Examples: Blair (2016); French (2016); Little & Kirwan (2017)
- Expression and demonstration of knowledge and understanding
 - Examples: Fine (2022); Kim & Choi (2021); Ramirez & Salinas (2021)
- Construction of disciplinary meaning
 - Examples: Duarte (2019); Pierson & Grapin (2021); Unsal et al. (2018)

An example of translanguaging supporting content learning (Ünsal et al. 2018)

- Science class in Swedish school
- How 4 students with a Turkish background make sense of electric phenomena / electric circuit
- Whole class instructions: short oral answers in Swedish
- Hands-on activities/Language groups: Turkish and Swedish
- Longer sentences, arguing, discussing, explaining, and generalizing



Translanguaging & the construction of disciplinary meaning

- Supports processing subject-specific content & deep-thinking
 - Examples: French (2016); Ollerhead (2020); Ünsal et al. (2018)
- Enables the comparison of different languages and conceptualizations
 - Examples: Deroo (2020); Karlsson et al. (2020); Prediger et al. (2019)
- Brings forth previous knowledge, experiences, and perspectives
 - Examples: Afitska (2020); Chronaki et al. (2022); Ünsal et al. (2018)
- Supports the development of multilingual disciplinary literacies
 - Examples: Ollerhead et al. (2020); Torpsen (2018); Van Viegen (2020)

Translanguaging can generate many benefits for multilingual students with a migration background.

HOWEVER

Translanguaging may also involve challenges (for educators and students).

Challenges involved in translanguaging

(SOME) STUDENTS

- May feel excluded:
 - Unique speakers of a home language
 - Monolingual speakers (language of instruction)
- Fear of being associated with certain nationalities in contexts characterized by interethnic conflict

Note: the benefits reported for students surpass by far the challenges they may experience

Challenges involved in translanguaging

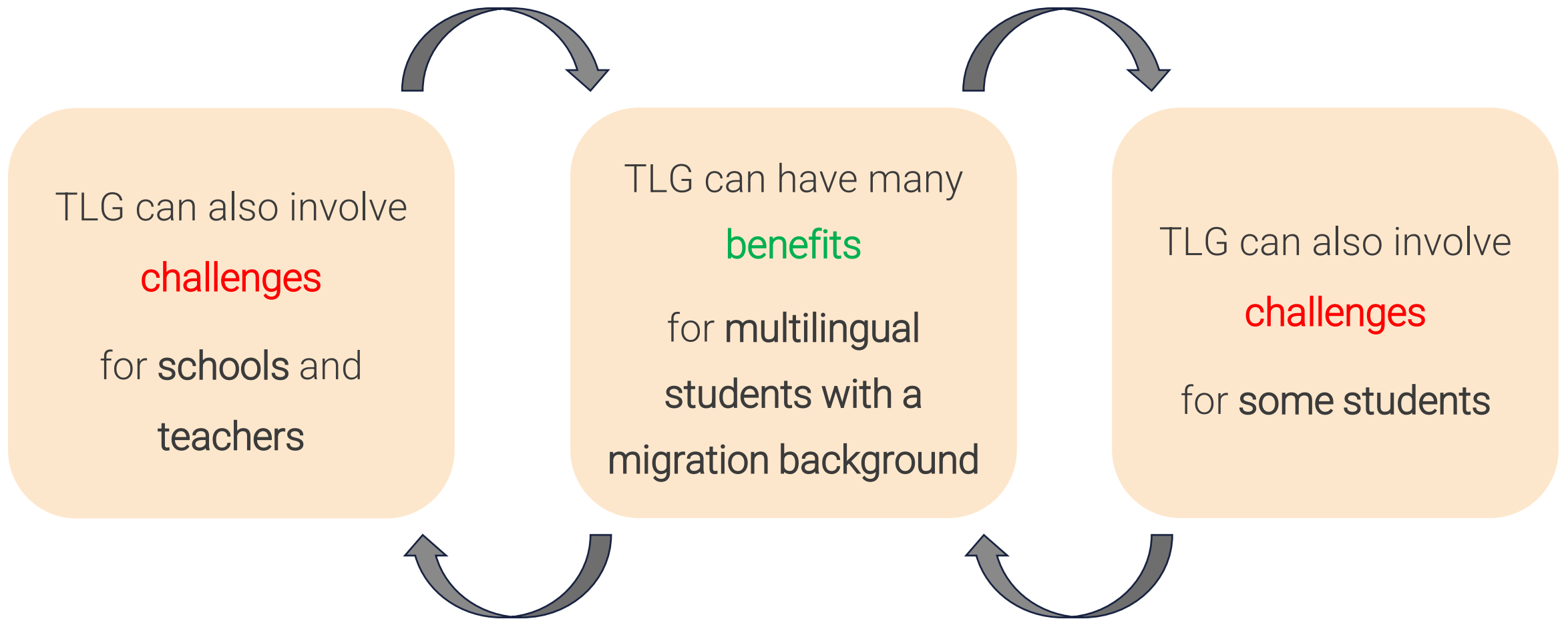
SCHOOLS

- TLG enters a strong tension with the monolingual norm
- policies, attitudes, pedagogical knowledge, structural conditions, practices

(SOME) TEACHERS MAY:

- Feel that TLG goes against their pedagogical knowledge
- Feel they lack the necessary training
- Feel they will lose control when they don't understand what students say
- Enter a tension with the curriculum (time)

Translanguaging involves a dynamic interplay between benefits and challenges





If translanguaging is adopted as a pedagogical approach, we need to pay attention to the interplay between different perspectives and work towards a balance for all those involved.

Good practices for implementing translanguaging

SCHOOL

- Implemented at school level
- Training & time
- Teachers' agency
- Teacher collaboration
- Involving caregivers & community in students' learning processes

CLASSROOM

- Info students' languages
- Teachers' & students' agency
- Clear language norms
- Trust students
- Design TLG tasks from a disciplinary perspective

Conclusion

- Adopting a multilingual approach in the content classroom:
 - Benefits
 - Challenges
- Going forward – practice:
 - Pay careful attention to all perspectives
 - Reflect/provide structural support
- Going forward – research:
 - What works for whom and when?
 - How to (better) make use of HLs in LOCT/TVO?





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Thank you!

<https://multistem.net/>

m.moraru@uu.nl

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