

Full references to studies used in the review

Online supplement with: Geography Teachers' Pedagogical Content Knowledge, a Systematic Review

Authors	year	Country	Method	n	Geography topic	Educational focus
1 (Bednarz et al., 2009)	2006	USA	survey		maps	higher order thinking skills
2 (Tiknaz & Sutton, 2006)	2006	UK	interview	12	geography general	formative assessment
3 (Monet & Etkina, 2008)	2008	USA	survey, pre-post test, journals	10	earth science	professional development course
4 (Reinfried, 2004)	2008	Switzerland	survey, lesson plans	811	geography general	student/teacher perceptions
5 (Lane, 2009)	2009	Australia	interview, observation	2	tropical cyclones	student preconceptions
6 (Alexandre, 2009)	2009	Portugal	interview	4	geography general	epistemic knowledge
7 (Wise, 2010)	2010	USA	survey	183	climate change	influence of public controversies
8 (Almquist et al., 2011)	2011	USA	survey, interview	24	geology, GIS	inquiry based teaching, fieldwork
9 (Hanley et al., 2012)	2012	USA	survey, pre-post test, interviews	50/13	earth science	geospatial technologies
10 (Zohir & Shaari, 2012)	2012	Malaysia	observation	9	geography general	productive pedagogies
11 (Tuna, 2012)	2012	Turkey	survey	90	geography general	active learning
12 (Pickering et al., 2012)	2012	USA	pre post test	47/23	land forms	inquiry based teaching / active learning
13 (Bitso, 2012)	2012	Lesotho	interview	82	geography general	information behaviour
14 (Jo & Bednarz, 2014)	2014	USA	lesson plans, interview	24	settlement patterns in Canada	spatial thinking, higher order thinking skills
15 (Hooghuis et al., 2014)	2014	Netherlands	survey	307	geography general	geographical reasoning
16 (Ababio & Dumba, 2014)	2014	Ghana	survey teachers & students	7/80	geography general	teaching resources, teaching strategies
17 (Mphathiwa, 2015)	2015	Botswana	CoRe, lesson plans	5	water resource management	PCK description
18 (Lane, 2015)	2015	Australia	interviews, observation	16	tropical cyclones	PCK of students' ideas
19 (Yoon & Peate, 2015)	2015	USA	pre-post test, survey	106	geologic time	teacher biography
20 (Zhang et al., 2015)	2015	VS	survey	164	earth science	teacher needs
21 (J. E. Hong & Stonier, 2015)	2015	USA	interview	4	GIS	TPACK description
22 (Ayas, C., 2015)	2015	Turkey	interview, survey	134	geography general	use of media technology

23 (Reitano & Harte, 2016)	2016	Australia	focus-group interview	4	geography general	PCK description
24 (Clausen, 2016)	2016	Denmark	survey	55	climate & weather	PCK description
25 (Seow, 2016)	2016	Singapore	interviews, lesson plans	4	geography general	geography teacher identities
26 (Puttick, 2016)	2016	UK	interviews, observations interviews, teaching	1	geography general	geography teacher identities
27 (Alexandre, 2016)	2016	Portugal	materials survey, observations, interview, pre-posttest	20	geography general	teacher biography
28 (Thomas-Brown et al., 2016)	2016	USA	interview, observation	28	global geography	constructivist learning
29 (Campbell et al., 2017)	2017	USA	interview	1	pollution, oceanography	teaching orientations & strategies
30 (Kocalar & Demirkaya, 2017)	2017	Turkey	interview	19	geography general	teaching strategies
31 (Kenna & Poole, 2017)	2017	VS	interview	20	Asia	subject knowledge & teaching practice
32 (Rajović & Bulatović, 2017)	2017	Serbia	survey	250	geography general	use of education research
33 (Clausen, 2018)	2018	Denmark	observation, interview	4	weather and climate change	PCK description
34 (W. Hong et al., 2018)	2018	China	survey	95	geography general	Relationship SMK & PCK
35 (Lee, 2018)	2018	South Korea	interview	23	regions around the world	teacher orientations
36 (Virranmäki et al., 2019)	2019	Finland	interview, concept map	11	geography general	powerful knowledge & teacher orientations
37 (Hanifah et al., 2019)	2019	Malaysia	survey	200	geography general	Relationship SMK & PCK
38 (Curtis, 2019)	2019	USA	survey, interview observation, lesson plans, interview	78	geospatial technologies	TPACK description
39 (Seow et al., 2019)	2019	Singapore	pre-posttest, survey, interview	6	water quality	inquiry based teaching, fieldwork
40 (Bijsterbosch et al., 2019)	2019	Netherlands	interview	8	geography general	assessment of higher order thinking skills
41 (Fögele et al., 2020)	2020	Germany	interview	151	experiments	professional orientations
42 (Knecht et al., 2020)	2020	Czech	survey	114	geography general	teaching orientations
43 (Apak Tezcan & Ütkür, 2020)	2020	Turkey	survey	121	social studies	teacher identities

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