# *Supplementary Material*

## 1 Reference list for all articles included in the meta-analysis


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## 2 Table S1

*Complete coding of all shortlisted studies based on the meta-analysis inclusion criteria*

| Citation | Year | Country | Age | Design | Subject | Length | Instructor | Extra Time | Nature Flipped | No. Flipped | No. Cont | No. effects | *g* | *SE* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams, Garcia et al. | 2016 | USA | University | X groups | Science | semester | Same | Yes | video | 73 | 77 | 8 | -0.04 | 0.16 |
| Adams, Randall et al. | 2015 | USA | University | X groups | Science | semester | Same | Yes | Lect+Vid | 202 | 122 | 4 | -0.54 | 0.12 |
| Aidinopoulou | 2017 | Greece | School | X groups | Humanities | year | Same | No | video + | 26 | 23 | 14 | 0.39 | 0.29 |
| Albert & Beatty | 2014 | USA | University | Pre-post | Business | semester | Same | No | video | 596 | 321 | 3 | 0.16 | 0.07 |
| Almodaires et al. | 2019 | Kuwait | University | X groups | Education | semester | Same | No | video | 128 | 67 | 4 | 0.34 | 0.15 |
| Anderson & Brennan | 2015 | USA | University | X groups | Engineering | semester | Same | No | video | 135 | 197 | 6 | 0.31 | 0.11 |
| Asef-Vaziri | 2015 | USA | University | X groups | Engineering | semester | Same | Yes | Ppt+Vid | 320 | 292 | 4 | 0.56 | 0.08 |
| Aşıksoy & Özdamlı | 2015 | Turkey | University | X groups | Science | semester | Same | No | video | 36 | 30 | 1 | 0.88 | 0.26 |
| Baepler, Walker et al. | 2014 | USA | University | X groups | Science | semester | Same | No | Lect+Vid | 304 | 316 | 2 | 0.14 | 0.08 |
| Balaban, Gilleskie et al. | 2016 | USA | University | X groups | Business | semester | Same | No | Lect+Vid | 367 | 362 | 5 | 0.47 | 0.08 |
| Bazelais | 2018 | Canada | School | X groups | Engineering | semester | Same | No | video | 37 | 34 | 3 | 0.42 | 0.24 |
| Beale et al. | 2014 | USA | University | X groups | Medicine | semester | Different | No | Lect+Vid | 149 | 149 | 6 | 0.01 | 0.12 |
| Belfi | 2015 | USA | University | Pre-post | Science | <= 1 month | Different | Yes | video | 101 | 101 | 2 | 0.59 | 0.15 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beom | 2018 | Korea | University | X groups | Medicine | <= 1 month | Different | Yes | video | 55 | 53 | 1 | 0.34 | 0.19 |
| Bhagat et al. | 2016 | Taiwan | School | X groups | Math | <= 1 month | Same | No | video | 41 | 41 | 1 | 0.05 | 0.22 |
| Blair | 2016 | Trinidad and Tobago | University | Pre-post | Engineering | semester | Same | No | video | 42 | 71 | 1 | 0.19 | 0.02 |
| Blazquez et al. | 2019 | Spain | University | X groups | Nursing | <= 1 month | Same | No | video + | 60 | 50 | 1 | 0.63 | 0.20 |
| Bonnes | 2017 | USA | University | Pre-post | Medicine | <= 1 month | Same | Yes | online | 95 | 48 | 2 | 1.53 | 0.20 |
| Borchardt | 2017 | USA | University | Pre-post | Science | semester | Same | Yes | video | 25 | 25 | 3 | 0.39 | 0.28 |
| Bossaer et al. | 2016 | USA | University | Pre-post | Science | <= 1 month | Same | No | video + | 76 | 72 | 1 | -0.22 | 0.16 |
| Bowen et_al. | 2014 | USA | University | X groups | Math | semester | Different | No | online | 292 | 313 | 2 | 0.04 | 0.08 |
| Boyraz & Ocak | 2016 | USA | University | X groups | Medicine | <= 1 month | Same | Yes | online | 95 | 259 | 3 | 0.96 | 0.34 |
| Boysen-Osborn | 2017 | Turkey | University | Pre-post | Humanities | year | Same | no | video | 23 | 17 | 1 | 0.43 | 0.12 |
| Brooks | 2014 | USA | University | X groups | Computing | semester | Same | Yes | video | 18 | 14 | 2 | 0.01 | 0.36 |
| Buch | 2017 | USA | University | Pre-post | Math | semester | Same | No | video | 62 | 38 | 4 | 0.35 | 0.21 |
| Busato | 2016 | USA | University | X groups | Engineering | semester | Same | Yes | video | 7 | 6 | 2 | 2.37 | 0.75 |
| Cabi | 2018 | Turkey | University | X groups | Computing | <= 1 month | Same | No | video + | 28 | 31 | 2 | 0.09 | 0.26 |
| Calimeris | 2015 | USA | University | X groups | Business | semester | Same | No | video | 31 | 35 | 3 | 0.32 | 0.25 |
| Casasola | 2017 | USA | University | X groups | Science | semester | Different | Yes | Lect+Vid | 166 | 129 | 2 | 0.45 | 0.12 |
| Caviglia-Harris | 2016 | USA | University | X groups | Business | semester | Same | No | Lect+Vid | 55 | 58 | 2 | 0.86 | 0.20 |
| Chao et al. | 2015 | Taiwan | School | X groups | Engineering | <= 1 month | Same | No | video | 45 | 46 | 1 | 0.78 | 0.22 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Christiansen | 2014 | USA | University | X groups | Science | semester | Same | No | Ppt+Vid | 6 | 7 | 2 | 0.84 | 0.60 |
| Cilli-Turner | 2015 | USA | University | X groups | Humanities | semester | Same | Yes | Lect+Vid | 78 | 56 | 2 | 0.99 | 0.19 |
| Clark | 2015 | USA | School | X groups | Math | semester | Same | Yes | Lect+Vid | 21 | 21 | 1 | 0.07 | 0.31 |
| Cotta et al. | 2015 | USA | University | X groups | Science | semester | Same | No | video | 151 | 165 | 2 | 0.35 | 0.11 |
| Crimmins | 2017 | USA | University | X groups | Science | semester | Same | Yes | video + | 395 | 371 | 3 | 0.55 | 0.07 |
| Davies, Dean, & Ball | 2013 | USA | University | Pre-post | Computing | <= 1 month | Same | No | Lect+Vid | 53 | 65 | 1 | 0.22 | 0.19 |
| Day | 2018 | USA | University | Pre-post | Medicine | semester | Same | No | video | 112 | 105 | 1 | 0.07 | 0.14 |
| Day & Foley | 2006 | USA | University | X groups | Computing | semester | Same | No | Lect+Vid | 28 | 18 | 6 | 1.50 | 0.35 |
| Delialioglu & Yildirim | 2008 | Turkey | University | X groups | Computing | semester | Same | No | online | 26 | 24 | 1 | 0.43 | 0.29 |
| DeSantis et al. | 2015 | USA | School | X groups | Math | <= 1 month | Same | No | Lect+Vid | 26 | 21 | 1 | -0.12 | 0.29 |
| Dove & Dove | 2015 | USA | University | X groups | Math | semester | Same | Yes | video | 35 | 27 | 1 | 0.76 | 0.27 |
| Eichler & Peeples | 2016 | USA | University | X groups | Science | semester | Same | Yes | video + | 452 | 294 | 4 | 0.17 | 0.07 |
| Ernst | 2008 | USA | University | Pre-post | Computing | semester | Same | No | Lect+Vid | 23 | 23 | 1 | 0.25 | 0.30 |
| Ferreri & O'Conner | 2013 | USA | University | Pre-post | Science | semester | Same | No | Assignments | 89 | 146 | 1 | 0.67 | 0.14 |
| Findlay-Thompson et al. | 2014 | Canada | University | X groups | Business | semester | Same | No | Lect+Vid | 30 | 42 | 1 | 0.09 | 0.24 |
| Flynn | 2015 | Canada | University | X groups | Science | semester | Same | Yes | video + | 398 | 2872 | 2 | 0.29 | 0.06 |
| Foldnes | 2016 | Norway | University | Pre-post | Business | semester | Different | Yes | Lect+Vid | 51 | 1506 | 3 | 0.93 | 0.14 |
| Fraga & Harmon | 2014 | USA | University | X groups | Humanities | semester | Same | No | online | 25 | 26 | 1 | 0.35 | 0.28 |
| Galway | 2014 | Canada | University | X groups | Engineering | semester | Different | Yes | online | 11 | 22 | 1 | 0.43 | 0.37 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Geist et al. | 2015 | USA | University | X groups | Nursing | semester | Same | Yes | Assignments | 46 | 40 | 4 | 1.14 | 0.24 |
| Gillespie (a) | 2016 | USA | University | X groups | Medicine | year | Same | Yes | video | 30 | 40 | 2 | -0.25 | 0.25 |
| Gillespie (b) | 2016 | USA | University | X groups | Medicine | year | Different | Yes | Lect+Vid | 22 | 14 | 8 | 0.48 | 0.35 |
| Giuliano & Moser | 2016 | USA | University | Pre-post | Science | semester | Same | No | video | 94 | 99 | 1 | 0.74 | 0.15 |
| González-Gómez et al. | 2016 | Spain | University | X groups | Science | semester | Same | No | online | 52 | 51 | 3 | 1.09 | 0.21 |
| Gross et al. | 2015 | USA | University | X groups | Science | semester | Same | No | Lect+Vid | 244 | 237 | 3 | 0.91 | 0.10 |
| Guerrero, Baumgartel et al. | 2013 | USA | University | X groups | Math | semester | Same | No | video | 29 | 15 | 1 | 0.53 | 0.32 |
| Guerrero, Beal et al. | 2015 | USA | University | X groups | Math | semester | Same | No | online | 37 | 31 | 4 | -0.10 | 0.24 |
| Gundlach et al. | 2015 | USA | University | X groups | Math | semester | Same | No | online | 56 | 330 | 5 | -0.26 | 0.14 |
| Guy & Marquis | 2016 | USA | University | X groups | Business | semester | Same | No | video + | | | 1 | 0.36 | 0.10 |
| Harrington et al. | 2015 | USA | University | X groups | Nursing | semester | Same | Yes | video | 41 | 41 | 12 | -0.02 | 0.22 |
| Harrison et al. | 2016 | USA | University | X groups | Engineering | semester | Same | No | Lect+Vid | 24 | 34 | 4 | -0.37 | 0.27 |
| Haughton & Kelly | 2015 | USA | University | X groups | Business | semester | Different | No | Lect+Vid | 46 | 221 | 2 | 0.32 | 0.14 |
| He et al. | 2016 | USA | University | X groups | Science | semester | Same | Yes | video + | 334 | 343 | 3 | 0.09 | 0.08 |
| Heuett | 2017 | USA | University | X groups | Math | semester | Same | No | Lect+Vid | 52 | 30 | 3 | 0.35 | 0.23 |
| Heyborne & Perrett | 2016 | USA | University | X groups | Science | semester | Same | Yes | Ppt+Vid | 68 | 71 | 5 | 0.43 | 0.17 |
| Hibbard et al. | 2015 | USA | University | X groups | Science | semester | Same | No | online | 171 | 122 | 1 | 0.40 | 0.12 |
| Hotle & Garrow | 2016 | USA | University | X groups | Engineering | semester | Same | Yes | video | 23 | 36 | 1 | -0.03 | 0.27 |
| Huang & Hong | 2016 | Taiwan | School | X groups | Humanities | <= 1 month | Different | Yes | video | 40 | 37 | 2 | 0.64 | 0.24 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hudson et al. | 2015 | USA | University | X groups | Science | semester | Different | Yes | Assignments | 3869 | 207 | 1 | -0.27 | 0.07 |
| Hughes et al. | 2016 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | video | 127 | 121 | 2 | 0.12 | 0.13 |
| Hung | 2015 | Taiwan | University | X groups | Humanities | <= 1 month | Different | No | video | 26 | 25 | 6 | 0.74 | 0.30 |
| Ibrahim | 2018 | USA | University | X groups | Education | semester | Same | No | video | 137 | 43 | 2 | 0.00 | 0.18 |
| Ilic et al. | 2015 | Australia | University | X groups | Medicine | semester | Different | Yes | online | 73 | 74 | 3 | 0.16 | 0.17 |
| Jeavons et al. | 2013 | Australia | University | X groups | Nursing | <= 1 month | Different | Yes | online | 28 | 107 | 2 | -0.29 | 0.21 |
| Jensen | 2011 | USA | University | X groups | Science | <= 1 month | Same | No | Powerpoint | 115 | 115 | 4 | 0.32 | 0.19 |
| Jensen et al. | 2015 | Brazil | University | X groups | Science | semester | Same | Yes | Assignments | 55 | 53 | 6 | 0.04 | 0.13 |
| Joyce | 2015 | USA | University | X groups | Business | semester | Same | No | video | 331 | 325 | 1 | -0.20 | 0.08 |
| Kakosimos | 2015 | Qatar | University | X groups | Engineering | semester | Different | Yes | video + | 20 | 15 | 4 | 0.36 | 0.36 |
| Kang | 2015 | Korea | University | X groups | Humanities | semester | Different | Yes | video | 24 | 42 | 3 | 0.18 | 0.26 |
| Kennedy et al. | 2015 | USA | University | X groups | Math | semester | Same | No | video | 87 | 86 | 8 | -0.04 | 0.16 |
| Kim et al. | 2014 | USA | University | Pre-post | Engineering | semester | Same | No | Lect+Vid | 168 | 141 | 4 | 0.40 | 0.12 |
| Kirvan et al. | 2015 | USA | School | X groups | Math | <= 1 month | Same | No | video | 25 | 29 | 3 | 0.27 | 0.27 |
| Kiviniemi | 2014 | USA | University | X groups | Medicine | semester | Same | Yes | online | 38 | 28 | 8 | 0.26 | 0.25 |
| Koo et al. | 2016 | USA | University | Pre-post | Science | semester | Same | No | video | 100 | 100 | 1 | 0.63 | 0.14 |
| Konstan et al., | 2015 | USA | University | Pre-post | Computing | semester | Same | yes | online | 252 | 10 | 1 | 0.40 | 0.32 |
| Köroğlu & Çakır | 2017 | Turkey | University | X groups | Humanities | <= 1 month | Same | No | video | 23 | 25 | 1 | 2.06 | 0.36 |
| Kosovich | 2016 | USA | University | X groups | Business | semester | Same | Yes | video | 133 | 116 | 4 | 0.16 | 0.13 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kostaris | 2016 | Greece | School | X groups | Computing | semester | Same | No | video | 23 | 23 | 6 | 1.20 | 0.33 |
| Krueger & Storlie | 2015 | USA | University | X groups | Business | semester | Same | Yes | Assignments | 30 | 30 | 8 | 0.00 | 0.26 |
| Kurt | 2017 | Turkey | University | X groups | Education | semester | Same | No | online | 32 | 30 | 1 | 0.92 | 0.27 |
| Lancaster & McQueeney | 2011 | USA | University | X groups | Science | semester | Same | Yes | Powerpoint | 13 | 17 | 4 | 0.24 | 0.37 |
| Lancaster, McQueen et al. | 2011 | USA | University | X groups | Science | semester | Same | No | online | 13 | 17 | 1 | 0.05 | 0.37 |
| Larson & Yamamoto | 2013 | USA | University | X groups | Computing | semester | Same | No | video | 70 | 55 | 1 | -0.20 | 0.18 |
| Lee & Liu | 2016 | USA | University | X groups | Humanities | semester | Same | Yes | video + | 36 | 56 | 10 | 0.18 | 0.21 |
| Leicht et al. | 2012 | USA | University | Pre-post | Engineering | <= 1 month | Same | No | video | 95 | 104 | 2 | 0.16 | 0.14 |
| Leo & Puzio | 2016 | USA | School | X groups | Science | semester | Same | No | video | 40 | 29 | 3 | 0.29 | 0.25 |
| Lewis | 2018 | USA | School | X groups | Medicine | semester | Different | Yes | Lect+Vid | 98 | 102 | 1 | 0.00 | 0.14 |
| Lewis & Harrison | 2012 | USA | University | X groups | Humanities | semester | Same | Yes | video + | 32 | 28 | 7 | 0.67 | 0.27 |
| Li et al. | 2015 | China | University | X groups | Science | semester | Same | No | video | 61 | 60 | 1 | 1.96 | 0.22 |
| Liebert | 2015 | USA | University | Pre-post | Medicine | <= 1 month | Different | No | Assignments | 89 | 92 | 1 | -0.12 | 0.15 |
| Lin & Hwang | 2017 | China | University | X groups | Medicine | <= 1 month | Same | No | video + | 22 | 22 | 2 | 0.15 | 0.30 |
| Lin et al. | 2018 | Taiwan | University | X groups | Humanities | semester | Same | Yes | video | 33 | 16 | 3 | 1.15 | 0.33 |
| Lindeman et al. | 2015 | USA | University | X groups | Medicine | <= 1 month | Same | No | online | 129 | 108 | 10 | 0.10 | 0.20 |
| Lockman et al. | 2017 | USA | University | Pre-post | Science | semester | Same | Yes | video | 162 | 156 | 2 | 0.89 | 0.12 |
| Love et al. | 2014 | USA | University | Pre-post | Math | semester | Same | Yes | Lect+Vid | 27 | 28 | 1 | 0.15 | 0.27 |
| Mason et al. | 2013 | USA | University | Pre-post | Engineering | semester | Same | No | video | 20 | 20 | 18 | 0.44 | 0.33 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| McGivney-Burelle & Xue | 2013 | USA | University | X groups | Math | semester | Same | Yes | video | 31 | 29 | 2 | 0.23 | 0.26 |
| McLaughlin et al. | 2014 | USA | University | Pre-post | Science | semester | Same | Yes | video | 153 | 162 | 1 | 0.39 | 0.11 |
| Mennella | 2016 | USA | University | X groups | Science | semester | Same | No | Lect+Vid | 15 | 25 | 6 | 0.71 | 0.34 |
| Milic et al. | 2016 | Serbia | University | X groups | Math | semester | Same | No | online | 87 | 353 | 2 | 0.36 | 0.12 |
| Missildine et al. | 2013 | USA | University | X groups | Nursing | semester | Same | Yes | Lect+Vid | 196 | 196 | 1 | 0.44 | 0.10 |
| Moffett & Mill | 2014 | UK | University | X groups | Medicine | semester | Same | Yes | Ppt+Vid | 64 | 133 | 7 | -0.45 | 0.15 |
| Mohamad & Alwani | 2016 | Malaysia | University | X groups | Math | semester | Same | No | video | 131 | 130 | 1 | -0.19 | 0.12 |
| Moravec et al. | 2010 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | video | 319 | 423 | 5 | 1.82 | 0.09 |
| Morgan et al. | 2015 | USA | University | Pre-post | Medicine | <= 1 month | Same | No | video | 81 | | 1 | 0.00 | 0.22 |
| Mortensen & Nicholson | 2015 | USA | University | X groups | Science | semester | Same | Yes | online | 130 | 173 | 3 | 0.41 | 0.12 |
| Munson & Pierce | 2015 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | video | 113 | 125 | 2 | 0.25 | 0.14 |
| Murphy et al. | 2016 | USA | University | X groups | Math | semester | Different | Yes | video + | 32 | 34 | 7 | 1.01 | 0.28 |
| Murray et al. | 2014 | USA | University | Pre-post | Science | semester | Same | No | online | 30 | 23 | 1 | 0.58 | 0.28 |
| Muzyk et al. | 2015 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | Lect+Vid | 104 | 101 | 5 | -0.12 | 0.14 |
| Nielsen et al. | 2018 | USA | University | X groups | Math | semester | Same | No | Assignments | 136 | 229 | 2 | 0.19 | 0.11 |
| O'Connor et al. | 2016 | USA | University | Pre-post | Science | <= 1 month | Same | No | online | 72 | 103 | 1 | 0.54 | 0.16 |
| Ojennus | 2016 | USA | University | X groups | Science | semester | Same | No | Lect+Vid | 25 | 29 | 6 | 0.05 | 0.27 |
| Oki | 2016 | USA | University | X groups | Humanities | semester | Same | No | Powerpoint | 9 | 8 | 1 | -0.02 | 0.49 |
| Olakanmi | 2017 | Nigeria | School | X groups | Science | <= 1 month | Same | No | Lect+Vid | 33 | 33 | 2 | 1.05 | 0.27 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Olitsky & Cosgrove | 2016 | USA | University | X groups | Business | semester | Same | No | video | 63 | 76 | 4 | 0.31 | 0.17 |
| Overmyer | 2015 | USA | University | X groups | Math | semester | Different | No | video | 28 | 30 | 1 | -0.01 | 0.26 |
| Özpinar et al. | 2016 | Turkey | University | X groups | Math | <= 1 month | Same | No | video | 25 | 25 | 1 | 0.66 | 0.29 |
| Persky & Pollack | 2010 | USA | University | Pre-post | Science | semester | Different | No | online | 265 | 107 | 3 | -0.05 | 0.11 |
| Peterson | 2016 | USA | University | X groups | Science | semester | Same | No | Powerpoint | 24 | 19 | 1 | 0.72 | 0.32 |
| Pierce & Fox | 2012 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | video + | 71 | 71 | 1 | 0.85 | 0.18 |
| Ryan & Reid | 2015 | USA | University | X groups | Science | semester | Same | No | video | 106 | 187 | 1 | 0.00 | 0.12 |
| Sahin et al. | 2014 | USA | University | X groups | Math | semester | Different | No | video | 96 | 96 | 1 | 0.04 | 0.13 |
| Sajid et al. | 2016 | Saudi Arabia | University | Pre-post | Medicine | <= 1 month | Same | No | Powerpoint | 154 | 155 | 2 | 0.50 | 0.15 |
| Salimi & Yousefzadeh | 2015 | Iran | School | X groups | Humanities | <= 1 month | Same | No | video | 25 | 25 | 5 | 0.07 | 0.11 |
| Sayeski et al. | 2015 | USA | University | X groups | Education | <= 1 month | Different | Yes | online | 38 | 38 | 6 | 1.36 | 0.32 |
| Schroeder et al. | 2015 | USA | University | X groups | Math | semester | Different | Yes | video | 63 | 49 | 3 | 0.31 | 0.23 |
| Schultz et al. | 2014 | USA | School | Pre-post | Science | semester | Same | Yes | Lect+Vid | 29 | 32 | 8 | 0.43 | 0.19 |
| Şengel | 2016 | Turkey | University | Pre-post | Computing | semester | Same | Yes | Lect+Vid | 41 | 55 | 1 | 0.80 | 0.27 |
| Seyedmonir et al. | 2014 | USA | University | Pre-post | Science | semester | Same | No | Powerpoint | 88 | 89 | 3 | 0.13 | 0.15 |
| Sezer | 2017 | Turkey | School | X groups | Science | <= 1 month | Same | No | online | 35 | 33 | 1 | 0.92 | 0.26 |
| Shatto et al. | 2017 | USA | University | X groups | Nursing | semester | Same | No | video + | 26 | 21 | 2 | 0.39 | 0.30 |
| Soltanpour & Valizadeh | 2018 | Iran | University | Pre-post | Humanities | <= 1 month | Same | No | video | 28 | 27 | 2 | 1.95 | 0.33 |
| Stelzer et al. | 2010 | USA | University | Pre-post | Science | semester | Same | No | online | 24 | 24 | 1 | 0.19 | 0.29 |

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| Stewart et al. | 2013 | USA | University | Pre-post | Science | <= 1 month | Same | Yes | online | 71 | 65 | 1 | -0.41 | 0.17 |
| Street et al. | 2015 | USA | University | Pre-post | Medicine | <= 1 month | Same | Yes | video | 180 | 177 | 1 | 0.21 | 0.11 |
| Suda et al. | 2014 | USA | University | X groups | Science | semester | Same | Yes | video | 143 | 176 | 6 | 0.03 | 0.11 |
| Swoboda & Feiler | 2016 | USA | University | Pre-post | Business | semester | Different | Yes | video + | 150 | 0 | 1 | 1.26 | 0.18 |
| Talley & Scherer | 2013 | USA | University | X groups | Science | semester | Same | Yes | video | 41 | 40 | 1 | 0.49 | 0.23 |
| Tang et al. | 2017 | China | University | X groups | Medicine | semester | Same | Yes | video + | 48 | 47 | 2 | 0.84 | 0.22 |
| Touchton | 2015 | USA | University | X groups | Humanities | semester | Same | No | video | 43 | 40 | 1 | 0.10 | 0.22 |
| Tsai et al. | 2016 | Taiwan | University | X groups | Computing | semester | Same | Yes | video + | 47 | 39 | 2 | 0.24 | 0.22 |
| Tugun et al. | 2017 | Cyprus | School | Pre-post | Engineering | <= 1 month | Same | Yes | video | 28 | 24 | 1 | 1.87 | 0.33 |
| Tune et al. | 2013 | USA | University | X groups | Medicine | semester | Same | Yes | Lect+Vid | 13 | 14 | 1 | 0.77 | 0.40 |
| Turan & Goktas | 2016 | Turkey | University | X groups | Computing | semester | Same | No | Lect+Vid | 58 | 58 | 1 | 0.94 | 0.20 |
| Turner et al. | 2017 | USA | University | Pre-post | Engineering | semester | Same | Yes | video | 11 | 10 | 27 | -0.17 | 0.49 |
| Tusa et al. | 2018 | Finland | University | X groups | Medicine | <= 1 month | Same | No | video | 39 | 40 | 8 | 0.75 | 0.24 |
| Ugwoke et al. | 2018 | Nigeria | University | X groups | Business | semester | Different | Yes | video | 95 | 73 | 1 | 2.05 | 0.19 |
| Van Sickle | 2015 | USA | University | X groups | Math | semester | Different | No | video | 58 | 54 | 1 | 0.44 | 0.19 |
| Veeramani et al. | 2015 | India | University | Pre-post | Medicine | <= 1 month | Same | No | online | 130 | 65 | 1 | 1.44 | 0.20 |
| Velegol et al. | 2015 | USA | University | Pre-post | Engineering | semester | Same | Yes | Lect+Vid | 80 | 0 | 1 | 0.02 | 0.22 |
| Wasserman et al. | 2017 | USA | University | X groups | Math | <= 1 month | Different | No | video | 74 | 77 | 2 | 0.26 | 0.16 |
| Weaver & Sturtevant | 2015 | USA | University | X groups | Science | semester | Different | No | Lect+Vid | 178 | 226 | 5 | -0.05 | 0.15 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weinstein | 2015 | USA | University | Pre-post | Engineering | semester | Same | No | video + | 108 | 188 | 1 | 0.40 | 0.12 |
| Whitman Cobb | 2016 | USA | University | X groups | Humanities | semester | Same | No | video | 23 | 23 | 4 | -0.11 | 0.30 |
| Wilson | 2013 | USA | University | X groups | Math | semester | Different | Yes | online | 44 | 43 | 2 | 0.56 | 0.22 |
| Winquist & Carlson | 2014 | USA | University | X groups | Math | semester | Same | No | Assignments | 53 | 58 | 1 | 0.42 | 0.19 |
| Wong et al. | 2014 | USA | University | Pre-post | Science | semester | Different | Yes | video | 101 | 105 | 4 | 0.95 | 0.15 |
| Yelamarthi & Drake | 2015 | USA | University | Pre-post | Engineering | semester | Same | Yes | Lect+Vid | 17 | 24 | 4 | 0.63 | 0.33 |
| Yu & Wang | 2016 | China | University | X groups | Business | semester | Same | Yes | video + | 35 | 36 | 1 | 0.49 | 0.24 |
| Zainuddin et al. | 2019 | Malaysia | University | X groups | Humanities | semester | Same | No | video | 31 | 30 | 3 | 1.48 | 0.30 |
| Ziegelmeier & Topaz | 2015 | USA | University | X groups | Math | semester | Same | Yes | Lect+Vid | 22 | 23 | 4 | 0.20 | 0.30 |