

Bilaga 1. Sökstrategi

Detta är en detaljerad beskrivning av den sökstrategi som använts i den systematiska översikten *Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap* (Skolforskningsinstitutets systematiska översikter 2018:02) och beskrivits kortfattat i 5.4 Litteratursökning i översikten. Sökstrategin redovisas här i följande ordning:

- Huvudsökning i internationella, vetenskapliga databaser
- Kompletterande sökning i internationella, vetenskapliga databaser
- Sökning i skandinaviska, vetenskapliga databaser
- Kompletterande sökning i skandinaviska, vetenskapliga databaser
- Citeringssökning
- Kedjesökning
- Handsökning

Huvudsökning i internationella, vetenskapliga databaser

Sju databaser, dvs. Academic Search Complete (ASC), Australian Education Index (AEI), British Education Index (BEI), Education Database (ED), Education Source (ES), Education Resources Information Center (ERIC) och PsycINFO (PI) användes. Fem av databaserna, dvs. ASC, BEI, ES, ERIC och PI användes på plattformen EBSCOhost (EH). Två av databaserna, dvs. AEI och ED användes på plattformen ProQuest (PQ). Databaserna AEI, BEI, ED, ES och ERIC är ämnesdatabaser inom utbildningsvetenskap. Se tabell A1 för databaserna, plattformarna och sökfälten som användes.

TABELL A1. Databaser, plattformar och sökfält som användes i huvudsökningarna.

PLATTFORM	SÖKFÄLT	DATABAS
EBSCOhost (EH)	Titel (TI)	Academic Search Complete (ASC)
	Sammanfattning (AB)	British Education Index (BEI)
	Nyckelord (KW)	Education Source (ES)
	Ämne (indexerad fras: DE)	Education Resources Information Center (ERIC)
		PsycINFO (PI)
ProQuest (PQ)	Titel (TI)	Australian Education Index (AEI)
	Sammanfattning (AB)	Education Database (ED)
	Ämne (exakt ämnesord: SU.EXACT)	

Sökningarna utfördes i november 2016 genom att kombinera block, dvs. kortare söksträngar, med sökord inom skolundervisning, naturvetenskap och språkutveckling. Blocken kombinerades med hjälp av den booleska operatören AND. Vid sökningar i ämnesdatabaserna inom utbildningsvetenskap uteslöts

skolundervisningsblocket. Sökresultaten begränsades till litteratur publicerad fr.o.m. år 2000.

Se tabell A2 för en detaljerad beskrivning av blocken och tabell A3 för blockkombinationerna och begränsningarna vid huvudsökningarna i databaserna ASC, BEI, ES, ERIC och PI på plattformen EH.

TABELL A2. Block som användes vid huvudsökningarna i databaserna Academic Search Complete (ASC), British Education Index (BEI), Education Source (ES), Education Resources Information Center (ERIC) och PsycINFO (PI) på plattformen EBSCOhost (EH).

BLOCK	SÖKFÄLT	SÖKSTRÄNG
Skolundervisning (block X)	TI AB KW	school* OR teach* OR learn* OR tutor* OR student* OR pupil* OR class* OR classroom* OR practice OR instruct* OR educat* OR didactic* OR pedagog* OR K-* OR (grade* 1*) OR (first grade*) OR (grade* one) OR (grade* 2*) OR (second grade*) OR (grade* two) OR (grade* 3*) OR (third grade*) OR (grade* three) OR (grade* 4*) OR (four* grade*) OR (grade* 5*) OR (fifth grade*) OR (grade* five) OR (grade* 6*) OR (six* grade*) OR (grade* 7*) OR (seven* grade*) OR (grade* eight*) OR (grade* 8*) OR (ninth grade*) OR (grade* nine) OR (grade* 9*) OR (ten* grade*) OR (grade* 10*) OR (eleven* grade*) OR (grade* 11*) OR (twel* grade*) OR (grade* 12*) OR "junior high" OR highschool OR *elementary OR "primary grade*" OR "intermediate grade*" OR "middle grade*" OR "secondary grade*" OR lyce* OR "sixth form" OR "lower sixth" OR "upper sixth" OR "key stage 5" OR "junior college*" OR gymnasium* OR "upper secondary" OR "lower secondary"
Naturvetenskap (block Y _{EH})	TI AB KW	*science* OR biology OR chemistry OR physics OR geology OR astronomy OR STEM
Naturvetenskap (block Y _{ASC})	DE	"SCIENCE -- Study & teaching"
Naturvetenskap (block Y _{BEI})	DE	"SCIENCE -- Study & teaching" OR "LIFE sciences -- Study & teaching" OR "NATURAL history -- Study & teaching" OR "NATURE study" OR "PHYSICAL sciences -- Study & teaching" OR "SCIENCE -- Study & teaching (Elementary)" OR "SCIENCE -- Study & teaching (Secondary)" OR "SCIENCE -- Study & teaching -- Aids & devices" OR "SCIENCE -- Study & teaching -- Audiovisual aids" OR "BIOLOGY -- Study & teaching" OR "LIFE sciences -- Study & teaching" OR "BIOLOGY -- Study & teaching (Middle school)" OR "BOTANY -- Study & teaching" OR "ECOLOGY -- Study & teaching" OR "ZOOLOGY -- Study & teaching" OR "PHYSICS -- Study & teaching" OR "PHYSICAL sciences -- Study & teaching" OR "CHEMISTRY -- Study & teaching" OR "CHEMISTRY -- Study & teaching (Elementary)" OR "CHEMISTRY -- Study & teaching (Middle school)" OR "ASTRONOMY -- Study & teaching" OR "ASTRONOMY -- Study & teaching (Elementary)" OR "ASTRONOMY -- Study & teaching (Middle school)" OR "ASTRONOMY -- Study & teaching (Secondary)" OR "GEOLOGY -- Study & teaching" OR "EARTH sciences -- Study & teaching" OR "GEOLOGY -- Study & teaching (Secondary)"
Naturvetenskap (block Y _{ES})	DE	"Science -- Study & teaching" OR DE "Life sciences -- Study & teaching" OR DE "Natural history -- Study & teaching" OR DE "Nature study" OR DE "Physical sciences -- Study & teaching" OR DE "Science -- Study & teaching (Elementary)" OR DE "Science -- Study & teaching (Secondary)" OR DE "Science -- Study & teaching -- Aids & devices" OR DE "Science -- Study & teaching -- Audiovisual aids" OR DE "Biology -- Study & teaching" OR DE "Biology -- Study & teaching (Middle school)" OR DE "Botany -- Study & teaching" OR DE "Ecology -- Study & teaching" OR DE "Zoology -- Study & teaching" OR DE "Chemistry -- Study & teaching" OR DE "Chemistry -- Study & teaching (Elementary)" OR DE "Chemistry -- Study & teaching (Middle school)" OR DE "Physics -- Study & teaching" OR DE "Astronomy -- Study & teaching" OR DE "Astronomy -- Study & teaching (Elementary)" OR DE "Astronomy -- Study & teaching (Middle school)" OR DE "Astronomy -- Study & teaching (Secondary)" OR DE "Geology -- Study & teaching" OR DE "Geology -- History - Study & teaching" OR DE "Geology -- Study & teaching (Secondary)"

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

Naturvetenskap (block Y _{ERIC})	DE	"Science Instruction" OR "College Science" OR "Elementary School Science" OR "Secondary School Science")
Språkutveckling (block Z _{EH1})	TI AB KW	bilingual* OR multilingual* OR (English N5 "second language") OR (English N5 "additional language") OR "English learn*" OR "learner* of English" OR "limited English-speak*" OR "limited English-proficient*" OR "non-English speak*" OR ("non-native" N5 speak*) OR ("non-native" N5 learn*) OR ("non-native" N5 student*) OR ("non-native" N5 pupil*) OR ("second language" N5 speak*) OR (language N5 learn*) OR (language N5 acquisition) OR SLL OR SLLs OR SLL:s OR ELL OR ELLs OR ELL:s OR EL:s OR "Els" OR EAL OR EALs OR EAL:s OR ESL OR L2 OR "English for speakers of other language*" OR "non-English language background*" OR ESOL OR ((asylum OR refugee* OR foreign* OR fugitive* OR migrant* OR immigrant* OR newcomer* OR "newly arrived" OR "language minorit*" OR "minority language*" OR "minority group*" OR "ethnic minorit*" OR "ethnically divers*" OR "ethnically heterogeneous" OR "linguistically divers*" OR "linguistically heterogeneous" OR "culturally divers*" OR "culturally heterogeneous" OR multicultural OR "multi-cultural" OR multiethnic OR "multi-ethnic" OR (diverse N5 background*) OR nonmainstream OR "non-mainstream" OR urban) AND (school* OR learn* OR pupil* OR student* OR child* OR classroom OR "class room")
Språkutveckling (block Z _{BEH1})	DE	"MINORITY students" OR "ASIAN American students" OR "HISPANIC American students" OR "LIMITED English-proficient students" OR "MINORITY college students"
Språkutveckling (block Z _{ES1})	DE	"Limited English-proficient students"
Språkutveckling (block Z _{ERIC1})	DE	"English Language Learners" OR "Limited English Speaking" OR "Non English Speaking"
Språkutveckling (block Z _{PI1})	DE	"English as Second Language"

TABELL A3. Söksträngar som utformades genom kombination av blocken vid huvudsökningarna i databaserna Academic Search Complete (ASC), British Education Index (BEI), Education Source (ES), Education Resources Information Center (ERIC) och PsycINFO (PI) på plattformen EBSCOhost (EH). Se tabell A2 för beskrivning av blocken.

DATABAS	BEGRENSNING	SÖKSTRÄNG
ASC	Referentgranskat	(block X) AND ((block Y _{EH}) OR (block Y _{ASC})) AND (block Z _{EH1})
BEI	Referentgranskat	((block Y _{EH}) OR (block Y _{BEI})) AND ((block Z _{EH1}) OR (block Z _{BEI1}))
ES	Referentgranskat	((block Y _{EH}) OR (block Y _{ES})) AND ((block Z _{EH1}) OR (block Z _{ES1}))
ERIC	Referentgranskat	((block Y _{EH}) OR (block Y _{ERIC})) AND ((block Z _{EH1}) OR (block Z _{ERIC1}))
PI	Referentgranskat	(block X) AND (block Y _{EH}) AND ((block Z _{EH1}) OR (block Z _{PI1}))

Se tabell A4 för en detaljerad beskrivning av blocken och tabell A5 för blockkombinationerna och begränsningarna vid huvudsökningarna i databaserna AEI och EED på plattformen PQ.

TABELL A4. Block som användes vid huvudsökningarna i databaserna Australian Education Index (AEI) och Education Database (ED) på plattformen ProQuest (PQ).

BLOCK	SÖKFÄLT	SÖKSTRÄNG
Naturvetenskap (block Y _{PQ})	TI AB	lifescience* OR earthscience* OR science* OR biology OR chemistry OR physics OR geology OR astronomy OR STEM
Naturvetenskap (block Y _{AEI})	SU.EXACT	"Secondary school science" OR "Primary school science" OR "Science teaching" OR "College science" OR "Biology" OR "Physics" OR "Chemistry"
Språkutveckling (block Z _{PQ1})	TI AB	bilingual* OR multilingual* OR (English N/5 "second language") OR (English N/5 "additional language") OR "English learn*" OR "learner* of English" OR "limited English-speak*" OR "limited English-proficient*" OR "non-English speak*" OR ("non-native" N/5 speak*) OR ("non-native" N/5 learn*) OR ("non-native" N/5 student*) OR ("non-native" N/5 pupil*) OR ("second

language" N/5 speak*) OR (language N/5 learn*) OR (language N/5 acquisition) OR SLL OR SLLs OR SLL:s OR ELL OR ELLs OR ELL:s OR EL:s OR "Els" OR EAL OR EALs OR EAL:s OR ESL OR L2 OR "English for speakers of other language*" OR "non-English language background*" OR ESOL OR ((asylum OR refugee* OR foreign* OR fugitive* OR migrant* OR immigrant* OR newcomer* OR "newly arrived" OR "language minorit*" OR "minority language*" OR "minority group*" OR "ethnic minorit*" OR "ethnically divers*" OR "ethnically heterogeneous" OR "linguistically divers*" OR "linguistically heterogeneous" OR "culturally divers*" OR "culturally heterogeneous" OR multicultural OR "multi-cultural" OR multiethnic OR "multi-ethnic" OR (diverse N/5 background*) OR nonmainstream OR "non-mainstream" OR urban) AND (school* OR learn* OR pupil* OR student* OR child* OR classroom OR "class room")

Språkutveckling (block Z _{AEI1})	SU.EXACT	"English (Second language)"
Språkutveckling (block Z _{ED1})	SU.EXACT	"English as a second language--ESL"

TABELL A5. Söksträngar som utformades genom kombination av block vid huvudsökningarna i databaserna Australian Education Index (AEI) och Education Database (ED) på plattformen ProQuest (PQ). Se tabell A4 för beskrivning av blocken.

DATABAS	BEGRÄNSNING	SÖKSTÄNG
AEI	Tidskriftsartikel Avhandling/upsats Bokkapitel Utländsk tidskriftsartikel Forskningsrapport	((block Y _{PQ}) OR (block Y _{AEI})) AND ((block Z _{PQ1}) OR (block Z _{AEI1}))
ED	Referentgranskat	(block Y _{PQ}) AND ((block Z _{PQ1}) OR (block Z _{ED1}))

Kompletterande sökning i internationella, vetenskapliga databaser

För att även finna publikationer om undervisning baserad på integrering av ämnesinnehåll utfördes kompletterande sökningar i internationella, vetenskapliga databaser.

Sju databaser, dvs. AEI, BEI, ED, ES, ERIC, PI och Scopus (S) användes. Fyra av databaserna, dvs. BEI, ES, ERIC och PI användes på plattformen EH. Två av databaserna, dvs. AEI och ED användes på plattformen PQ. Databasen S användes på databasens egna plattform. Se tabell A6 för databaserna, plattformarna och sökfälten som användes.

TABELL A6. Databaser, plattformar och sökfält som användes i de kompletterande sökningarna.

PLATTFORM	SÖKFÄLT	DATABAS
EBSCOhost (EH)	Titel (TI)	British Education Index (BEI)
	Sammanfattning (AB)	Education Source (ES)
	Nyckelord (KW)	Education Resources Information Center (ERIC)
	Ämne (indexerad fras: DE)	PsycINFO (PI)
ProQuest (PQ)	Titel (TI)	Australian Education Index (AEI)
	Sammanfattning (AB)	Education Database (ED)
	Ämne (exakt ämnesord: SU.EXACT; exakt)	

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

	ämnesord och dess associerade, snävare ämnesord: SU.EXACT.EXPLODE)	
Scopus (S)	Titel (TI)	Scopus (S)
	Sammanfattning (AB)	
	Nyckelord (KW)	

Sökningarna utfördes i maj 2017 genom att kombinera block med sökord inom skolundervisning, naturvetenskap och språkutveckling. Blocken kombinerades med hjälp av den booleska operatoren AND. Vid sökningar i ämnesdatabaserna inom utbildningsvetenskap uteslöts skolundervisningsblocket. Sökresultaten begränsades till litteratur publicerad fr.o.m. år 2000.

Se tabell A7 för detaljerad beskrivning av blocken och tabell A8 för blockkombinationerna och begränsningarna vid de kompletterande sökningarna i databaserna BEI, ES, ERIC och PI på plattformen EH.

TABELL A7. Block som användes vid de kompletterande sökningarna i databaserna British Education Index (BEI), Education Source (ES), Education Resources Information Center (ERIC) och PsycINFO (PI) på plattformen EBSCOhost (EH).

BLOCK	SÖKFÄLT	SÖKSTRÄNG
Språkutveckling (block Z _{EH2})	TI AB KW	"dual-language" OR "dual language" OR CLIL OR "content and language integrated" OR immersion OR CBI OR "content based instruction" OR "content-based instruction" OR "content based learning" OR "content-based learning" OR "content based teaching" OR "content-based teaching" OR CBLT OR "content based language teaching" OR "content-based language teaching" OR CBLI OR "content based language instruction" OR "content-based language instruction" OR "content based language learning" OR "content-based language learning" OR "content based approach" OR "content-based approach" OR (language N3 curriculum) OR (languages N3 curriculum) OR "language-content-task" OR "LCT framework" OR SIOP
Språkutveckling (block Z _{EH3})	TI AB KW	"dual-language" OR "dual language" OR CLIL OR "content and language integrated" OR "content-language integrated" OR "content language integrated" OR immersion OR CBI OR "content based instruction" OR "content-based instruction" OR "content based learning" OR "content-based learning" OR "content based teaching" OR "content-based teaching" OR CBLT OR "content based language teaching" OR "content-based language teaching" OR CBLI OR "content based language instruction" OR "content-based language instruction" OR "content based language learning" OR "content-based language learning" OR "content based approach" OR "content-based approach" OR (language N3 curriculum) OR (languages N3 curriculum) OR "language-content-task" OR "LCT framework" OR SIOP OR "sheltered instruction observation protocol"
Språkutveckling (block Z _{BEI2})	DE	"MULTILINGUAL education" OR "MULTILINGUAL teaching aids & devices" OR "BILINGUAL education -- Aids & devices" OR "BILINGUAL education" OR "LANGUAGE & languages -- Study & teaching -- Bilingual method" OR "MAINSTREAMING in bilingual education" OR "BILINGUAL education -- Aids & devices" OR "BILINGUAL education -- Study & teaching" OR "BILINGUAL schools" OR "BILINGUAL students" OR "BILINGUAL teachers" OR "IMMERSION method (Language teaching)" OR "ENGLISH language -- Study & teaching -- Immersion method" OR "IMMIGRANT students" OR "IMMIGRANTS" OR "CHILDREN of immigrants" OR "IMMIGRANT students" OR "UNDOCUMENTED immigrants" OR "IMMIGRANTS -- Education"
Språkutveckling (block Z _{ES2})	(Samma som Z _{BEI2})	(Samma som Z _{BEI2})
Språkutveckling (block Z _{ERIC2})	DE	"Immersion Programs"
Språkutveckling (block Z _{PI2})	DE	"Bilingual Education"

TABELL A8. Söksträngar som utformades genom kombination av block vid de kompletterande sökningarna i databaserna British Education Index (BEI), Education Source (ES), Education Resources Information Center (ERIC) och PsycINFO (PI) på plattformen EBSCOhost (EH). Se tabell A2 och A7 för beskrivning av blocken.

DATA-BAS	BEGRÄNSNING	SÖKSTÄNG	PUBLICERINGS-TID
BEI	Referentgranskat	((block Y _{EH}) OR (block Y _{BEI})) AND ((block Z _{EH2}) OR (block Z _{BEI2}))	fr.o.m. 2000
		NOT ((block Y _{EH}) OR (block Y _{BEI})) AND ((block Z _{EH1}) OR (block Z _{BEI1}))	fr.o.m. 2000 t.o.m. nov 2016
ES	Referentgranskat	((block Y _{EH}) OR (block Y _{ES})) AND ((block Z _{EH2}) OR (block Z _{ES2}))	fr.o.m. 2000
		NOT ((block Y _{EH}) OR (block Y _{ES})) AND ((block Z _{EH1}) OR (block Z _{ES1}))	fr.o.m. 2000 t.o.m. nov 2016
ERIC	Referentgranskat	((block Y _{EH}) OR (block Y _{ERIC})) AND ((block Z _{EH2}) OR (block Z _{ERIC2}))	fr.o.m. 2000
		NOT (block Y _{EH}) OR (block Y _{ERIC}) AND ((block Z _{EH1}) OR (block Z _{ERIC1}))	fr.o.m. 2000 t.o.m. dec 2015
PI	Referentgranskat	(block X) AND (block Y _{EH}) AND ((block Z _{EH3}) OR (block Z _{PI2}))	fr.o.m. 2000
		NOT (block X) AND (block Y _{EH}) AND ((block Z _{EH1}) OR (block Z _{PI1}))	fr.o.m. 2000 t.o.m. sep 2016

Se tabell A9 för detaljerad beskrivning av blocken och tabell A10 för blockkombinationerna och begränsningarna vid de kompletterande sökningarna i databaserna AEI och ED på plattformen PQ.

TABELL A9. Block som användes vid de kompletterande sökningarna i databaserna Australian Education Index (AEI) och Education Database (ED) på plattformen ProQuest (PQ).

BLOCK	SÖKFÄLT	SÖKSTRÄNG
Språkutveckling (block Z _{PQ2})	TI AB	"dual-language" OR "dual language" OR CLIL OR "content and language integrated" OR immersion OR CBI OR "content based instruction" OR "content-based instruction" OR "content based learning" OR "content-based learning" OR "content based teaching" OR "content-based teaching" OR CBLT OR "content based language teaching" OR "content-based language teaching" OR CBLI OR "content based language instruction" OR "content-based language instruction" OR "content based language learning" OR "content-based language learning" OR "content based approach" OR "content-based approach" OR (language N/3 curriculum) OR (languages N/3 curriculum) OR "language-content-task" OR "LCT framework" OR SIOP
Språkutveckling (block Z _{AEI2})	SU.EXACT.EXPLODE	"Bilingual students" OR "Bilingual instructional materials" OR "Bilingual teacher aides" OR "Bilingual schools" OR "Bilingual teachers" OR "Bilingual education programs" OR "Bilingual education" OR "Immersion programs" OR "Multilingual materials"
Språkutveckling (block Z _{ED2})	SU.EXACT	"Bilingual education" OR "Bilingual materials" OR "Immersion programs"

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

TABELL A10. Söksträngar som utformades genom kombination av block vid de kompletterande sökningarna i databaserna Australian Education Index (AEI) och Education Database (ED) på plattformen ProQuest (PQ). Se tabell A4 och A9 för beskrivning av blocken.

DATA-BAS	BEGRÄNSNING	SÖKSTÄNG	PUBLICERINGS-TID
AEI	Tidskriftsartikel	(((block Y _{PQ}) OR (block Y _{AEI})) AND ((block Z _{PQ2}) OR (block Z _{AEI2})))	fr.o.m. 2000
	Avhandling/upsats		
	Bokkapitel	NOT	
	Utländsk tidskriftsartikel	(((block Y _{PQ}) OR (block Y _{AEI})) AND ((block Z _{PQ1}) OR (block Z _{AEI1})))	fr.o.m. 2000
Forskningsrapport			
ED	Referentgranskat	(block Y _{PQ}) AND ((block Z _{PQ2}) OR (block Z _{ED2}))	fr.o.m. 2000
		NOT	
		(block Y _{PQ}) AND ((block Z _{PQ1}) OR (block Z _{ED1}))	fr.o.m. 2000 t.o.m. 2015

Se tabell A11 för detaljerad beskrivning av blocken och tabell A12 för blockkombinationerna och begränsningarna vid sökningarna i databasen S. Sökningarna utfördes i november 2016 genom att kombinera block, dvs. kortare söksträngar, med sökord inom skolundervisning, naturvetenskap och språkutveckling. Sökningen uteslöt skolundervisningsblocket och begränsades till ämnesområden konst och humaniora, psykologi samt samhällsvetenskap.

TABELL A11. Block som användes vid den kompletterande sökningen i databasen Scopus (S).

BLOCK	SÖKFÄLT	SÖKSTRÄNG
Naturvetenskap (block Y _s)	(Samma som Y _{PQ})	(Samma som Y _{PQ})
Språkutveckling (block Z _s)	TI AB KW	"dual-language" OR "dual language" OR CLIL OR "content and language integrated" OR immersion OR CBI OR "content based instruction" OR "content-based instruction" OR "content based learning" OR "content-based learning" OR "content based teaching" OR "content-based teaching" OR CBLT OR "content based language teaching" OR "content-based language teaching" OR CBLI OR "content based language instruction" OR "content-based language instruction" OR "content based language learning" OR "content-based language learning" OR "content based approach" OR "content-based approach" OR (language W/3 curriculum) OR (languages W/3 curriculum) OR "language-content-task" OR "LCT framework" OR SIOP

TABELL A12. Söksträngar som utformades genom kombination av block vid den kompletterande sökningen i databasen Scopus (S). Se tabell A11 för beskrivning av blocken.

DATA-BAS	BEGRÄNSNING (DOKUMENTTYP)	(ÄMNESOMRÅDE)	SÖKSTÄNG	PUBLICERINGS-TID
S	Artikel Artikel under utgivning Översiktsartikel Bokkapitel	Konst och humaniora Psykologi Samhällsvetenskap	(block Y _s) AND (block Z _s)	fr.o.m. 2000

Sökning i skandinaviska, vetenskapliga databaser

Fyra databaser, dvs. Den Danske Forskningsdatabase, Libris, Oria (uio.oria.no) och SwePub, användes. I varje databas utfördes två sökningar, dvs. en sökning med sökord på engelska och en annan sökning med sökord på databasens originalspråk, i alla sökfälten.

Sökningarna utfördes i januari 2017, utom sökningen på danska i Den Danske Forskningsdatabase som utfördes i juni 2017. Sökningarna utfördes genom att kombinera block med sökord inom skolundervisning, naturvetenskap och språkutveckling. Blocken kombinerades med hjälp av den booleska operatoren AND. Sökresultaten begränsades till litteratur publicerad år 2000–2016.

Se tabell A13 för detaljerad beskrivning av blocken och tabell A14 för blockkombinationerna och begränsningarna vid sökningarna på engelska i de skandinaviska, vetenskapliga databaserna.

TABELL A13. Block som användes vid sökningarna på engelska i de skandinaviska, vetenskapliga databaserna.

BLOCK	SÖKSTRÅNG
Skolundervisning (block P)	school* OR teach* OR learn* OR tutor* OR student* OR pupil* OR class* OR classroom* OR practice* OR instruct* OR educat* OR didactic* OR pedagog* OR grade* OR "junior high" OR highschool OR elementary OR primary grade* OR intermediate grade* OR middle grade* OR secondary grade* OR lyce* OR "sixth form" OR "lower sixth" OR "upper sixth" OR "key stage 5" OR junior college* OR gymnasium* OR "upper secondary" OR "lower secondary"
Naturvetenskap (block Q1)	science OR sciences OR biology OR chemistry OR physics OR geology OR astronomy
Naturvetenskap (block Q2)	science* OR biology OR chemistry OR physics OR geology OR astronomy
Språkutveckling (block R1)	bilingual* OR multilingual* OR "second language" OR "second languages" OR "additional language" OR "additional languages" OR "learner of danish" OR "learners of danish" OR "non-native" OR "non-natives" OR "danish for speakers of another language" OR "danish for speakers of other languages" OR "non-danish language background" OR "non-danish language backgrounds" OR "asylum seeker" OR "asylum seekers" OR refugee* OR fugitive* OR migrant* OR immigrant* OR newcomer* OR foreign* OR "newly arrived" OR "language minorities" OR "language minority" OR "minority languages" OR "minority language" OR "minority group" OR "minority groups" OR "ethnic minority" OR "ethnic minorities" OR "ethnically diverse" OR "ethnically heterogeneous" OR "linguistically diverse" OR "linguistically heterogeneous" OR "culturally diverse" OR "culturally heterogeneous" OR multicultural OR "multi-cultural" OR multiethnic OR "multi-ethnic" OR nonmainstream OR "non-mainstream"
Språkutveckling (block R2)	bilingual* OR multilingual* OR "second language" OR "additional language" OR "learner of swedish" OR "learners of swedish" OR "non-native" OR "swedish for speakers of another language" OR "swedish for speakers of other languages" OR "non-swedish language background" OR "non-swedish language backgrounds" OR "swedish language learners" OR "asylum seeker" OR "asylum seekers" OR refugee* OR foreign* OR fugitive* OR migrant* OR immigrant* OR newcomer* OR "newly arrived" OR language minorit* OR minority language* OR minority group* OR ethnic minorit* OR ethnically divers* OR "ethnically heterogeneous" OR linguistically divers* OR "linguistically heterogeneous" OR culturally divers* OR "culturally heterogeneous" OR multicultural OR "multi-cultural" OR multiethnic OR "multi-ethnic" OR nonmainstream OR "non-mainstream"
Språkutveckling (block R3)	bilingual* OR multilingual* OR "second language" OR "additional language" OR "learner of norwegian" OR "learners of norwegian" OR "non-native" OR "norwegian for speakers of another language" OR "norwegian for speakers of other languages" OR "non-norwegian language background" OR "non-norwegian language backgrounds" OR "norwegian language learners" OR "asylum seeker" OR "asylum seekers" OR refugee* OR fugitive* OR foreign* OR migrant* OR immigrant* OR newcomer* OR "newly arrived" OR language minorit* OR minority language* OR minority group* OR ethnic minorit* OR ethnically divers* OR

"ethnically heterogeneous" OR linguistically divers* OR "linguistically heterogeneous" OR culturally divers* OR "culturally heterogeneous" OR multicultural OR "multi-cultural" OR multiethnic OR "multi-ethnic" OR nonmainstream OR "non-mainstream"

TABELL A14. Söksträngar som utformades genom kombination av block vid sökningarna på engelska i de skandinaviska, vetenskapliga databaserna.

DATABAS	SÖKSTRÄNG	PUBLIKATIONSTYP
Den Danske Forsknings-database	(block Q1) AND (block R1)	Afhandling-Ph.D. Afhandling-Doktor
LIBRIS	(block Q2) AND (block R2)	Avhandling Artiklar/kapitel övriga
SwePub	(block P) AND (block Q2) AND (block R2)	Doktorsavhandling Tidskriftsartikel (referentgranskat) Bokkapitel (referentgranskat) Forskningsöversikt (referentgranskat) Samlingsverk (redaktörskap)
Oria (Alle bibliotek)	(block Q2) AND (block R3)	Avhandlingar

Se tabell A15 för detaljerad beskrivning av blocken och tabell A16 för blockkombinationerna och begränsningarna vid sökningarna på databasens originalspråk i de skandinaviska, vetenskapliga databaserna.

TABELL A15. Block som användes vid sökningar på databasens originalspråk i de skandinaviska, vetenskapliga databaserna.

BLOCK	SPRÅK	SÖKSTRÄNG
Naturvetenskap (block S1)	Danska	naturfag* OR naturvidenskab* OR biologi OR kemi OR fysik OR geologi* OR astronomi* OR genrepædagog* OR sprogbaeret* OR stilladiser*
Naturvetenskap (block S2)	Svenska	NO-klass* OR NO-undervisn* OR NO-ämne* OR NO-lärare* OR NO-kunskap* OR NO-stud* OR NO-elev* OR naturorienter* OR naturvetenskap* OR biologi* OR kemi* OR fysik* OR geologi* OR astronomi* OR "språk- och kunskapsutvecklande" OR "språkinriktad ämnesundervisning" OR "språkutvecklande ämnesundervisning" OR genrepædagog* OR cirkelmodell* OR stött*
Naturvetenskap (block S3)	Norska	naturfag* OR naturvitenskap* OR biologi* OR kjemi* OR fysikk* OR geologi* OR astronomi OR genrepædagog* OR støtte* OR fag- og språkutvikl*
Språkutveckling (block T1)	Danska	andetsprog* OR flersprog* OR tosprag* OR indvand* OR flygtning* OR udlændi* OR nyankom* OR multikultur* OR "andet modersmål" OR asylansøg* OR alenekommende* OR migrant* OR immigrant* OR minoritet*
Språkutveckling (block T2)	Svenska	andraspråk* OR flerspråk* OR tvåspråk* OR asyl* OR flykting* OR ensamkommande* OR utlän* OR migranter* OR invandra* OR immigrant* OR "direktintegrerade elever" OR minoritet* OR nyanlända* OR multikultur* OR "annat modersmål"
Språkutveckling (block T3)	Norska	andrespråk* OR flerspråk* OR tospråk* OR asylsøk* OR flykting* OR alenekommende* OR utlændi* OR migrant* OR innvandrere* OR minoritet* OR nykom* OR nyankom* OR "nylig ankomne" OR nytilkom* OR multikultur* OR "annet morsmål"

TABELL A16. Söksträngar som utformades genom kombination av block vid sökningarna på databasens originalspråk i skandinaviska, vetenskapliga databaser.

DATABAS	SÖKSTRÄNG	PUBLIKATIONSTYP
Den Danske Forskningsdatabas	(block S1) AND (block T1)	Afhandling-Ph.D. Tidsskrift-artikel
LIBRIS	(block S2) AND (block T2)	Avhandlingar Artiklar/kapitel övriga
SwePub	(block S2) AND (block T2)	Doktorsavhandling Tidskriftsartikel (referentgranskat) Bokkapitel (referentgranskat) Forskningsöversikt (referentgranskat) Samlingsverk (redaktörskap)
Oria (Böcker i norske fagbibliotek)	(block S3) AND (block T3)	Avhandlingar Artikler

Kompletterande sökning i skandinaviska, vetenskapliga databaser

Kompletterande sökning utfördes i skandinaviska, vetenskapliga databaser för att även finna publikationer om undervisning baserad på integrering av ämnesinnehåll samt flera publikationer om undervisning i naturvetenskap.

Fyra databaser, dvs. Den Danske Forskningsdatabas, Libris, Oria (nb.oria.no) och SwePub, användes. För att finna publikationer om undervisning baserad på integrering av ämnesinnehåll utfördes sökningarna i alla fyra databaserna. För att finna flera publikationer om undervisning i naturvetenskap utfördes sökningarna i alla fyra databaserna utom Den Danske Forskningsdatabas.

Sökningarna utfördes i juni 2017. Sökningarna utfördes genom att kombinera block med sökord inom naturvetenskap och språkutveckling. Blocken kombinerades med hjälp av den booleska operatoren AND. Sökresultaten begränsades till litteratur publicerad år 2000–2017.

Se tabell A17 för detaljerad beskrivning av blocken och tabell A18 för blockkombinationerna och begränsningarna vid de kompletterande sökningarna i de skandinaviska, vetenskapliga databaserna för att finna publikationer om undervisning baserad på integrering av ämnesinnehåll.

TABELL A17. Block som användes vid de kompletterande sökningarna i de skandinaviska, vetenskapliga databaserna för att finna publikationer om undervisning baserad på integrering av ämnesinnehåll.

BLOCK	SÖKSTRÄNG
Naturvetenskap (block Q3)	science OR sciences OR biology OR chemistry OR physics OR geology OR astronomy OR naturfag* OR naturvidenskab* OR biologi* OR kemi* OR fysik* OR geologi* OR astronomi*
Naturvetenskap (block Q4)	science* OR biology OR chemistry OR physics OR geology OR astronomy OR NO-klass* OR NO-undervisn* OR NO-ämne* OR NO-lärare* OR naturkunskap* OR NO-stud* OR NO-elev* OR naturorienter* OR naturvetenskap* OR biologi* OR kemi* OR fysik* OR geologi* OR astronomi*
Språkutveckling (block R4)	"dual-language" OR "dual language" OR CLIL OR "content and language integrated" OR "content-language integrated" OR "content language integrated" OR immersion OR CBI OR "content based instruction" OR "content-based instruction" OR "content based learning" OR "content-based learning" OR "content based teaching" OR "content-based teaching" OR CBLT OR "content based language teaching" OR "content-based language teaching" OR CBLI

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

Språkutveckling (block R5)	OR "content based language instruction" OR "content-based language instruction" OR "content based language learning" OR "content-based language learning" OR "content based approach" OR "content-based approach" OR "language across the curriculum" OR "languages across the curriculum" OR "language across curriculum" OR "languages across curriculum" OR "language integrated curriculum" OR "language-integrated curriculum" OR "language-content-task" OR "LCT framework" OR SIOP OR "sheltered instruction observation protocol"
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TABELL A18. Söksträngar som utformades genom kombination av block eller sökord vid de kompletterande sökningarna i de skandinaviska, vetenskapliga databaserna för att finna publikationer om undervisning baserad på integrering av ämnesinnehåll.

DATABAS	SÖKSTRÄNG	PUBLIKATIONSTYP
Den Danske Forskningsdatabase	(block Q3) AND (block R4)	Afhandling-Ph.D. Tidsskrift-artikel
LIBRIS	(block Q4) AND (block R5)	Avhandling Artiklar/kapitel övriga
SwePub	(block Q4) AND (block R5)	Doktorsavhandling Tidskriftsartikel (referentgranskat) Bokkapitel (referentgranskat) Forskningsöversikt (referentgranskat) Samlingsverk (redaktörskap)
Oria (Norske fagbibliotek, Inkluderer materiale ditt bibliotek ikke har tilgang til, Norwegian Open Research Archives (NORA))	immersion AND science* immersion AND biology immersion AND chemistry immersion AND physics	Avhandlingar

Se tabell A19 för detaljerad beskrivning av blocken och tabell A20 för blockkombinationerna och begränsningarna vid de kompletterande sökningarna för att finna flera publikationer om undervisning i naturvetenskap.

TABELL A19. Block som användes vid de kompletterande sökningar i den norska, vetenskapliga databasen Oria för att finna flera publikationer om undervisning i naturvetenskap.

BLOCK	SÖKSTRÄNG
Naturvetenskap (block S4)	naturfag* OR naturvitenskap*
Naturvetenskap (block S5)	biologi* OR kjemi*
Naturvetenskap (block S6)	fysikk* OR geologi*
Naturvetenskap (block S7)	astronomi*
Språkutveckling (block T4)	flerspråk* OR tospråk*
Språkutveckling (block T5)	andrespråk* OR "annet morsmål"
Språkutveckling (block T6)	fagutvikl* OR språkutvikl*

TABELL A20. Söksträngar som utformades genom kombination av block eller sökord vid de kompletterande sökningarna i skandinaviska, vetenskapliga databaser för att finna flera publikationer om undervisning i naturvetenskap.

DATABAS	SÖKSTRÄNG	PUBLIKATIONSTYP
LIBRIS	naturkunskap* AND (block T2)	Avhandlingar Artiklar/kapitel övriga
SwePub	naturkunskap* AND (block T2)	Doktorsavhandling Tidskriftsartikel (referentgranskat) Bokkapitel (referentgranskat) Forskningsöversikt (referentgranskat) Samlingsverk (redaktörskap)
Oria (Norske fagbibliotek, Inkluder materiale ditt bibliotek ikke har tilgang til)	(block S4) AND (block T4) (block S4) AND (block T5) (block S4) AND (block T6) (block S5) AND (block T4) (block S5) AND (block T5) (block S5) AND (block T6) (block S6) AND (block T4) (block S6) AND (block T5) (block S6) AND (block T6) (block S7) AND (block T4) (block S7) AND (block T5) (block S7) AND (block T6)	Avhandlingar Artikler

Citeringssökning

Publikationer som citerat följande 65 referenser eftersöktes i juni-juli 2017. Sökning utfördes i Scopus i första hand på de 65 referenser som bedömdes som intressanta vid relevansgranskning av fulltext. Om det i Scopus inte gick att hitta någon av referenserna eller någon publikation som citerat någon av referenserna, utfördes sökning även i Social Science Premium Collection på ProQuest och sedan i Google Scholar.

- Adams, A., Jessup, W., Criswell, B. A., Weaver-High, C., & Rushton, G. T. (2015). Using Inquiry To Break the Language Barrier in Chemistry Classrooms. *Journal of Chemical Education*, 92(12), 2062–2066.
- Albakri, R. H. (2013). Teaching Scientific Vocabulary to EFL Learners Using English: Content and Language Integrated Learning. *Arab World English Journal*, 4(1), 269–284.
- BouJaoude, S., & Tamim, R. (2008). Middle School Students' Perceptions of the Instructional Value of Analogies, Summaries and Answering Questions in Life Science. *Science Educator*, 17(1), 72–78.
- Braden, S., Wassell, B. A., Scantlebury, K., & Grover, A. (2016). Supporting language learners in science classrooms: insights from middle-school English language learner students. *Language & Education: An International Journal*, 30(5), 438–458.
- Brooks, M. D. (2015). "It's like a script": Long-term English learners' experiences with and ideas about academic reading. *Research in the Teaching of English*, 49(4), 383–406.

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

- Chala Bejarano, P. A., & Pedraza Leal, D. M. (2003). Establishing cross-curricular links between science and English in ninth grade. *PROFILE Issues in Teachers' Professional Development*, 4(1), 66–81.
- Chapman, A. M., Ward, H. C., Tiwari, A., Weimer, A., Duran, J. B., Guerra, F., & Sale, P. (2017). The role of language in anatomy and physiology instruction. *The American Biology Teacher*, 79(3), 184–190.
- Chin, C. (2007). Teacher questioning in science classrooms: Approaches that stimulate productive thinking. *Journal of Research in Science Teaching*, 44(6), 815–843.
- Cink, R. B., & Song, Y. (2016). Appropriating scientific vocabulary in chemistry laboratories: a multiple case study of four community college students with diverse ethno-linguistic backgrounds. *Chemistry Education Research and Practice*, 17(3), 604–617.
- Clark, D. B., Touchman, S., Martinez-Garza, M., Ramirez-Marin, F., & Skjerping Drews, T. (2012). Bilingual Language Supports in Online Science Inquiry Environments. *Computers & Education*, 58(4), 1207–1224.
- Dong, Y. R. (2002). Integrating language and content: How three biology teachers work with non-English speaking students. *International Journal of Bilingual Education and Bilingualism*, 5(1), 40–57.
- Echevarria, J., Richards-Tutor, C., Canges, R., & Francis, D. (2011). Using the SIOP Model to Promote the Acquisition of Language and Science Concepts with English Learners. *Bilingual Research Journal*, 34(3), 334–351.
- Evnitskaya, N., & Morton, T. (2011). Knowledge construction, meaning-making and interaction in CLIL science classroom communities of practice. *Language & Education: An International Journal*, 25(2), 109–127.
- Ferreira, J. G. (2011). Teaching life sciences to English second language learners: What do teachers do? *South African Journal of Education*, 31(1), 102–113.
- Fidalgo, J., & Gallástegui, J. R. (2006). Physics as a useful tool for learning English. *Physics Education*, 41(2), 168–173.
- Flores, A., & Smith, K. C. (2013). Spanish-speaking English language learners' experiences in high school chemistry education. *Journal of Chemical Education*, 90(2), 152–158.
- González-Howard, M., & McNeill, K. L. (2016). Learning in a Community of Practice: Factors Impacting English-Learning Students' Engagement in Scientific Argumentation. *Journal of Research in Science Teaching*, 53(4), 527–553.
- Heller, J.I. (2012). *Effects of Making Sense of SCIENCE™ professional development on the achievement of middle school students, including English language learners*. (NCEE 2012–4002). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Holloway, S. M. (2012). Visual literacies and multiliteracies : an ecology arts-based pedagogical model. *Language and Literacy*, 14(3), 150–168.

- Huang, J. (2004). Socialising ESL Students into the Discourse of School Science through Academic Writing. *Language & Education*, 18(2), 97–123.
- Hudicourt-Barnes, J. (2003). The use of argumentation in Haitian Creole science classrooms. *Harvard Educational Review*, 73(1), 73–93.
- Hägerfelth, G. (2004). *Språkpraktiker i naturkunskap i två mångkulturella gymnasieklassrum: en studie av läroprocesser bland elever med olika förstaspråk*. Lärarutbildningen, Malmö högskola.
- Johnson, C. C., Bolshakova, V. L. J., & Waldron, T. (2016). When good intentions and reality meet: Large-scale reform of science teaching in urban schools with predominantly Latino ELL students. *Urban Education*, 51(5), 476–513.
- Kibler, A. (2011). “I write it in a way that people can read it”: How teachers and adolescent L2 writers describe content area writing. *Journal of Second Language Writing*, 20(3), 211–226.
- Kouns, M (2010). *Inga IG i Kemi A: en språkdidaktisk studie av en kemilärares undervisningsstrategier i en gymnasieklass med elever med svenska som andraspråk*. Lärarutbildningen, Malmö högskola.
- Langman, J. (2014). Translanguaging, identity, and learning: Science teachers as engaged language planners. *Language Policy*, 13(2), 183–200.
- Langman, J., & Fies, C. (2010). Classroom response system-mediated science learning with English language learners. *Language & Education: An International Journal*, 24(2), 81–99.
- Lin, A. M. Y. (2006). Beyond linguistic purism in language-in-education policy and practice: exploring bilingual pedagogies in a Hong Kong science classroom. *Language and Education*, 20(4), 287–305.
- Lin, A. M. Y., & Lo, Y. Y. (2017). Trans/languaging and the triadic dialogue in content and language integrated learning (CLIL) classrooms. *Language and Education*, 31(1), 26–45.
- Lin, A. M. Y., & Wu, Y. (2015). 'May I speak Cantonese?'—Co-constructing a scientific proof in an EFL junior secondary science classroom. *International Journal of Bilingual Education and Bilingualism*, 18(3), 289–305.
- Lindahl, C. (2015). *Tecken av betydelse: en studie av dialog i ett multimodalt, teckenspråkigt tvåspråkigt NO-klassrum*. Institutionen för matematikämnet och naturvetenskapsämnenas didaktik, Stockholms universitet.
- Lynch, S., Kuipers, J., Pyke, C., & Szesze, M. (2005). Examining the Effects of a Highly Rated Science Curriculum Unit on Diverse Students: Results from a Planning Grant. *Journal of Research in Science Teaching*, 42(8), 912–946.
- Magnusson, U. (2014). Grammatik i läromedelstexter. Flerspråkiga gymnasieelevers förståelse av grammatisk metafor i biologitexter. *Nordand – Nordisk tidskrift för andrespråksforskning*, 9(1), 37–68.

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

- Manavathu, M., & Zhou, G. (2012). The Impact of Differentiated Instructional Materials on English Language Learner (ELL) Students' Comprehension of Science Laboratory Tasks. *Canadian Journal of Science, Mathematics & Technology Education*, 12(4), 334–349.
- Manzo, R. D., Cruz, L., Faltis, C., & de la Torre, A. (2011). Professional Development of Secondary Science Teachers of English Learners in Immigrant Communities. *AMAE Journal*, 5(1), 41–48.
- McCallum, M., & Miller, J. (2013). Supporting English as an additional language students in Science: Integrating content and language. *Teaching Science: The Journal of the Australian Science Teachers Association*, 59(2), 37–42.
- Mickan, P. (2007). Doing Science and Home Economics: Curriculum Socialisation of New Arrivals in Australia. *Language & Education: An International Journal*, 21(2), 107–123.
- Miller, J. (2009). Teaching Refugee Learners with Interrupted Education in Science: Vocabulary, literacy and pedagogy. *International Journal of Science Education*, 31(4), 571–592.
- Moje, E. B., Ciechanowski, K. M., Kramer, K., Ellis, L., Carrillo, R., & Collazo, T. (2004). Working toward third space in content area literacy: An examination of everyday funds of knowledge and Discourse. *Reading Research Quarterly*, 39(1), 38–70.
- Moje, E. B., Collazo, T., Carrillo, R., & Marx, R. W. (2001). "Maestro, What Is Quality?": Language, Literacy, and Discourse in Project-based Science. *Journal of Research in Science Teaching*, 38(4), 469–498.
- Morales, M. P. E. (2015). Influence of culture and language sensitive physics on science attitude enhancement. *Cultural Studies of Science Education*, 10(4), 951–984.
- Morales, M. P. E. (2017). Cultural Historical Activity Theory (CHAT): Influenced Case Research of a Philippine Physics Class. *The Asia - Pacific Education Researcher*, 26(1), 85–96.
- Morton, T. (2012). Classroom talk, conceptual change and teacher reflection in bilingual science teaching. *Teaching and Teacher Education*, 28(1), 101–110.
- Msimanga, A., & Lelliott, A. (2014). Talking Science in Multilingual Contexts in South Africa: Possibilities and challenges for engagement in learners home languages in high school classrooms. *International Journal of Science Education*, 36(7), 1159–1183.
- Nikula, T. (2015). Hands-on tasks in CLIL science classrooms as sites for subject-specific language use and learning. *System*, 54, 14–27.
- Nygård Larsson, P. (2011). *Biologiämnets texter: Text, språk och lärande i en språkligt heterogen gymnasieklass*. Malmö: Lärarutbildningen, Malmö högskola.

- O'Connor, B. H., & Crawford, L. J. (2015). An Art of Being in between: The Promise of Hybrid Language Practices. Research on Preparing Inservice Teachers to Work Effectively with Emergent Bilinguals, I: Freeman, Y. S., Freeman, D. E., (red.) *Research on Preparing Inservice Teachers to Work Effectively with Emergent Bilinguals (Advances in Research on Teaching, Volume 24)* Emerald Group Publishing Limited, s. 149–173
- O'Hara, S., & Pritchard, R. (2008). Hypermedia authoring as a vehicle for vocabulary development in middle school English as a second language classrooms. *Clearing House, 82*(2), 60–65.
- Padilla De La Cerda, F. (2016). The design of a theme-based and genre-oriented strategic reading course to improve students' reading comprehension skills at a public school in Colombia. *HOW 23*(1), 49–67.
- Pritchard, R., & O'Hara, S. (2009). Vocabulary Development in the Science Classroom: Using Hypermedia Authoring to Support English Learners. *Tapestry Journal, 1*(1), 15–29.
- Probyn, M. (2006). Language and learning science in South Africa. *Language & Education: An International Journal, 20*(5), 391–414.
- Probyn, M. (2015). Pedagogical translanguaging: bridging discourses in South African science classrooms. *Language & Education: An International Journal, 29*(3), 218–234.
- Richardson Bruna, K., Vann, R., & Perales Escudero, M. (2007). What's language got to do with it?: A case study of academic language instruction in a high school "English Learner Science" class. *Journal of English for Academic Purposes, 6*(1), 36–54.
- Richardson Bruna, K., Vann, R., & Perales Escudero, M. (2010). "You Got the Word Now": Problematizing Vocabulary-Based Academic Language Instruction for English Learners in Science. *The Tapestry Journal, 2*(1), 19–36.
- Rivard, L. P., & Levesque, A. (2011). Three francophone teachers' use of language-based activities in science classrooms. *Canadian Modern Language Review, 67*(3), 323–350.
- Setati, M., Adler, J., Reed, Y., & Bapoo, A. (2002). Incomplete Journeys: Code-Switching and Other Language Practices in Mathematics, Science, and English Language Classrooms in South Africa. *Language and Education, 16*(2), 128–149.
- Swanson, L. H., Bianchini, J. A., & Lee, J. S. (2014). Engaging in Argument and Communicating Information: A Case Study of English Language Learners and Their Science Teacher in an Urban High School. *Journal of Research in Science Teaching, 51*(1), 31–64.
- Terrazas-Arellanes, F. E., Knox, C., & Walden, E. (2015). Pilot Study on the Feasibility and Indicator Effects of Collaborative Online Projects on Science Learning for English Learners. *International Journal of Information & Communication Technology Education, 11*(4), 31–50.

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

- Terrazas-Arellanes, F. E., Knox, C., & Rivas, C. (2013). Collaborative online projects for English language learners in science. *Cultural Studies of Science Education*, 8, 953–971.
- Then, D. C.-O., & Ting, S.-H. (2011). Code-switching in English and science classrooms: more than translation. *International Journal of Multilingualism*, 8(4), 299–323.
- Turnbull, M., Cormier, M., & Bourque, J. (2011). The First Language in Science Class: A Quasi-Experimental Study in Late French Immersion. *The Modern Language Journal*, 95, 182–198.
- Urmeneta, C. E., & Sola, A. S. (2009). Language Learning Through Tasks in a Content and Language Integrated Learning (CLIL) Science Classroom. *Porta Linguarum*, 11, 65–83.
- Walker, E. (2011). How 'language-aware' are lesson studies in an East Asian high school context? *Language & Education: An International Journal*, 25(3), 187–202.
- Webb, P., & Treadwell, D. F. D. (2006). Using Exploratory Talk to Enhance Problem-solving and Reasoning Skills in Grade-7 Science Classrooms. *Research in Science Education*, 36(4), 381–401.
- Webster, B., & Hazari, A. (2009). Measuring language learning environments in secondary science classrooms. *Learning Environments Research*, 12(2), 131–142.

Kedjesökning

Referenslistor i följande publikationer, som identifierats under arbetet och bedömts vara intressanta, kontrollerades i september 2017.

- Braden, S., Wassell, B. A., Scantlebury, K., & Grover, A. (2016). Supporting language learners in science classrooms: insights from middle-school English language learner students. *Language & Education: An International Journal*, 30(5), 438–458.
- Brooks, M. D. (2016). "Tell me what you are thinking": An investigation of five Latina LTELs constructing meaning with academic texts. *Linguistics & Education*, 35, 1–14.
- Cink, R. B., & Song, Y. (2016). Appropriating scientific vocabulary in chemistry laboratories: a multiple case study of four community college students with diverse ethno-linguistic backgrounds. *Chemistry Education Research and Practice*, 17(3), 604–617.
- Clark, D. B., Touchman, S., Martinez-Garza, M., Ramirez-Marin, F., & Skjerping Drews, T. (2012). Bilingual Language Supports in Online Science Inquiry Environments. *Computers & Education*, 58(4), 1207–1224.

- Echevarria, J., Richards-Tutor, C., Canges, R., & Francis, D. (2011). Using the SIOP Model to Promote the Acquisition of Language and Science Concepts with English Learners. *Bilingual Research Journal*, 34(3), 334–351.
- Evnitskaya, N., & Morton, T. (2011). Knowledge construction, meaning-making and interaction in CLIL science classroom communities of practice. *Language & Education: An International Journal*, 25(2), 109–127.
- Flores, A., & Smith, K. C. (2013). Spanish-speaking English language learners' experiences in high school chemistry education. *Journal of Chemical Education*, 90(2), 152–158.
- González-Howard, M., & McNeill, K. L. (2016). Learning in a Community of Practice: Factors Impacting English-Learning Students' Engagement in Scientific Argumentation. *Journal of Research in Science Teaching*, 53(4), 527–553.
- Huang, J. (2004). Socialising ESL Students into the Discourse of School Science through Academic Writing. *Language & Education*, 18(2), 97–123.
- Hägerfelth, G. (2004). *Språkpraktiker i naturkunskap i två mångkulturella gymnasieklassrum: en studie av läroprocesser bland elever med olika förstaspråk*. Lärarutbildningen, Malmö högskola.
- Karlsson, A. (2016). Code-switching as a linguistic resource in the multilingual science classroom. In J. Lavonen, K. Juuti, J. Lampiselkä, A. Uitto & K. Hahl (Eds.), *Electronic Proceedings of the ESERA 2015 Conference. Science education research: Engaging learners for a sustainable future, Part 12*, s. 1820–1831. Helsinki, Finland: University of Helsinki
- Kouns, M (2010). *Inga IG i Kemi A: en språkdidaktisk studie av en kemilärares undervisningsstrategier i en gymnasieklass med elever med svenska som andraspråk*. Lärarutbildningen, Malmö högskola.
- Langman, J. (2014). Translanguaging, identity, and learning: Science teachers as engaged language planners. *Language Policy*, 13(2), 183–200.
- Langman, J., & Fies, C. (2010). Classroom response system-mediated science learning with English language learners. *Language & Education: An International Journal*, 24(2), 81–99.
- Lin, A. M. Y. (2006). Beyond linguistic purism in language-in-education policy and practice: exploring bilingual pedagogies in a Hong Kong science classroom. *Language and Education*, 20(4), 287–305.
- Lin, A. M. Y., & Lo, Y. Y. (2017). Trans/languaging and the triadic dialogue in content and language integrated learning (CLIL) classrooms. *Language and Education*, 31(1), 26–45.
- Lin, A. M. Y., & Wu, Y. (2015). 'May I speak Cantonese?'—Co-constructing a scientific proof in an EFL junior secondary science classroom. *International Journal of Bilingual Education and Bilingualism*, 18(3), 289–305.
- Lynch, S., Kuipers, J., Pyke, C., & Szesze, M. (2005). Examining the Effects of a Highly Rated Science Curriculum Unit on Diverse Students: Results from a Planning Grant. *Journal of Research in Science Teaching*, 42(8), 912–946.

Språk- och kunskapsutvecklande undervisning i det flerspråkiga klassrummet – med fokus naturvetenskap. Systematisk översikt 2018:02. Skolforskningsinstitutet, 2018

- Magnusson, U. (2014). Grammatik i läromedelstexter. Flerspråkiga gymnasieelevers förståelse av grammatisk metafor i biologitexter. *Nordand – Nordisk tidskrift för andrespråksforskning*, 9(1), 37–68.
- Manavathu, M., & Zhou, G. (2012). The Impact of Differentiated Instructional Materials on English Language Learner (ELL) Students' Comprehension of Science Laboratory Tasks. *Canadian Journal of Science, Mathematics & Technology Education*, 12(4), 334–349.
- Miller, J. (2009). Teaching Refugee Learners with Interrupted Education in Science: Vocabulary, literacy and pedagogy. *International Journal of Science Education*, 31(4), 571–592.
- Moje, E. B., Collazo, T., Carrillo, R., & Marx, R. W. (2001). "Maestro, What Is Quality?": Language, Literacy, and Discourse in Project-based Science. *Journal of Research in Science Teaching*, 38(4), 469–498.
- Morales, M. P. E. (2015). Influence of culture and language sensitive physics on science attitude enhancement. *Cultural Studies of Science Education*, 10(4), 951–984.
- Morton, T. (2012). Classroom talk, conceptual change and teacher reflection in bilingual science teaching. *Teaching and Teacher Education*, 28(1), 101–110.
- Msimanga, A., & Lelliott, A. (2014). Talking Science in Multilingual Contexts in South Africa: Possibilities and challenges for engagement in learners home languages in high school classrooms. *International Journal of Science Education*, 36(7), 1159–1183.
- Nikula, T. (2015). Hands-on tasks in CLIL science classrooms as sites for subject-specific language use and learning. *System*, 54, 14–27.
- Nygård Larsson, P. (2011). *Biologiämnets texter: Text, språk och lärande i en språkligt heterogen gymnasieklass*. Malmö: Lärarutbildningen, Malmö högskola.
- O'Connor, B. H., & Crawford, L. J. (2015). An Art of Being in between: The Promise of Hybrid Language Practices. Research on Preparing Inservice Teachers to Work Effectively with Emergent Bilinguals, I: Freeman, Y. S., Freeman, D. E., (red.) *Research on Preparing Inservice Teachers to Work Effectively with Emergent Bilinguals (Advances in Research on Teaching, Volume 24)* Emerald Group Publishing Limited, s. 149–173
- Probyn, M. (2006). Language and learning science in South Africa. *Language & Education: An International Journal*, 20(5), 391–414.
- Probyn, M. (2015). Pedagogical translanguaging: bridging discourses in South African science classrooms. *Language & Education: An International Journal*, 29(3), 218–234.
- Richardson Bruna, K., Vann, R., & Perales Escudero, M. (2007). What's language got to do with it?: A case study of academic language instruction in a high

- school "English Learner Science" class. *Journal of English for Academic Purposes*, 6(1), 36–54.
- Richardson Bruna, K., Vann, R., & Perales Escudero, M. (2010). "You Got the Word Now": Problematizing Vocabulary-Based Academic Language Instruction for English Learners in Science. *The Tapestry Journal*, 2(1), 19–36.
- Swanson, L. H., Bianchini, J. A., & Lee, J. S. (2014). Engaging in Argument and Communicating Information: A Case Study of English Language Learners and Their Science Teacher in an Urban High School. *Journal of Research in Science Teaching*, 51(1), 31–64.
- Turnbull, M., Cormier, M., & Bourque, J. (2011). The First Language in Science Class: A Quasi-Experimental Study in Late French Immersion. *The Modern Language Journal*, 95, 182–198.
- Ünsal, Z., Jakobson, B., Molander, B.-O., & Wickman, P.-O. (2016). Science education in a bilingual class: problematising a translational practice. *Cultural Studies of Science Education*, 1-24.
- Walker, E. (2011). How 'language-aware' are lesson studies in an East Asian high school context? *Language & Education: An International Journal*, 25(3), 187–202.
- Webb, P., & Treagust, D. F. D. (2006). Using Exploratory Talk to Enhance Problem-solving and Reasoning Skills in Grade-7 Science Classrooms. *Research in Science Education*, 36(4), 381–401.

Handsökning

Följande vetenskapliga tidskrifter, som identifierats under arbetet och bedömts vara intressanta, genomsöktes manuellt i september 2017. Syftet var att hitta sent publicerade studier.

TABELL A21. Vetenskapliga tidskrifter som manuell genomsökning utfördes i.

TIDSKRIFT	FR.O.M.
<i>Cultural Studies of Science Education</i>	vol 11 nr 4 (2016)
<i>International Journal of Science Education</i>	vol 38 nr 10 (2016)
<i>Journal of Research in Science Teaching</i>	vol 54 nr 1 (2017)
<i>Language and Education</i>	vol 30 nr 6 (2016)

Dessutom genomsöktes webbportalen Skolporten manuellt i oktober 2017 för avhandlingar inom kategorierna Naturvetenskap och Språk (<https://www.skolporten.se/forskning/avhandlingar/>).