



# Qualitative Evidence Synthesis and EPPI Reviewer

**Introductory Workshop  
University of Stavanger  
3 November 2023**



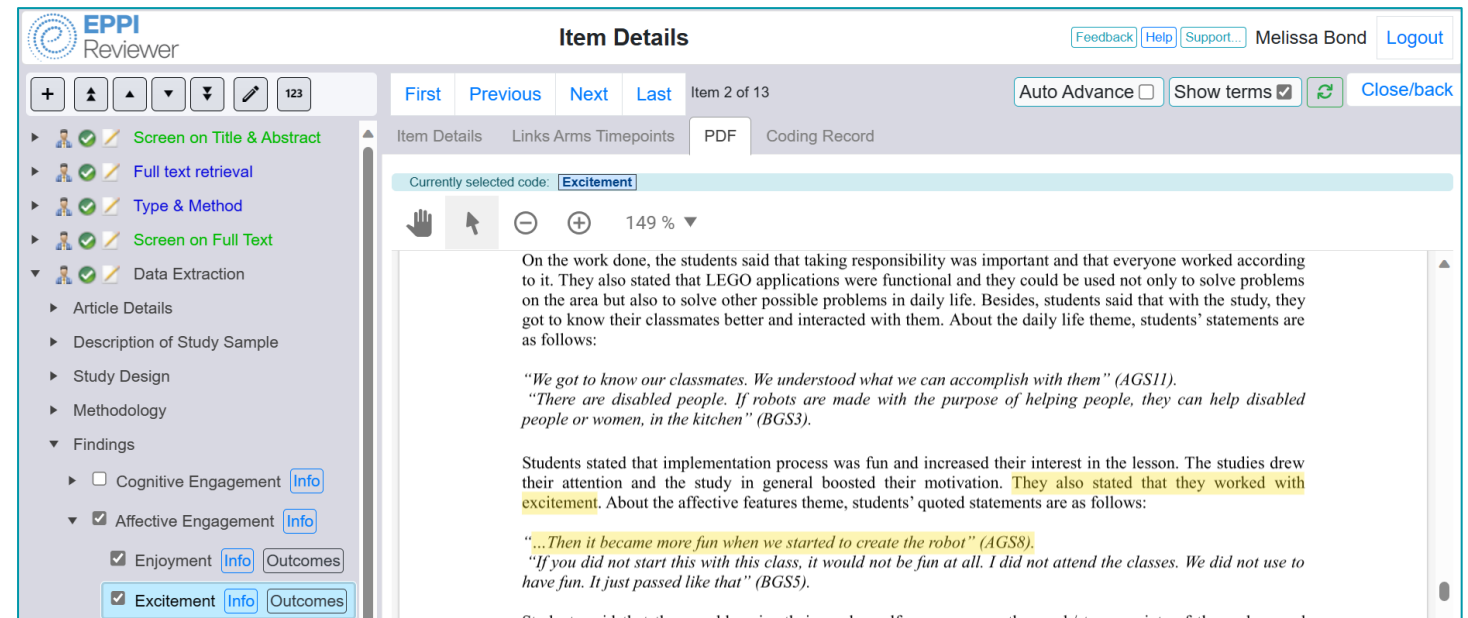
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 @misc\_nerd

 @EPPIReviewer

 @EPPIReviewer4

<https://tinyurl.com/hk6r8frr>



The screenshot displays the EPPI Reviewer software interface. On the left is a navigation pane with a tree view of item components: Screen on Title & Abstract, Full text retrieval, Type & Method, Screen on Full Text, and Data Extraction. Under Data Extraction, there are sub-items for Article Details, Description of Study Sample, Study Design, Methodology, and Findings. The Findings section is expanded to show 'Affective Engagement' with sub-items for 'Excitement' and 'Enjoyment'. The 'Excitement' item is selected, and its 'Outcomes' are visible. The main area shows 'Item Details' for 'Item 2 of 13'. It includes navigation buttons (First, Previous, Next, Last), a search bar for the currently selected code 'Excitement', and a zoom level of 149%. The text content shows a paragraph about student responsibility, followed by two quoted statements: "We got to know our classmates. We understood what we can accomplish with them" (AGS11) and "There are disabled people. If robots are made with the purpose of helping people, they can help disabled people or women, in the kitchen" (BGS3). Below this, another paragraph states that implementation was fun and increased interest, followed by two more quoted statements: "...Then it became more fun when we started to create the robot" (AGS8) and "If you did not start this with this class, it would not be fun at all. I did not attend the classes. We did not use to have fun. It just passed like that" (BGS5).

# Workshop schedule

1. Welcome & Introductions – Who am I? Who are you?
2. What are systematic reviews and why are they important?
3. What are the steps of conducting a systematic review?
4. Software to assist with conducting QES
5. EPPI Reviewer to conduct QES
  - Screening
  - Report generation
  - Data extraction
6. Synthesising qualitative evidence
7. Q&A session

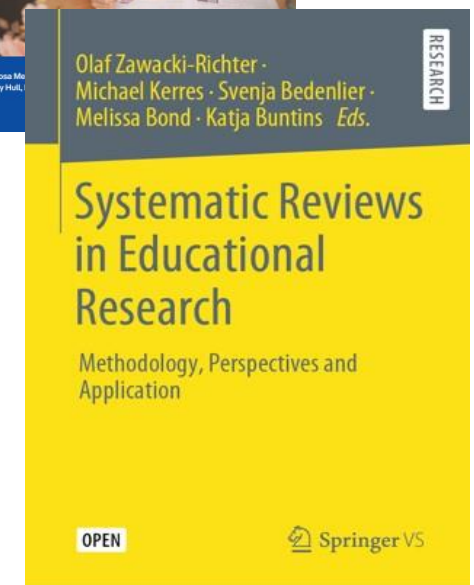
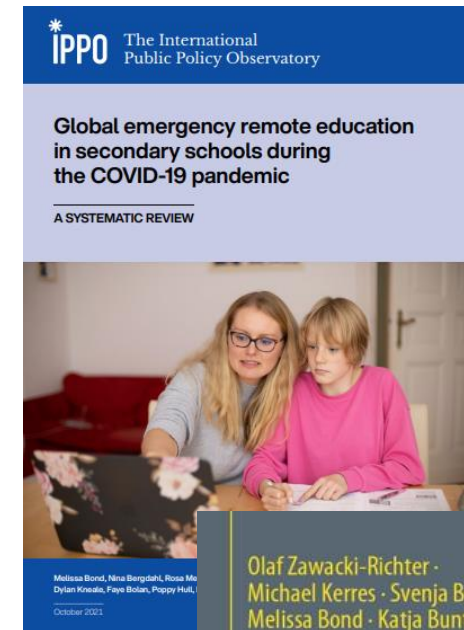


# Evidence synthesis

- [Student engagement and educational technology in higher education](#)
- [Student engagement and the flipped learning approach \(K-12\)](#)
- [Artificial Intelligence in Higher Education](#)
- [Systematic Reviews in Educational Research \(co editor\)](#)
- [COVID-19 studies on teaching and learning in K-12 \(rapid review\)](#)
- [COVID-19 studies on teaching and learning in higher education](#)
- [Teaching and learning in secondary schools during COVID-19](#)

## Current reviews include...

- Artificial intelligence in education – meta review
- Language bias & methodological approaches to evidence synthesis – meta review
- Mothers undertaking doctoral studies – systematic review
- Experiences of disabled pre-service teachers – scoping review
- Programming and computational thinking in K-12 – meta review





# Evidence synthesis

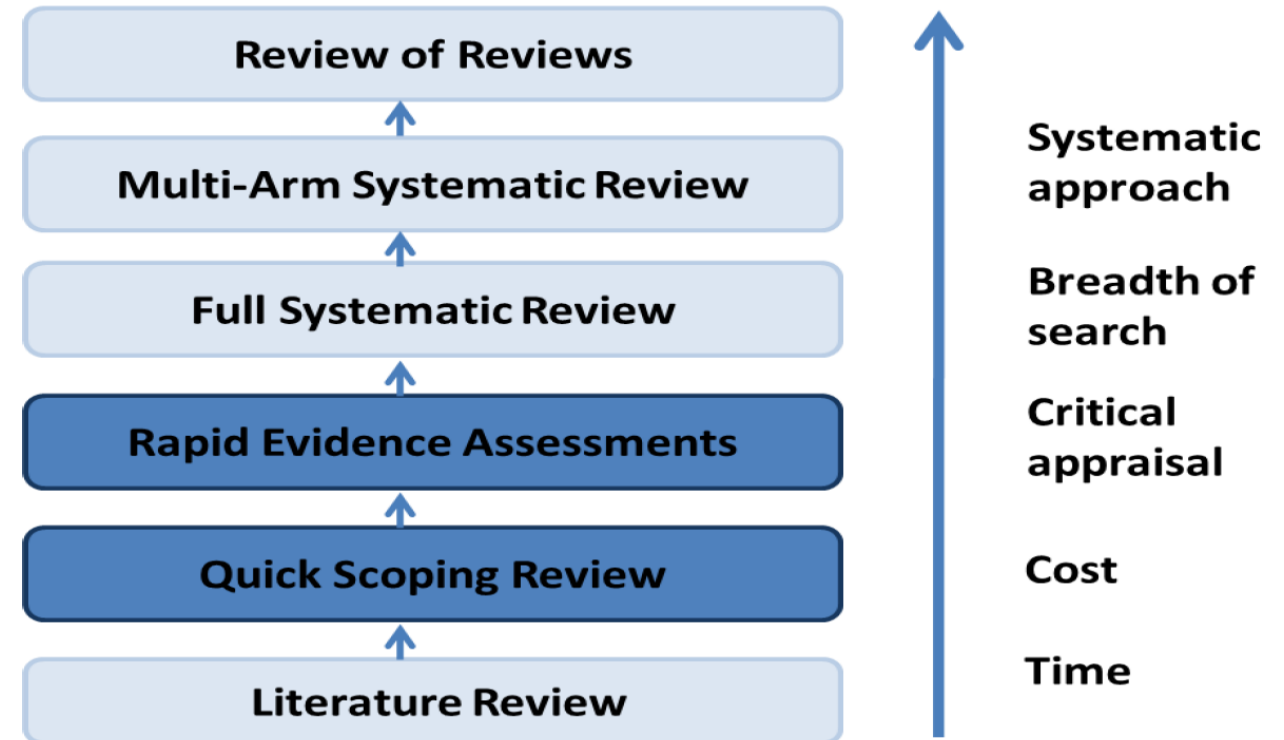
“Rather than looking at any study in isolation, we need to look at the body of evidence”<sup>1</sup>





# What are SRs and why are they important?

- "a review of research literature using systematic and explicit, accountable methods"<sup>1</sup>
  - Transparent and explicit
  - Replicable and updatable
  - Identify gaps, contradictions or (in)consistencies
  - Can help inform policy and practice



# Review Family

Traditional review family	Systematic review family	Review of review family	Rapid review family	Qualitative review family	Mixed methods review family	Purpose specific review family
<ul style="list-style-type: none"><li>• Critical review</li><li>• Integrative review</li><li>• Narrative review</li><li>• Narrative summary</li><li>• State of the art review</li></ul>	<ul style="list-style-type: none"><li>• Meta-analysis</li><li>• Systematic review</li></ul>	<ul style="list-style-type: none"><li>• Review of reviews</li><li>• Umbrella review</li></ul>	<ul style="list-style-type: none"><li>• Rapid reviews</li><li>• Rapid evidence assessment</li><li>• Rapid realist synthesis</li></ul>	<ul style="list-style-type: none"><li>• Qualitative evidence synthesis</li><li>• Qualitative meta-synthesis</li><li>• Meta-Ethnography</li></ul>	<ul style="list-style-type: none"><li>• Mixed methods synthesis</li><li>• Narrative synthesis</li></ul>	<ul style="list-style-type: none"><li>• Content analysis</li><li>• Scoping review</li><li>• Mapping review</li></ul>

# Which review?

## Scoping review

- “Preliminary assessment of potential size and scope of available research literature. Aims to identify nature and extent of research evidence” (Grant & Booth, 2009)
- No quality assessment
- Often one overarching question with sub-questions

What is the nature and scope of K-12 learning analytics research exploring student engagement?

1. What are the publication and study characteristics of K-12 LA research exploring student engagement?
2. How does engagement theory inform data analysis in K-12 LA research?
3. What methods and data sources have been used to examine student engagement in K-12?
4. What is the LA evidence to measure and support student engagement in K-12?



# Which review?

## Systematic review

- “Seeks to systematically search for, appraise and synthesise research evidence, often adhering to guidelines on the conduct of a review” (Grant & Booth, 2009)
- Must perform quality assessment

1. What are the characteristics (countries, educational settings, participants, subjects, length of studies) of and methods used in research on flipped learning and student engagement in K-12?
2. How is research on flipped learning in K-12 theoretically grounded?
3. Which indicators of student engagement and disengagement are affected as a result of using the flipped learning approach in K-12?
4. What technology has been used in K-12 applications of flipped learning research, and how is it linked to engagement?

# Benefits

Search and retrieval skills

Exposure to many research  
& writing styles

Broad understanding of a  
topic

Identification of research  
gaps

# Challenges

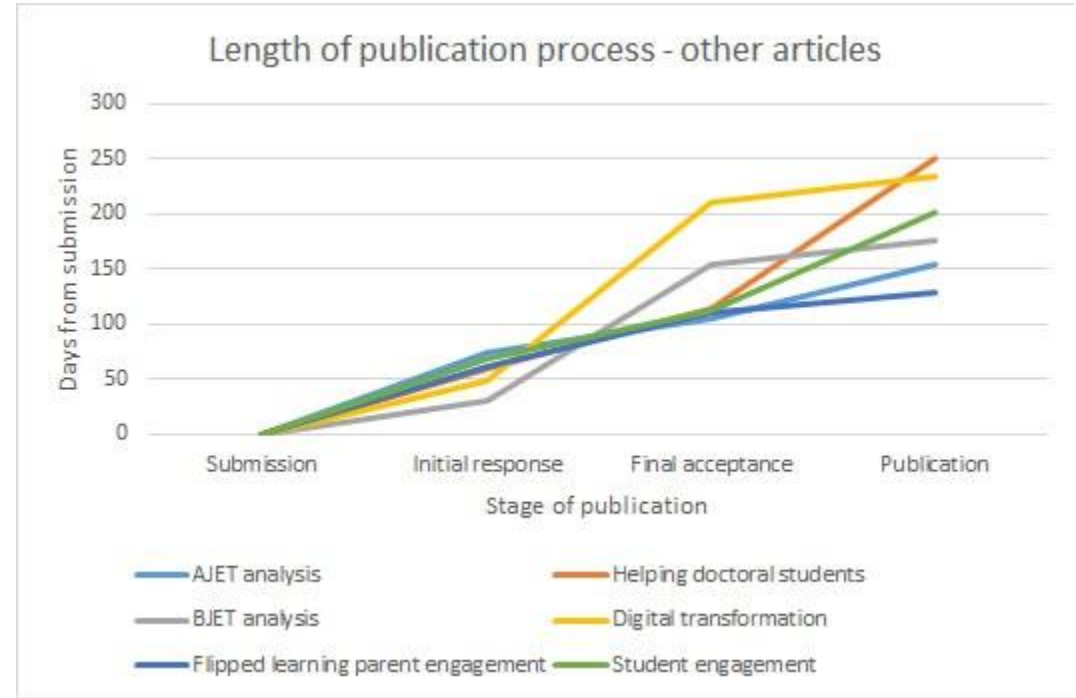
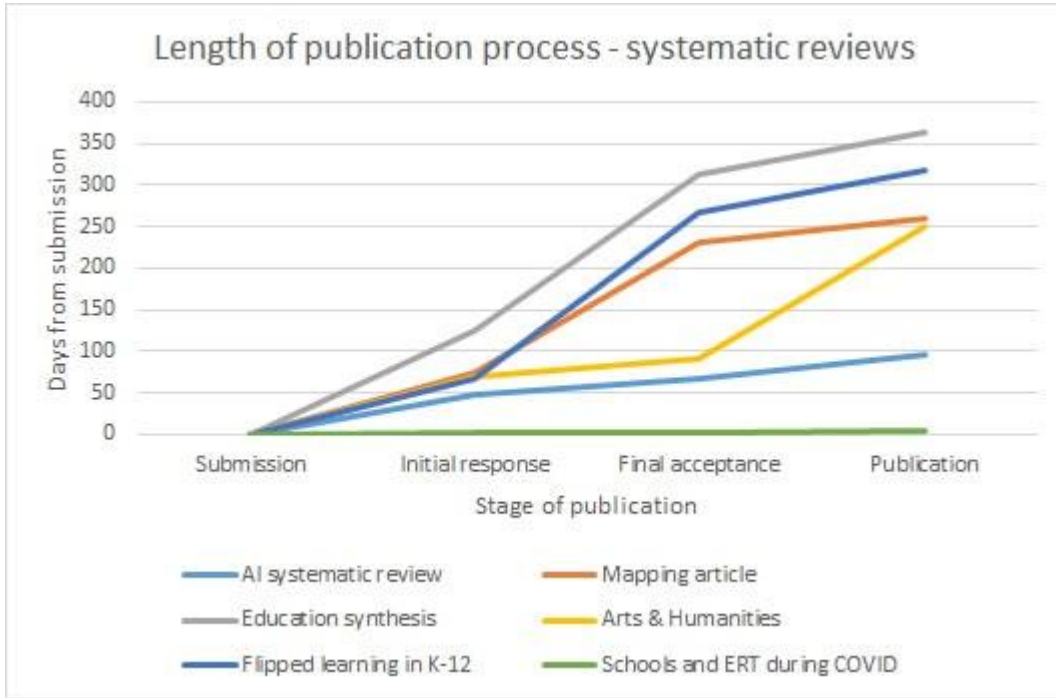
Understanding of method

Software

Scope and retrieval

Resources (time and people)

# Are systematic reviews ‘harder’ to get published? ([blog](#))



	Submission to initial response	Initial response to final acceptance	Final acceptance to publication	Entire process
<b>Minimum</b>	3 days (outlier)	1 day	1 day	4 days
<b>Maximum</b>	124 days	201 days	159 days	363 days
<b>Average</b>	64 days (76 removing outlier)	99 days (118 removing outlier)	52 days (63 removing outlier)	215 days (257 removing outlier)

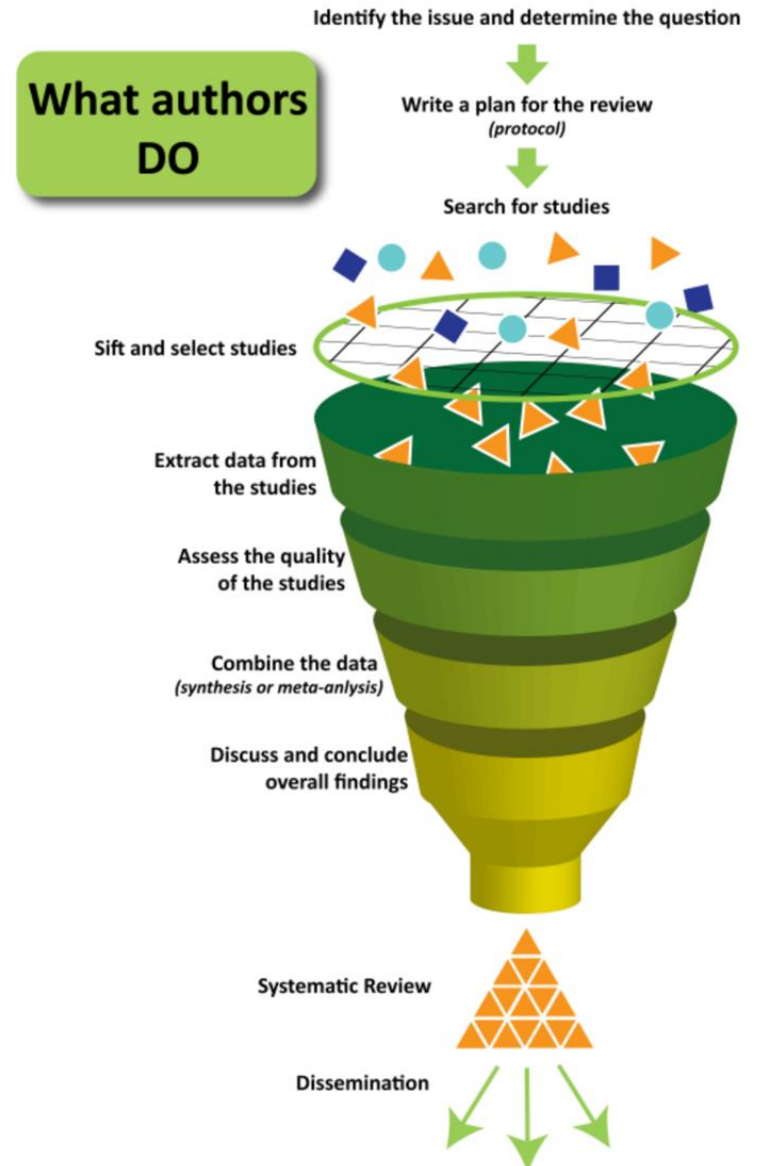
	Submission to initial response	Initial response to final acceptance	Final acceptance to publication	Entire process
<b>Minimum</b>	30 days	31 days	17 days	128 days
<b>Maximum</b>	75 days	163 days	136 days	251 days
<b>Average</b>	57 days	78 days	56 days	191 days

On average, 19 days longer to receive an initial response to a systematic review article, and 40 days longer to final acceptance, with the overall process taking 66 days longer on average for the entire publication process.



# Systematic review process

- Review question and conceptual framework



# Review questions

- Identify and clearly define the question/s your review will address.
  - PICOTS framework (see Boland et al., 2017):

# Review questions

- Identify and clearly define the question/s your review will address.
  - PICOTS framework (see Boland et al., 2017):
    - **P**opulation (e.g. the types of students)
    - **I**ntervention (e.g. the specific technology)
    - **C**omparator (e.g. compared to traditional classrooms)
    - **O**utcome/s (e.g. student engagement)
    - **T**iming (e.g. between 2012 and 2019)
    - **S**etting (e.g. Africa) OR **S**tudy design (e.g. RCTs)



## *Chen, Lui, & Martinelli (2017)*

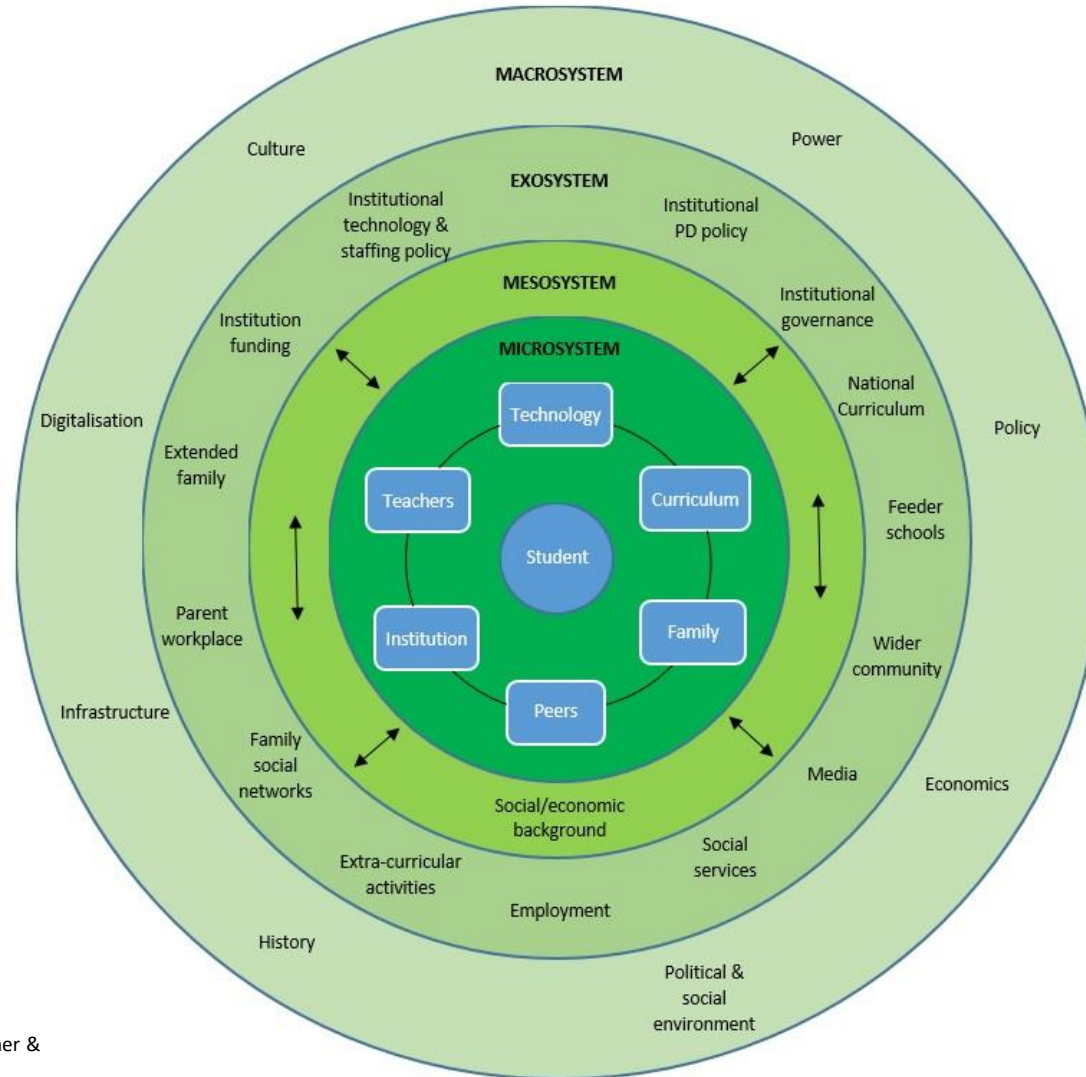
1. What is the scope of the studies that have been published on flipped classrooms in medical education?
2. What is the research quality of the studies examined?
3. What are the effects of the flipped classroom, as reported by controlled studies?
  - Population:
  - Intervention:
  - Comparator:
  - Outcome:

# Facilitating student engagement through the flipped learning approach in K-12

## Research questions

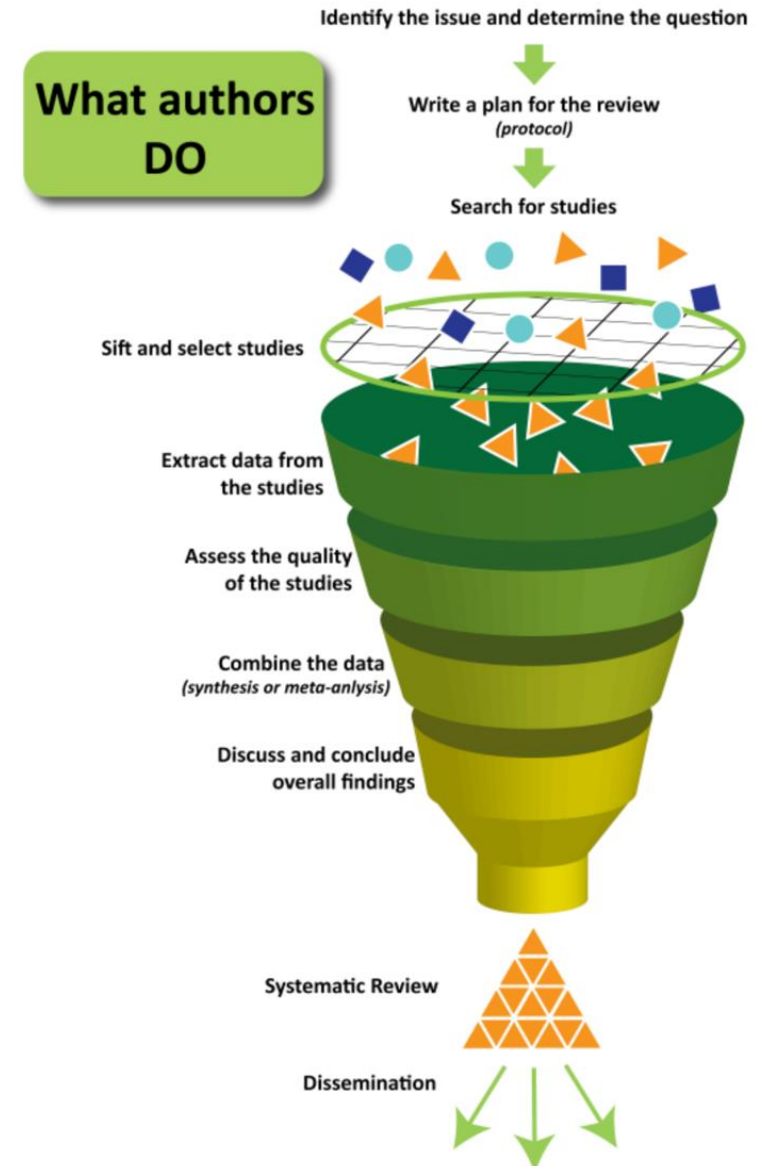
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# Bioecological Student Engagement Framework



# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria





# Developing search strings

- Your search string combines the key concepts of your question, in order to retrieve accurate results.
- Each database is different, so it's best to begin with a master list of terms.
- According to Bramer et al. (2018), it is important to:
  - Identify example articles that can answer your question.
  - Decide which key concepts address the different elements of the question.
  - Decide which elements should be used for the best results.
  - Choose an appropriate database to begin with (e.g. WoS).
  - Use the thesaurus feature of the database to identify synonyms.

# Brainstorming search terms

	Concept 1	Concept 2	Concept 3	Concept 4
<b>Key concepts</b>	Identify the key concept of your review question/s			
<b>Free text terms</b>	Brainstorm synonyms, acronyms/abbreviations, use a thesaurus or Google, look at words in titles/abstracts			
<b>Author keywords/ keywords plus</b>	Do a quick search in WoS using your concepts and write down relevant author keywords/keywords plus			

# Brainstorming search terms

Key concepts

Free text

Learning the basic concepts of programming and its foundations is considered as a challenging task for students to figure out. It is a challenging process for lecturers to learn these concepts, as well. The current literature on programming training abounds with the examples of a wide range of methods employed. Within this context, one of the prominent approaches in programming training is flipped classroom (FC) model. This article has sought to illuminate the effect of cognitive flexibility, problem-solving skills (PSS), and **flipped learning** readiness (FLR) levels on students' programming achievements in programming training through FC model. A total of 149 freshmen computer science students studying in a state university in Turkey were recruited for this study. In this study, designed as a relational screening model, a personal form, an achievement test, and three different data collection instruments were employed to collect data. For the data analysis, structural equation modeling, a multivariate statistical analysis technique, was used to reveal a model explaining and predicting the relations between programming achievement and different variables. The findings clearly indicate that FLR is the most important predictor of the programming achievements of students in FC. Other important predictors were found as PSS and cognitive flexibility. The research model demonstrates that an increase or development in FLR, PSS, and cognitive flexibility levels in FC will enhance the achievements of students in programming.

## Keywords

Author Keywords: programming training; App Inventor; flipped classroom; cognitive flexibility; problem-solving skills; university students

KeyWords Plus: COGNITIVE FLEXIBILITY; SELF-EFFICACY; LANGUAGE; STUDENTS; IMPACT; EDUCATION; DESIGN; PERSPECTIVES; ACHIEVEMENT; RELIABILITY

Cited References

[View Related Records](#)

## Use in Web of Science

Web of Science Usage Count

3

Last 180 Days

3

Since 2013

[Learn more](#)

This record is from:  
Web of Science Core Collection  
- Social Sciences Citation Index

Author keywords/  
keywords plus

Do a quick search in WoS using your concepts and write down relevant author keywords/keywords plus

# Brainstorming search terms

	Concept 1	Concept 2	Concept 3	Concept 4
<b>Key concepts</b>	Higher education students	Science, Engineering, Technology	African context	Mobile learning
<b>Free text terms</b>	<ul style="list-style-type: none"> <li>• higher education</li> <li>• Undergraduate</li> <li>• Postgraduate</li> <li>• university</li> </ul>	<ul style="list-style-type: none"> <li>• Science</li> <li>• Engineering</li> <li>• Technology</li> <li>• STEM</li> </ul>	<ul style="list-style-type: none"> <li>• Africa</li> </ul>	<ul style="list-style-type: none"> <li>• mobile learning</li> <li>• mLearning</li> <li>• m-learning</li> </ul>
<b>Author keywords/ keywords plus</b>				mobile devices

# Example search strings

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Topic	Search terms
Artificial intelligence	"artificial intelligence" OR "machine intelligence" OR "intelligent support" OR "intelligent virtual reality" OR "chat bot*" OR "machine learning" OR "automated tutor" OR "personal tutor*" OR "intelligent agent*" OR "expert system" OR "neural network" OR "natural language processing"
<b>AND</b>	
Education level	"higher education" OR college* OR undergrad* OR graduate OR postgrad* OR "K-12" OR kindergarten* OR "corporate training*" OR "professional training*" OR "primary school*" OR "middle school*" OR "high school*" OR "elementary school*" OR "vocational education" OR "adult education"
<b>AND</b>	
Learning setting	learn* OR student*

---



# Example search strings

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“emergency remote teaching” OR “student-centred remote teaching” OR “emergency remote education” OR “student-centered remote teaching” OR “COVID-19” OR “COVID19” OR pandemic OR “Corona virus” OR “online pivot”

AND

“K-12” OR kindergarten OR kindy OR “primary school” OR “middle school” OR “secondary school” OR school OR “high school” OR “reception” OR “R-12” OR “junior primary” OR “elementary school” OR “middle primary” OR “upper primary” OR “senior school”

NOT

“public health” OR nonpharmaceutical OR energy OR pharmaceutical OR pharmacy OR clinic\* OR pathology OR telemedicine OR inflammation OR patient\* OR neurolog\* OR telehealth OR surgery OR universit\* OR “higher education” OR postgrad\* OR undergrad\* OR “tertiary education” OR college

---

**Figure 3.** Search string

# Search strategy

1. Decide what types of studies and data will answer your question.

- Empirical research only?
- Grey literature?
- Both quantitative and qualitative data?

2. Which databases/platforms will you search in?\*

- Web of Science
- EBSCO Host (e.g. ERIC)
- Scopus
- PsycINFO
- ProQuest
- Teacher Reference Center
- Science Direct

\* Gusenbauer & Haddaway (2019)



## Search

- Use of previous reviews to construct search string
- ERIC, Web of Science, Scopus, ProQuest, PsycINFO, Teacher Reference Center, Education Source, Google Scholar

---

### Search terms

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class\* OR learn\*  
AND

"K-12" OR kindergarten OR kindy OR "primary school" OR "middle school" OR "secondary school" OR school OR "high school" OR "reception" OR "R-12" OR "junior primary" OR "elementary school" OR "middle primary" OR "upper primary" OR "senior school"

AND

"flip\* classroom" OR "flip\* learning" OR "inverted instruction" OR "flipping" OR "flipped" OR invert\*

NOT

"higher education" OR universit\* OR college OR undergrad\* OR graduate OR postgrad\* OR "corporate training" OR "professional training" OR "vocational education" OR "adult education" OR "medical school" OR "medical student" OR "dental education"

---

# Record keeping log

<b>Database searched</b>	<b>Web of Science</b>
<b>Search Set</b>	1 and 2
<b>Date of search</b>	10/7/2017
<b>Person searching</b>	Melissa Bond and Svenja Bedenlier
<b>Database settings</b>	Refined by: LANGUAGES: ( ENGLISH ) AND DOCUMENT TYPES: ( ARTICLE ) Timespan: 1995-2017. Indexes: SCI-EXPANDED, SSCI, A&HCI, ESCI.
<b>No. Of records obtained</b>	9,517
<b>Search string</b>	TS=(learner* or student*) AND TS=("higher education" OR universit* OR college* OR undergrad* OR graduate OR postgrad*) AND TS=("educational technolog*" or "learning technolog*" OR "digital learning" OR "digital education" OR "app" OR "digital technolog*" OR "digital media" OR "social media" OR "social network*" OR "social web" OR vodcast* OR podcast* OR "digital broadcasting" OR blog* OR weblog* OR "electronic publishing" OR microblog* OR "interactive whiteboard*" OR simulation* OR forum* OR "computer-mediated communication" OR "computer * network*" OR ePortfolio OR e-Portfolio OR eAssessment OR e-Assessment OR "computer-based testing" OR "computer-assisted testing" OR OER OR "open educational resource*" OR "open access" OR "open source*" OR "information and communication technolog*" OR "information technolog*" OR "social tagging" OR tablet* OR "handheld device*" OR "mobile device*" OR "smart*phone*" OR "electronic book*" OR eBook*) NOT TS=("K-12" OR kindergarten* OR "corporate training*" OR "professional training*" OR "primary school*" OR "middle school*" OR "vocational education" OR "adult education")

# Keep search information within software

**EPPI**  
Reviewer

## Import/Manage Sources

Manage Sources | Import Items | PubMed

Source Name

Date of search

Database (optional)

Search String (optional)

Description (optional)

**Source Stats:** [Report](#)

Items: <b>100</b>	Import Date: <b>26 Oct 2022</b>
Items coded: <b>95</b>	Is Deleted: <b>false</b>
Uploaded documents: <b>8</b>	Duplicates: <b>5</b>
Masters of duplicates: <b>28</b>	Outcomes: <b>0</b>
Deleted Items: <b>5</b>	Import Filter: <b>RIS</b>



# Search strategy

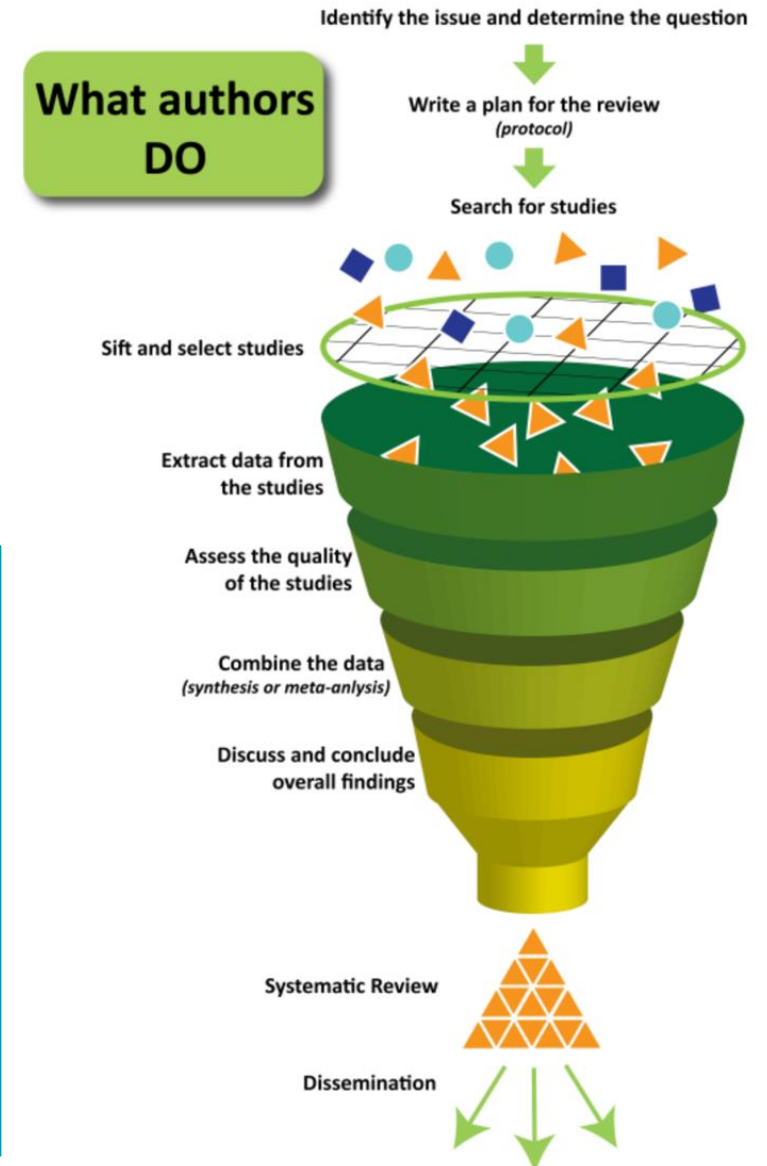
3. Decide on the study inclusion/exclusion criteria
  - For example:

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Published between 2012-2018	Published before 2012
English language	Not in English
K-12/schools focused	Not K-12
Flipped learning	Not flipped learning
Empirical, primary research	No student engagement
Indexed in ERIC, Web of Science, Scopus, ProQuest, PsycINFO, Teacher Reference Center, Education Source	No learning setting Description of a tool Not primary research

# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - ❑ Title & Abstract

The screenshot shows the EPPI Reviewer software interface. The main window displays 'Item Details' for a study. On the left, there is a sidebar with a list of exclusion criteria, such as 'EXCLUDE duplicate', 'EXCLUDE not in English', and 'EXCLUDE not flipped learning'. The 'INCLUDE on title & abstract' option is checked. The main content area shows the title 'A technology leader's role in initiating a flipped classroom in a high school math class' and an abstract. The abstract describes a mixed methods study on the effectiveness of a flipped classroom in a high school discrete mathematics course. The interface includes navigation buttons like 'First', 'Previous', 'Next', and 'Last', and a 'Close/back' button.



# Systematic review process

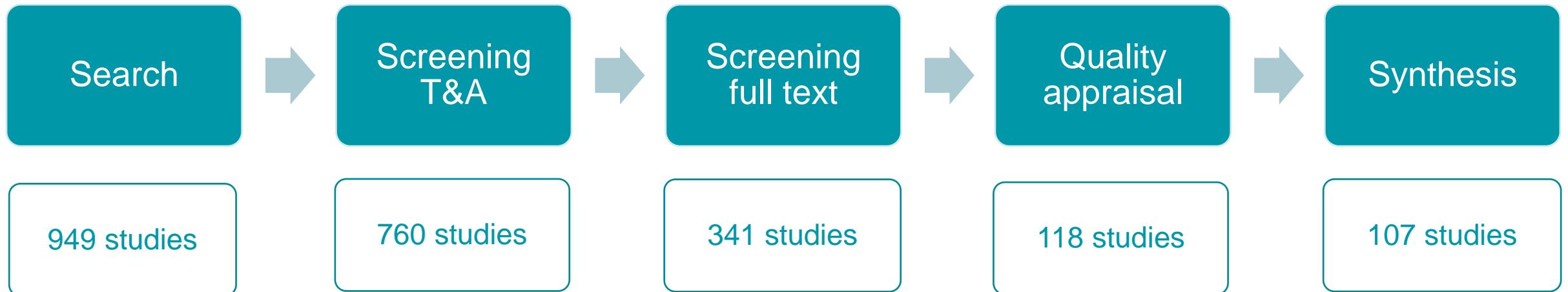
- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - Title & Abstract
- Study retrieval
- Screen on full text

The screenshot displays a software interface for managing search results. On the left, a sidebar contains a list of filters for screening studies. The 'Screen on Full Text' section is expanded, showing various exclusion and inclusion criteria. The 'INCLUDE on full text' option is checked. The main area shows the details of 'Item 3 of 100', including navigation buttons (First, Previous, Next, Last), a PDF icon, and a zoom level of 166%. The article preview shows the journal title 'TOJET: The Turkish Online Journal of Educational Technology – July 2017, volume 16 issue 3' and the title 'Flipped Learning for ESL Writing in a Sudanese School'. The authors listed are Limia Ali Mohamed Abdelrahman, Dorothy DeWitt, Norlidah Alias, and Mohd Nazri Abdul Rahman.

## Screening

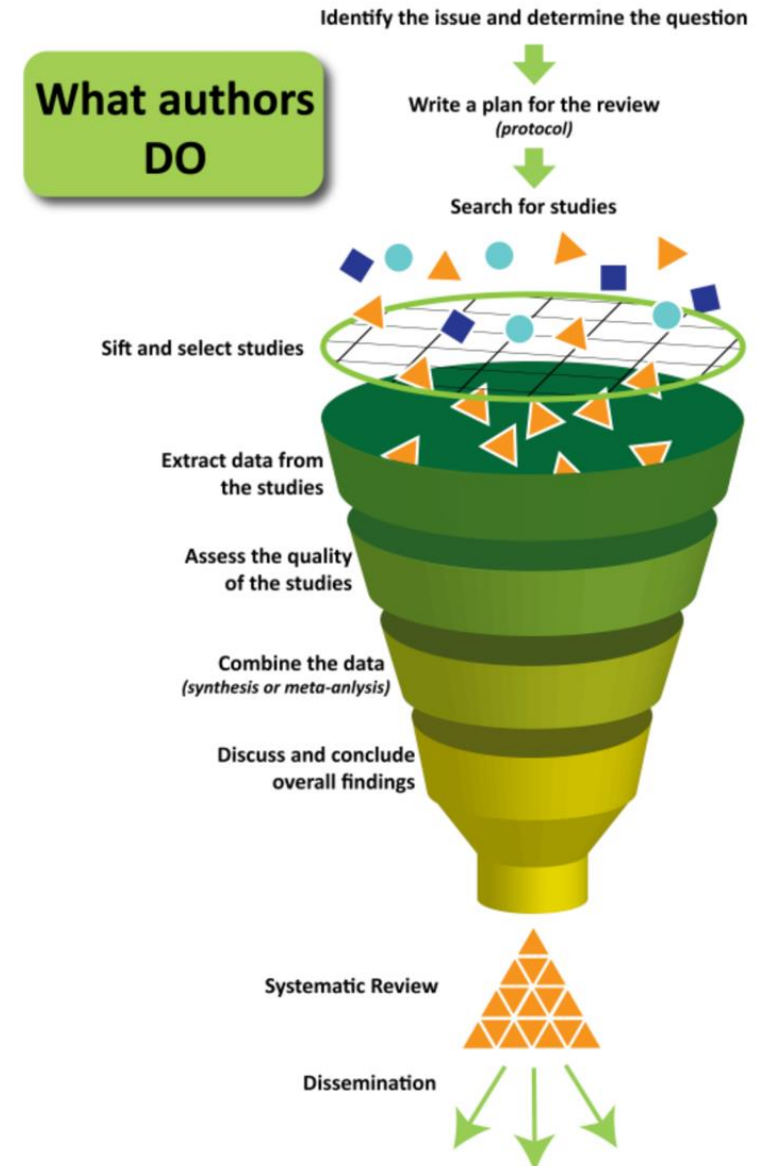
- EPPI Reviewer
- 760 screened on title and abstract, 341 on full text

Inclusion Criteria	Exclusion Criteria
Published between 2012-2018	Published before 2012
English language	Not in English
K-12/schools focused	Not K-12
Flipped learning	Not flipped learning
Empirical, primary research	No student engagement
Indexed in ERIC, Web of Science, Scopus, ProQuest, PsycINFO, Teacher Reference Center, Education Source	No learning setting
	Description of a tool
	Not primary research



# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - ❑ Title & Abstract
- Study retrieval
- Screen on full text
- Data Extraction





# Data extraction

1. Decide what data you want to extract
  - Look at previous SRs as to what should be included
  - Descriptive (e.g. study and participant characteristics)
  - Analytical (e.g. outcomes)
  - Keep it relevant
  - Conceptual framework
2. Decide how and where you will store extracted information
  - SR software does this for you
3. Highlight where in articles the data comes from (page number)

- ▼  Data Extraction
  - ▶ Article Details
  - ▼ Description of Study Sample
    - ▶ Country
    - ▶ Sample Focus
    - ▶ Number of participants
    - ▶ Sampling & recruitment
    - ▶ Participant consent
    - ▶ Age of participants
    - ▶ Year Level
    - ▶ Gender
    - ▶ Disability
    - ▶ School Type
    - ▶ Subject
    - ▶ Class Size
  - ▶ Study Design
  - ▶ Methodology
  - ▶ Findings

- ▼  Data Extraction
  - ▶ Article Details
  - ▶ Description of Study Sample
  - ▶ Study Design
  - ▶ Methodology
  - ▶ Findings

- ▼ Article Details
  - ▶ Publication
  - ▶ Keywords
  - ▶ Number of Authors
  - ▶ Gender
  - ▶ Position
  - ▶ Country
  - ▶ Example code
- ▼ Description of Study Sample
  - ▶ Country
  - ▶ Sample Focus
  - ▶ Number of participants
  - ▶ Sampling & recruitment
  - ▶ Participant consent
  - ▶ Age of participants
  - ▶ Year Level
  - ▶ Gender
  - ▶ Disability

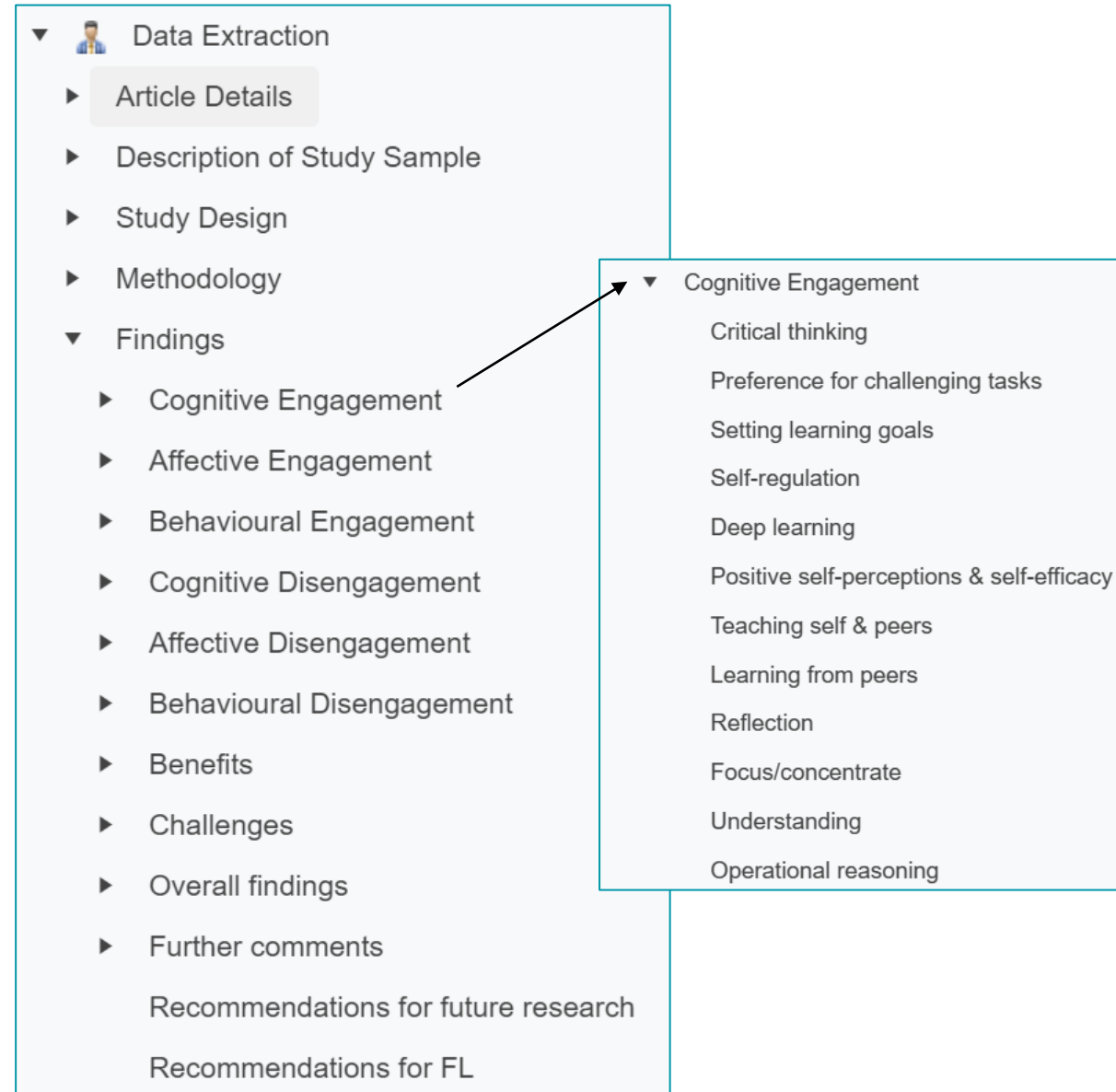
- ▼ Study Design
  - ▶ Research Question
  - ▶ Ed Tech Tools Used
  - ▶ Teaching Techniques
  - ▶ Intervention
  - ▶ Comparators
  - ▶ Length of study
  - ▶ Definition of SE
  - ▶ Theoretical Model
  - ▶ Definition of Flipped Learning

- ▼ Methodology
  - ▶ Approach
  - ▶ Data Collection
  - ▶ Data Analysis

- ▼ Definition of SE
  - Yes (specify) [Info](#)
  - Not given [Info](#)
- ▼ Theoretical Model
  - Yes (specify) [Info](#)
  - Not specified [Info](#)
  - Literature review on flipped learning generally [Info](#)
  - Literature review on blended learning [Info](#)
- ▼ Definition of Flipped Learning
  - Yes [Info](#)
  - No [Info](#)

Cognitive engagement	Affective engagement	Behavioural engagement
Purposeful	Enthusiasm	Effort
Integrating ideas	Sense of belonging	Attention/focus
Critical thinking	Satisfaction	Developing agency
Setting learning goals	Curiosity	Attendance
Self-regulation	Sees relevance	Attempting
Operational reasoning	Interest	Homework completion
Trying to understand	Sense of wellbeing	Positive conduct
Reflection	Vitality/zest	Action/initiation
Focus/concentration	Feeling appreciated	Confidence
Deep learning	Manages expectations	Participation/involvement
Learning from peers	Enjoyment	Asking teacher or peers for help
Justifying decisions	Pride	Assuming responsibility
Understanding	Excitement	Identifying opportunities/challenges
Doing extra to learn more	Desire to do well	Developing multidisciplinary skills
Follow through/care/thoroughness	Positive interactions with peers and teachers	Supporting and encouraging peers
Positive self-perceptions and self-efficacy	Sense of connectedness to school/university/within classroom	Interaction (peers, teacher, content, technology)
Preference for challenging tasks		
Teaching self and peers	Positive attitude about learning/values learning	Study habits/accessing course material
Use of sophisticated learning strategies		Time on task/staying on task/persistence
Positive perceptions of teacher support		

(Bond & Bedenlier, 2019)



## Item Details

+ ↑ ↓ ✎ 123

- ▶ Screen on Title & Abstract
- ▶ Full text retrieval
- ▶ Type & Method
- ▶ Screen on Full Text
- ▼ Data Extraction
  - ▶ Article Details
  - ▶ Description of Study Sample
  - ▶ Study Design
  - ▶ Methodology
  - ▼ Findings
    - ▶  Cognitive Engagement [Info](#)
    - ▼  Affective Engagement [Info](#)
      - Enjoyment [Info](#) [Outcomes](#)
      - Excitement [Info](#) [Outcomes](#)

Currently selected code: **Excitement**

🖐️ 🖱️ - + 149 % ▼

On the work done, the students said that taking responsibility was important and that everyone worked according to it. They also stated that LEGO applications were functional and they could be used not only to solve problems on the area but also to solve other possible problems in daily life. Besides, students said that with the study, they got to know their classmates better and interacted with them. About the daily life theme, students' statements are as follows:

*"We got to know our classmates. We understood what we can accomplish with them" (AGS11).*

*"There are disabled people. If robots are made with the purpose of helping people, they can help disabled people or women, in the kitchen" (BGS3).*

Students stated that implementation process was fun and increased their interest in the lesson. The studies drew their attention and the study in general boosted their motivation. **They also stated that they worked with excitement.** About the affective features theme, students' quoted statements are as follows:

*"...Then it became more fun when we started to create the robot" (AGS8).*

*"If you did not start this with this class, it would not be fun at all. I did not attend the classes. We did not use to have fun. It just passed like that" (BGS5).*

Students said that they could revise their works, self-assess, gauge the weak/strong points of themselves and

- ▶ Geographical focus of the review
- ▶ Focus of AI review
- ▶ Educational Context searched for
- ▶ Specific participant focus/setting
- ▶ Methodological questions
- ▼ Quality Assessment
  - ▼ Are there any research questions, aims or objectives?

Yes - use highlight tool Info

Partly Info

No Info
- ▶ Were inclusion/exclusion criteria provided in the method section?

(4) Some key challenging problems including interpretability, imbalanced data, especially the semantic learning trajectory modeling are proposed in this review.

In short, this study provides a systematic and comprehensive understanding of MOOC dropout prediction which helps researchers to capture the whole picture of the issue to be studied. Moreover, researchers can quickly understand the problem definition, general process and methods, and the corresponding references.

## 2. Methodology

### 2.1. Framework of dropout prediction

This review proposes a systematic framework for learners' dropout prediction using various machine learning methods. Due to the diversity of learning behaviors and large-scale data, the definition of dropout, the detailed process from the raw data to predictive results need to be represented clearly. Thus, we focus on the following research questions: (1) What kinds of factors may affect dropout and how to extract those kinds of features? (2) What kinds of machine learning methods have been applied for dropout prediction? (3) How to evaluate the performance of predictive results? (4) What are the key challenges in current studies? The overall framework for the above research questions is shown as in Figure 1.

Specifically, MOOC platforms record various types of raw learning data which enable the research to be carried out. Firstly, three definitions are summarized from most of the current studies. Secondly, the learning factors that influence course dropout have been explored and classified. The feature extraction methods for the two main types of learning data (clickstream data and text

**Coding report**

*Text entered via Info box*

- Quality Assessment
  - Are there any research questions, aims or objectives?
    - Yes - use highlight tool  
A systematic review for MOOC dropout prediction from the perspective of machine learning.pdf: Page 4: "(1) What kinds of factors may affect dropout and how to extract those kinds of features? (2) What kinds of machine learning methods have been applied for dropout prediction? (3) How to evaluate the performance of predictive results? (4) What are the key challenges in current studies?"
  - Were inclusion/exclusion criteria provided in the method section?
    - Partly
  - Are the publication years included defined?
    - Yes  
2012-2022

*Assigned text from PDF*



## Data Extraction (completed)

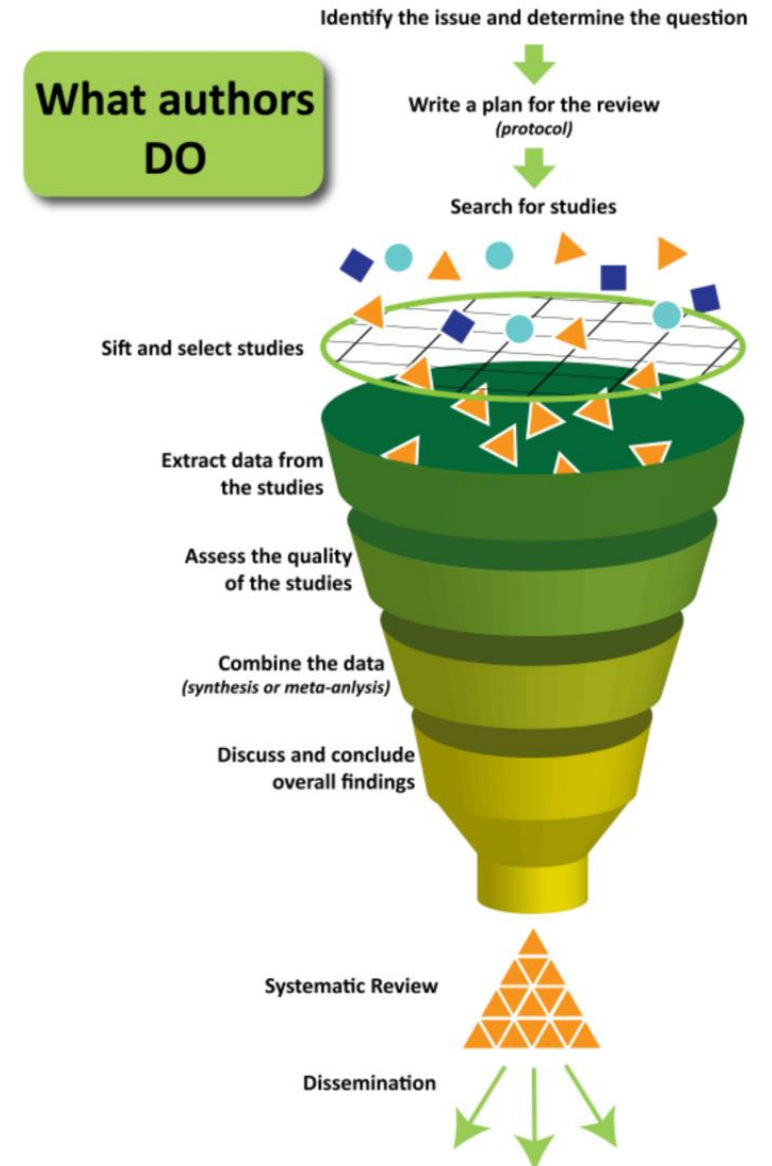
- Article Details
  - Number of Authors
    - 1 author
  - Gender
    - Male
  - Country
    - USA
      - New Jersey City University
  - Example code  
Caverly (2018).pdf: Page 5: "Further research should be conducted to determine if a longer time period will help students adjust to the change in instruction."
- Description of Study Sample
  - Country
    - USA
  - Sample Focus
    - Students
      - Students only
  - Number of participants
    - Specified  
Caverly (2018).pdf: Page 51: "For the treatment group with a population of 17 a sam needed."
    - 51-100 students
  - Sampling & recruitment
    - Explicitly stated  
Caverly (2018).pdf: Page 51: "To determine the sample size for each of the groups t know the population size, confidence interval, and margin of error and it will calculate t treatment and control groups were calculated. For the treatment group with a populatio would be needed."

## Cognitive Engagement

Short Title	Critical thinking	Critical thinking quotes	Preference for challenging tasks	Preference for challenging tasks quotes	Setting learning goals	Setting learning goals quotes	Self-regulation	Self-regulation quotes
A technology leader's... (Caverly)							Self-regulation	[Caverly (2018).pdf] Page 74: <i>he was able to do the work whenever he wanted and would be able to view the lesson multiple times.</i>
Abdelrahman (2017)	Critical thinking	[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 6: <i>We are more aware about grammar, mechanics, types of paragraphs, and other aspects. We are also able to evaluate each others writing</i>			Setting learning goals	[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 7: <i>My teacher and I were able to detect my weaknesses in the English language. This is a result of having enough class time to work together. Thus, I work</i>		

# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - ❑ Title & Abstract
- Study retrieval
- Screen on full text
- Data Extraction
- Quality assessment






# Quality assessment

## Quality Appraisal (Gough 2007)


- Is the study design appropriate to my research/review question(s)?
- How is the quality of study methods?
- Is the study relevant to my research/review question(s)?

## Roots in “medicine” studies

- **CASP Checklists** - Critical Appraisals Skills Programme
  - Systematic Reviews, Randomized Controlled Trials, Cohort Studies, Case Control Studies, Economic Evaluations, Diagnostic Studies, Qualitative studies and Clinical Prediction Rule
- **GRADE** - Grading of Recommendations, Assessment, Development and Evaluations
- **JBI Critical Appraisal Tools** - Joanna Briggs Institute, trustworthiness, relevance and results

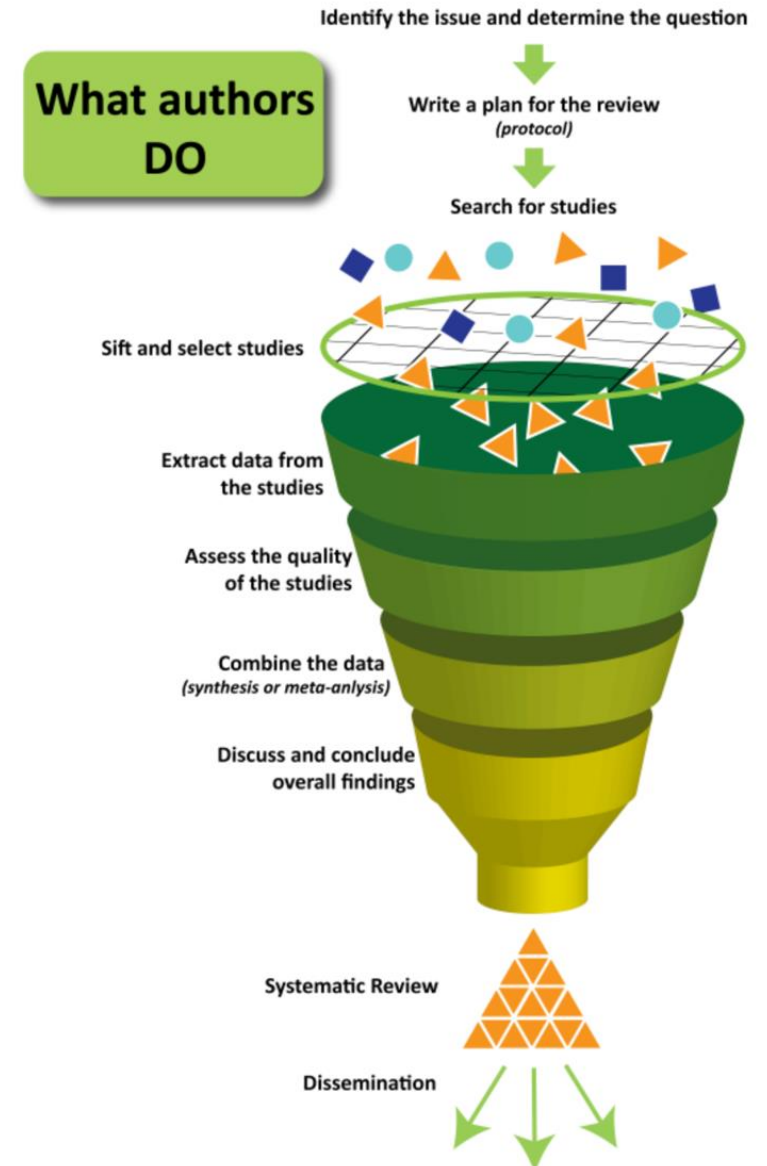
- ▼  IPPO Quality Assessment
  - ▼ Does this study answer our research questions?
    - Yes
    - No
    - Partly
    - Unclear
  - ▼ Is the evidence trustworthy, given the method that was used?
    - Yes
    - No
    - Partly
    - Unclear

- ▼ Study Design
  - ▼ Research Question
    - No research question
    - Research question stated
  - ▶ Ed Tech Tools Used
  - ▶ Teaching Techniques
  - ▶ Intervention
  - ▶ Comparators
  - ▼ Length of study
    - ▶ Specified
    - Not specified
  - ▼ Definition of SE
    - Yes (specify)
    - Not given

- ▼  Mixed Methods Appraisal Tool (MMAT), v 2018
  - ▶ Screening questions (for all types)
  - ▼ 1. Qualitative
    - ▶ 1.1. Is the qualitative approach appropriate to answer the research question?
    - ▶ 1.2. Are the qualitative data collection methods adequate to address the research question?
    - ▶ 1.3. Are the findings adequately derived from the data?
    - ▶ 1.4. Is the interpretation of results sufficiently substantiated by data?
    - ▶ 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?
  - ▶ 2. Quantitative randomized controlled trials
  - ▶ 3. Quantitative non-randomized
  - ▶ 4. Quantitative descriptive
  - ▶ 5. Mixed methods

# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - ❑ Title & Abstract
- Study retrieval
- Screen on full text
- Data Extraction
- Quality assessment
- Synthesis



# Synthesis

## Ask yourself the following questions:

1. How can you pull the results together?
  - Why choose that method?
  - Does it accurately represent what was found?
2. Overall, what is the research suggesting in relation to the question?
3. How can you best describe and represent what the research is saying?
4. How clearly or confidently can the review question be answered?

# Narrative Synthesis

A valid method to analyse and assemble evidence (Petticrew & Roberts, 2006).

1. A narrative description of the study and participant characteristics.
2. A summary of key results, preferably informed by the theoretical framework.
3. Tabulation of the studies, providing an overview of the study setting, methods, participants, intervention and study findings.

## 4. Findings

### 4.1. Study characteristics

The 62 journal articles included in this sample were published in 42 different journals (see [Appendix D](#)); 12 (29%) general education journals, 15 (36%) educational technology journals, 14 (33%) discipline specific (e.g., engineering education), one methodology journal and one interdisciplinary journal. However, of the journals where multiple articles have been published ( $n = 10$ ), seven of them are educational technology journals, with the top three journals being *Educational Technology & Society* (unfortunately no longer accepting submissions), *Computers & Education* and *Journal of Computer Assisted Learning*, and only one being a general education journal (*Teaching and Teacher Education*).

Whilst [Lundin et al. \(2018\)](#) noticed a substantial increase in studies on flipped learning in 2015, their review was heavily comprised of higher education studies, whereas studies in this K-12 review corpus saw an exponential rise in 2016 ( $n = 34$ ), including seven doctoral dissertations. However, there was a 26% drop in publications in 2017, with only three dissertations published in that year, and a further 12% drop in 2018. Unfortunately [Lundin et al.'s \(2018\)](#) comprehensive analysis did not go past 2015 to confirm this trend and, although [Tütüncü and Aksu's \(2018\)](#) review included 2017 and did show a slight drop, it was focused on research in Turkey only. Further research could explore whether this is due to flipped learning being more established and therefore having less novelty factor, or whether less educators are now using the approach.

#### 4.1.1. Geographical characteristics

Mirroring previous reviews ([Lo & Hew, 2017](#); [Lundin et al., 2018](#)), the majority of studies in this corpus were undertaken within the US (51.40%,  $n = 55$ ), followed by Taiwan (9.35%,  $n = 10$ ) and Hong Kong (7.48%,  $n = 8$ ). Whilst this review includes 26 dissertations, 25 of which conducted their research within the US, the percentage of studies undertaken in the US would still triple that of the next country were these to be excluded. When viewing the research contexts by continent, research in North America (54.20%) and Asia (25.24%) dominates, with very little research being undertaken in other parts of the world, including none from South America or the

onal technology

#### 4.4.1. Behavioural engagement and flipped learning

The most frequently reported dimension of engagement – but also arguably the most frequently measured – was behavioural engagement, with 14 different indicators identified as a result of flipped learning (see [Table 4](#) for the top five). By far the most cited instance of behavioural engagement was *increased interaction between peers* (47%,  $n = 50$ ), with a number of studies that used classroom observations within flipped classes reporting a significant increase, compared to those using traditional methods (e.g., [Chen, 2016](#); [Johnson & Renner, 2012](#)). Students identified that flipped learning helped to improve how they participated within the classroom ([Abdelrahman et al., 2017](#), pp. 60–70; [Olanmi, 2017](#)), including more equitable interactions between students, with quieter students finding courage - and likewise being encouraged - to engage in discussions ([Collins, 2015](#); [Grypp & Luebeck, 2015](#)). Teachers found these peer interactions particularly valuable, as they made student knowledge more visible ([Bäcklund & Hugo, 2018](#)), including

**Table 4**  
Top five engagement indicators across the three dimensions.

Rank	Behavioural Eng.	n	%	Affective Eng.	n	%	Cognitive Eng.	n	%
1	Increased interaction with peers	50	47%	Enjoyment	42	39%	Positive self-perceptions & self-efficacy	30	28%
2	Participation/involvement	39	36%	Positive interactions with peers	25	23%	Self-regulation	25	23%
3	Increased interaction with teachers	37	35%	Interest	23	21%	Understanding	24	22%
4	Confidence	33	31%	Enthusiasm	15	14%	Learning from peers	23	21%
5	Study habits/Assuming responsibility	21	20%	Positive interactions with teachers	13	12%	Focus/concentrate	20	19%

Note. Eng. = Engagement.

# Narrative Synthesis

Review home   References   Reports   Search & Classify   Collaborate

Frequencies and crosstabs   Configurable reports   Run Reports

Rows: Cognitive Engagement   **Set**   Get Frequencies

Columns: *Not set (only used for Crosstabs)*   **Set**

Filter: *Not set (optional)*   **Set Filter**   Clear Filter

Get Frequencies   Get CrossTab    Included    Excluded    Both   Current code:

Show results as:  Table    Pie chart    Bar chart    Show 'None of the codes above'   Export

Code	Count
Critical thinking	18
Preference for challenging tasks	3
Setting learning goals	5
Self-regulation	25

## Cognitive Engagement

Short Title	Critical thinking	Critical thinking quotes	Preference for challenging tasks	Preference for challenging tasks quotes	Setting learning goals	Setting learning goals quotes	Self-regulation	Self-regulation quotes
A technology leader's... (Caverly)							Self-regulation	[Caverly (2018).pdf] Page 74: <i>he was able to do the work whenever he wanted and would be able to view the lesson multiple times.</i>
Abdelrahman (2017)	Critical thinking	[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 6: <i>We are more aware about grammar, mechanics, types of paragraphs, and other aspects. We are also able to evaluate each others' writing</i>			Setting learning goals	[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 7: <i>My teacher and I were able to detect my weaknesses in the English language. This is a result of having enough class time to work together. Thus, I work</i>		



## Appendix G List of studies in the corpus (n = 107)

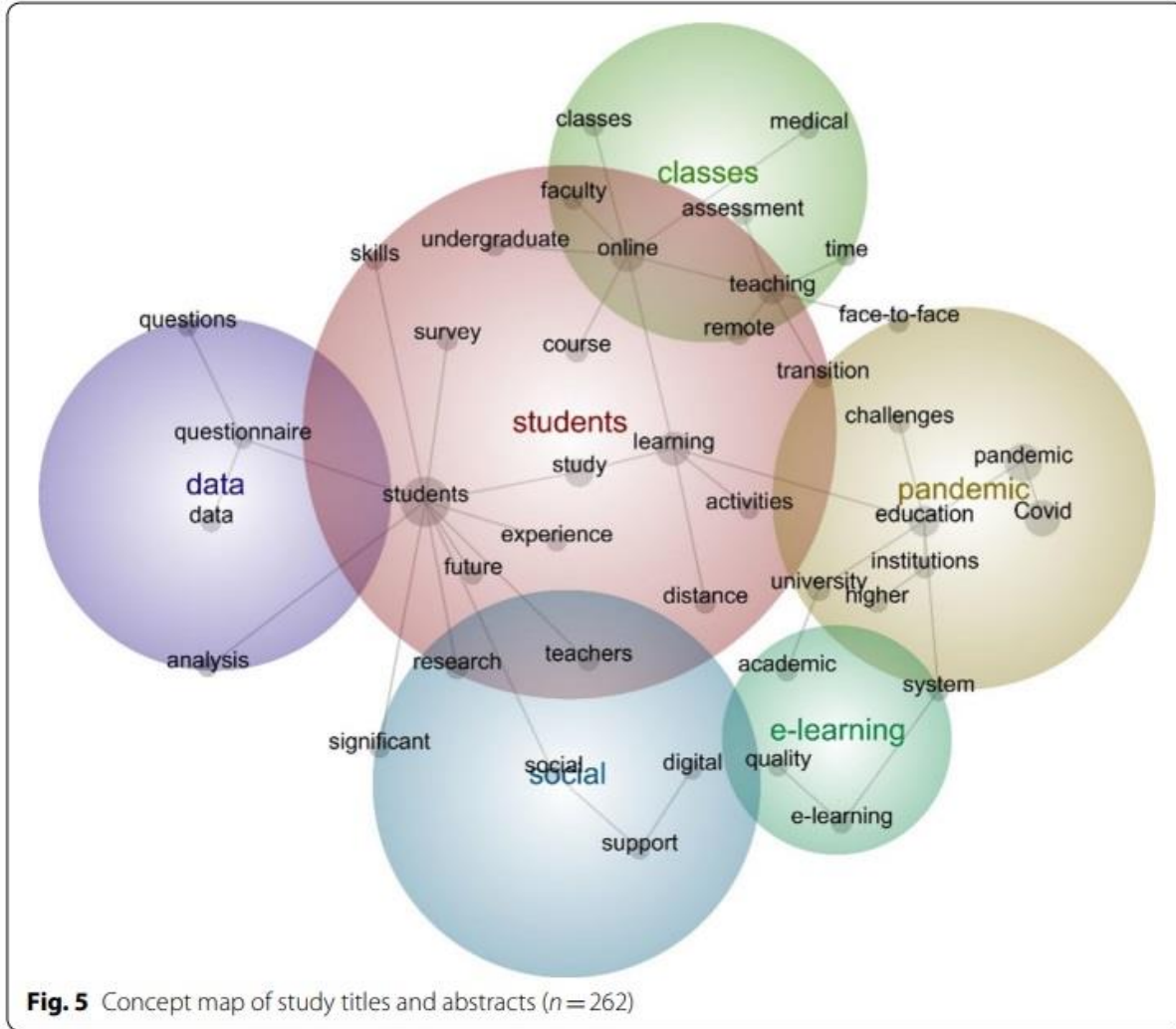
### Dissertations (n = 26)

Author	Year	Institution	Subject	Grade	School Type	Study Duration	Approach	Participants	Ed Tech	BE	AE	CE	BD	AD	CD	Ach
Johnson & Renner	2012	Uni. of Louisville	ICT	9–11	HS	12 weeks	Quasi-Exp.	S, T		X	X	X	X	X	X	
Howell	2013	Gardner-Webb Uni.	Science	9	HS	11 weeks	Quasi-Exp.	S, T, P		X	X	X	X		X	
Wiginton	2013	Uni. of Alabama	Maths	9	HS	16 weeks	Case Study	S, T		X	X	X	X	X	X	
Saunders	2014	Liberty Uni.	Maths	11	HS	9 weeks	Quasi-Exp.	S								X
Collins	2015	The Sage Colleges	Multiple	5–9	MS	N/S	Phenomenology	T, SL		X	X	X	X			X
Huereca	2015	Uni. of Texas	Maths	N/S	HS	1 year	Narrative Inq	T		X			X	X	X	
Ramaglia	2015	Kansas State Uni.	Maths	7–12	MS / HS	N/S	Quasi-Exp.	S, T		X	X	X	X	X		
Ripley	2015	Uni. of Nevada	Maths	6	PS	1 year	Quasi-Exp.	S, T		X	X	X		X		
Speller	2015	Uni. of Toledo	Maths	N/S	MS / HS	9 weeks	Phenomenology	T		X	X	X	X			
Wiley	2015	Uni. of Minnesota	Maths	5	PS	32 classes	CCMM	S, T		X	X			X	X	
Duffy	2016	Wilkes Uni.	Science	8	MS	3 weeks	Quasi-Exp.	S		X						X
Hunley	2016	East Tennessee State Uni	Multiple	9–12	HS	N/S	Phenomenology	S, T		X	X	X	X	X	X	
Oyola	2016	Missouri Baptist Uni.	Multiple	N/S	K / PS	N/S	Case Study	T		X	X	X				
Perrella	2016	Hofstra Uni.	Foreign Lang.	9–11	MS	28 weeks	Experimental	S								X
Sharpe	2016	Regent Uni.	Maths	9–11	HS	8 weeks	Experimental	S		X	X		X	X	X	
Strohmyer	2016	Walden Uni.	Maths	12	HS	2 weeks	Phenomenology	S		X	X	X	X	X		
Tarazi	2016	Northcentral Uni.	Maths	11	HS	4 months	Quasi-Exp.	S								X
Bergstresser	2017	Northcentral Uni.	Multiple	5–12	5-12	1 year	Quasi-Exp.	S		X		X		X		
Caverly	2017	New Jersey City Uni.	Maths	11 - 12	HS	2 weeks	Quasi-Exp.	S		X	X	X		X	X	
Leo	2017	Uni. of South Carolina	Maths	7	MS	6 weeks	Action Res.	S, T		X	X	X		X	X	
Carlisle	2018	Trevecca Nazarene Uni.	Maths	9–12	K-12	1 year	CSMM	S		X	X					
Lazarus	2018	Arizona State Uni.	SS	12	HS	1 semester	Action Res.	S		X	X	X				
Parham	2018	Uni. of South Carolina	Maths	12	HS	4 weeks	Action Res.	S		X	X	X	X	X		
Ronnebaum	2018	Uni. of Kansas	Maths	9	HS	9 months	Quasi-Exp.	S, T		X			X			
Weidmann	2018	Liberty Uni.	Multiple	7 - 12	HS	N/S	Phenomenology	T		X	X	X		X		X
Weiss	2018	Trevecca Nazarene Uni.	Biology	9	HS	1 semester	Quasi-Exp.	S		X	X		X	X	X	

Note: ELA = English Language Arts, SS = Social Studies, MS = Middle School, PS = Primary School, HS = High School, K = Kindergarten, S = Students, T = Teachers, P = Parents, SL = Principals, N/S = Not specified, BE = behavioural engagement, AE = affective engagement, CE = cognitive engagement, BD = behavioural disengagement, AD = affective disengagement, CD = cognitive disengagement, Ach = Achievement, CCMM = Convergent Concurrent Mixed Methods, CSMM = Cross-sectional Mixed Methods, = Videos created by others, = Quizzes, = Teacher-created videos, = LMS, = YouTube, = PowerPoint, = Khan Academy, = Edmodo, = Google Forms, = Google Classroom, = Moodle, = Videos (uncertain), = Edpuzzle, = Google Docs, = Twitter

All icons obtained from [www.flaticon.com](http://www.flaticon.com) with the exception of Khan Academy (<https://www.youtube.com/user/khanacademy>), Edmodo (<https://www.amazon.com/Edmodo-Inc/dp/B00721LOXC0>), Google Classroom (<https://classroom.google.com>), Google Docs ([https://en.wikipedia.org/wiki/Google\\_Docs](https://en.wikipedia.org/wiki/Google_Docs)), Edpuzzle ([https://www.youtube.com/channel/UC-wRQQ\\_gfvSomuZJaBLRshQ](https://www.youtube.com/channel/UC-wRQQ_gfvSomuZJaBLRshQ)), Moodle (<https://tracker.moodle.org>), PlayPosit (<https://iteachyouaf.edu/playposit-interactive-video-tool/>), Blendspace (<https://www.tes.com/lessons>), Socrative (<https://socrative.com/>) and Zmaker (<http://zmaker.emaghome.com/>).

# Content analysis



# Co-occurrence analysis

	Sum all	Sum Quanti	Sum Mixed	Sum Quali	LMS	MPT	TBT	AT	SNT	KO&S	VW	MOOCs	WCT	DAT	ML	GAMES
SCT	146	72	47	27	0.68	0.81	0.86	0.70	0.77	0.72	0.60	0.33	0.60	0.50	1	1
LMS	117	52	43	22		0.62	0.64	0.57	0.65	0.61	0.26	0.33	0.60	1	1	1
MPT	98	45	36	17			0.60	0.59	0.57	0.61	0.47	0.33	0.60	1	1	1
TBT	90	37	33	20				0.48	0.48	0.67	0.40	0.33	0.40	0.50	0.50	0
AT	63	33	26	4					0.20	0.33	0.33	0	0.40	1	0	1
SNT	40	21	15	4						0.33	0.06	0	0.60	0	1	0
KO&S	18	11	4	3							0.13	0.17	0.40	0	0.50	0
VW	15	6	9	0								0.17	0.20	0	0	0
MOOCs	6	1	2	3									0	0	0	0
WCT	5	2	3	0										0	0.50	0
DAT	2	1	0	1											0	0
ML	2	0	2	0												0
Games	1	0	1	0												

**Fig. 6** Co-occurrence of tools across the sample (n = 282). Note: Quanti = Quantitative, Quali = Qualitative, SCT = synchronous collaboration tools, LMS = learning management system, MPT = multimodal production tools, TBT = text-based tools, AT = assessment tools, SNT = social networking tools, KO&S = knowledge organisation & sharing tools, VW = virtual worlds, WCT = website creation tools, DAT = data analysis tools, ML = mobile learning

**Table 5**  
Relative frequency of studies using technology and student engagement domains.

	Videos (teacher) <i>n</i> = 62	Videos (others) <i>n</i> = 29	Videos (?) <i>n</i> = 20	You Tube <i>n</i> = 17	Khan <i>n</i> = 10	LMS <i>n</i> = 55	Other LMS <i>n</i> = 23	Edmodo <i>n</i> = 12	GC <i>n</i> = 10	Moodle <i>n</i> = 10	Quizzes <i>n</i> = 58
Behavioural Engagement	87%	93%	70%	82%	80%	80%	70%	92%	100%	80%	76%
Affective Engagement	73%	86%	75%	76%	70%	82%	78%	83%	90%	90%	74%
Cognitive Engagement	69%	83%	75%	65%	70%	69%	65%	83%	70%	70%	74%

*Note* ? = uncertain origin; LMS numbers include those that used named LMS such as Google Classroom; Other LMS = LMS not including Edmodo, Google Classroom or Moodle; GC = Google Classroom

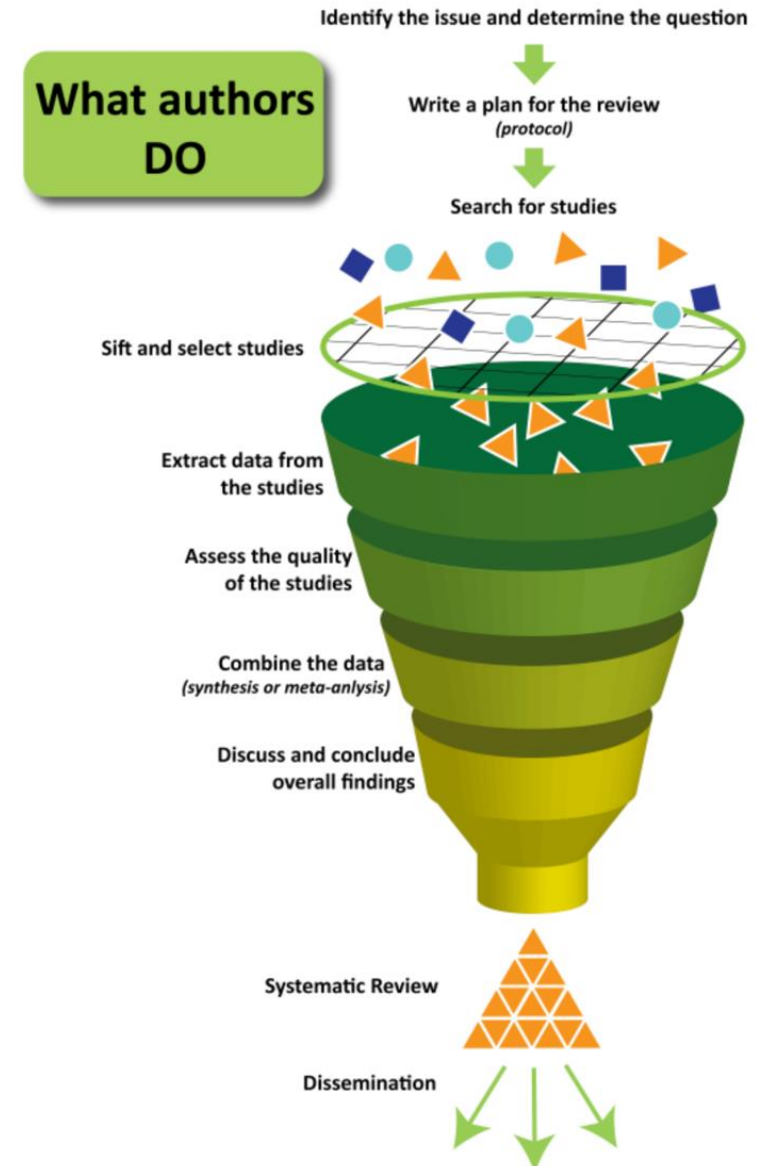
**Table 10**  
Percentage of studies using technology and student disengagement.

	Videos (teacher) <i>n</i> = 62	Videos (others) <i>n</i> = 29	Videos (?) <i>n</i> = 20	You Tube <i>n</i> = 17	Khan <i>n</i> = 10	LMS <i>n</i> = 55	Other LMS <i>n</i> = 24	Edmodo <i>n</i> = 12	GC <i>n</i> = 10	Moodle <i>n</i> = 10	Quizzes <i>n</i> = 58
Behavioural Diseng.	35%	55%	35%	47%	50%	38%	46%	33%	40%	30%	34%
Affective Diseng.	32%	38%	35%	35%	50%	36%	38%	33%	50%	30%	33%
Cognitive Diseng.	27%	45%	25%	24%	30%	33%	42%	17%	30%	40%	28%

*Note:* Diseng. = disengagement; ? = uncertain origin; LMS numbers include those that used named LMS such as Google Classroom; Other LMS = LMS not including Edmodo, Google Classroom or Moodle; GC = Google Classroom

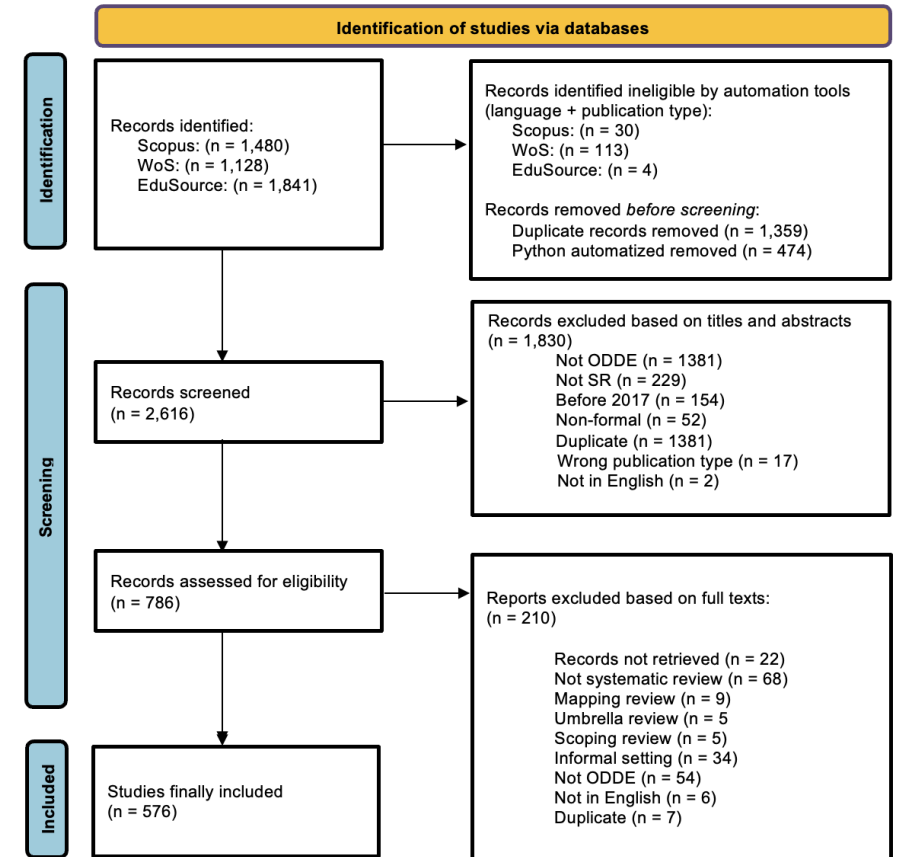
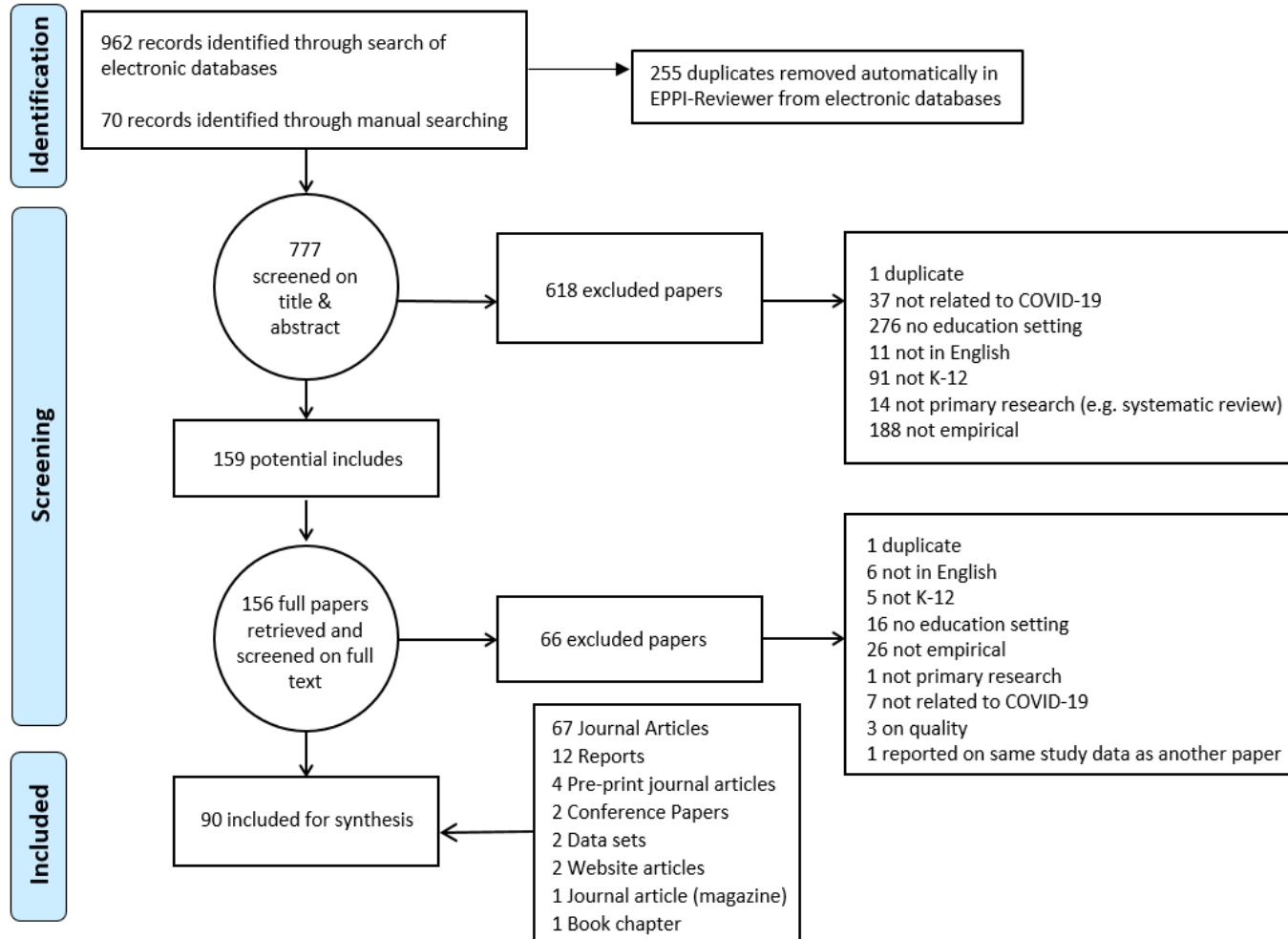
# Systematic review process

- Review question and conceptual framework
- Search strategy: search string and selection criteria
- Study screening
  - ❑ Title & Abstract
- Study retrieval
- Screen on full text
- Data Extraction
- Quality assessment
- Synthesis
- Report



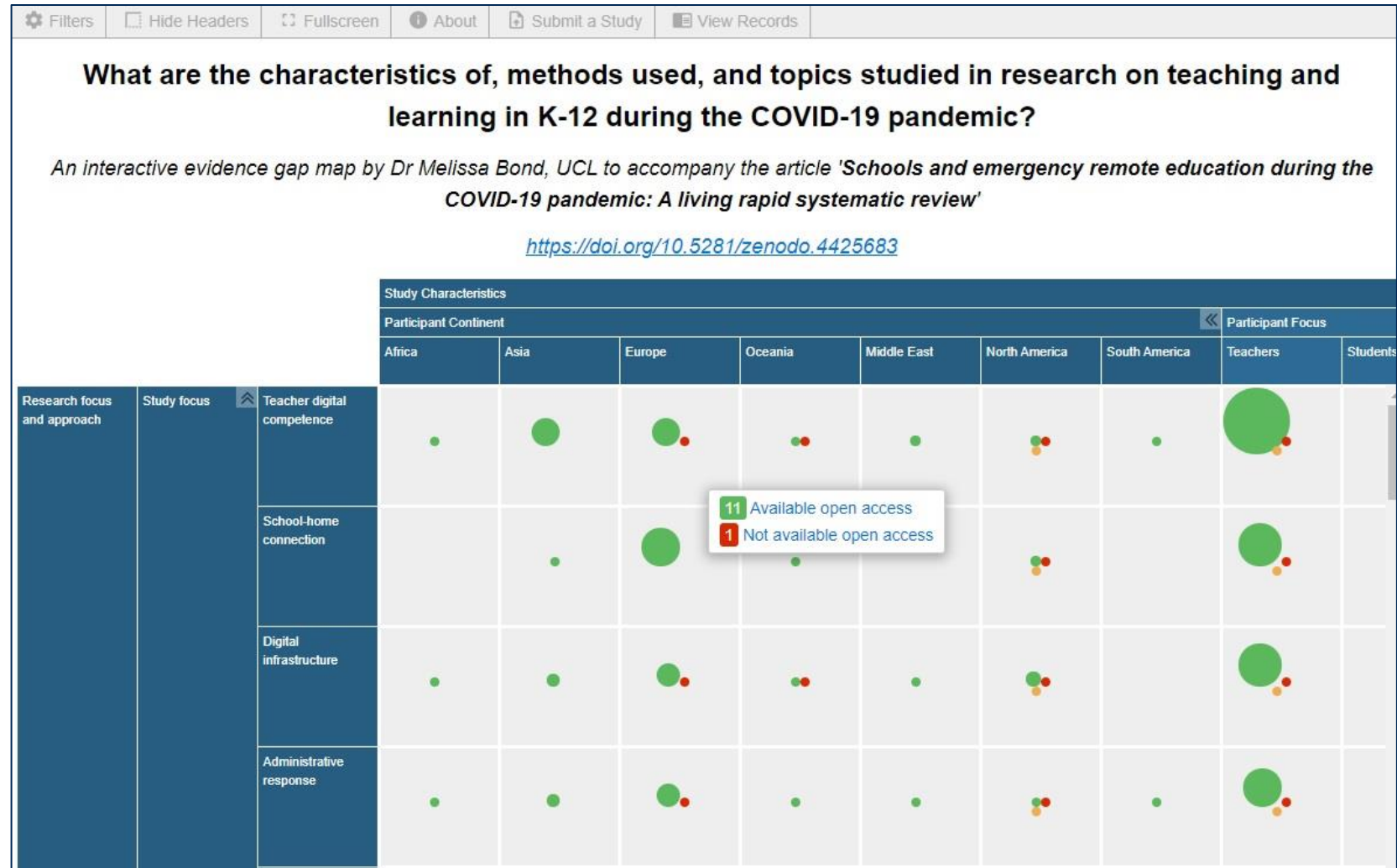


# PRISMA reporting guidelines



- Created for each research question
- Freely available open access
- Filterable, searchable
- Can download references
- Direct links to studies
- Can assist synthesis

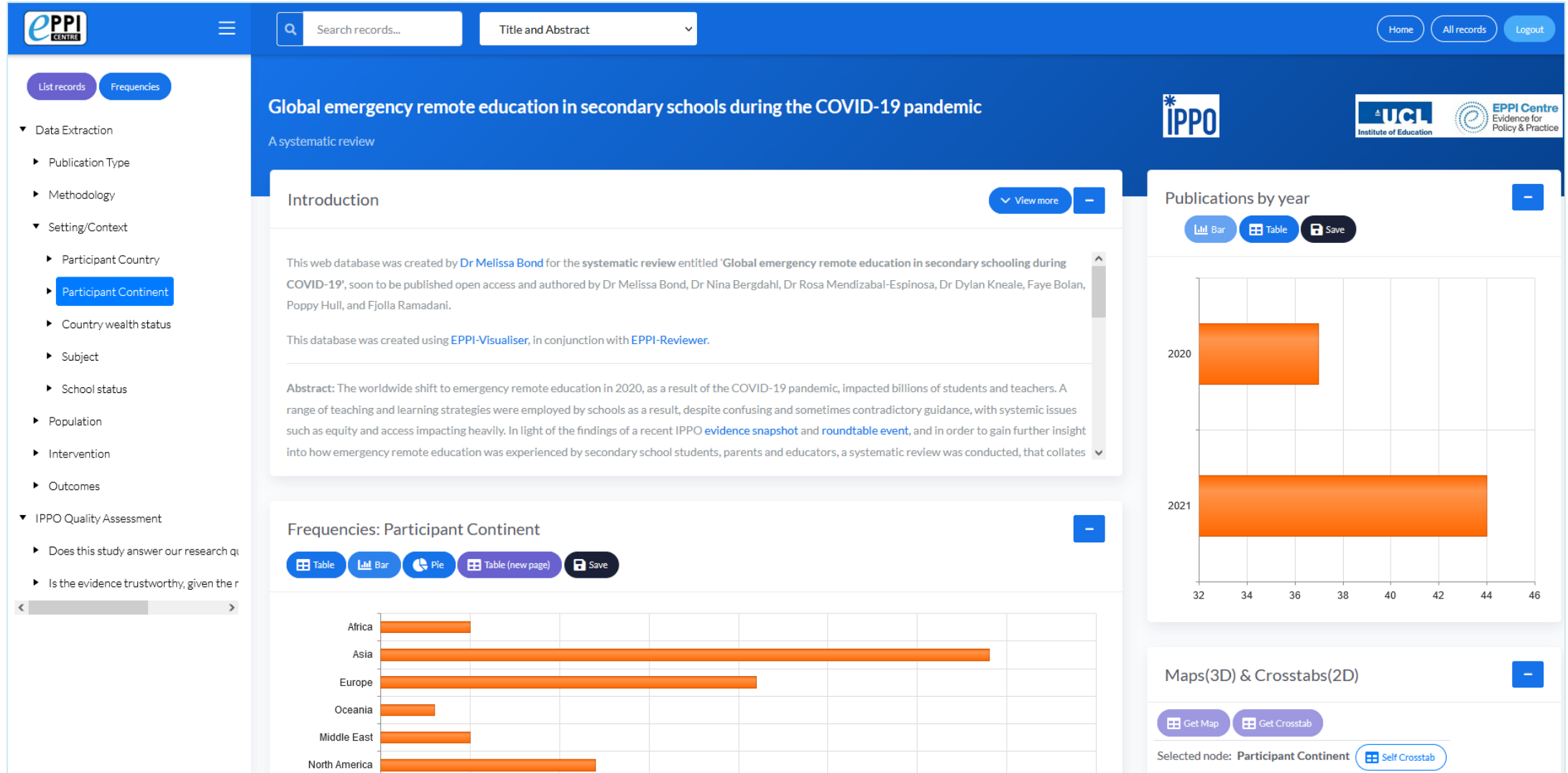
<https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=3794>





**EPPI-Visualiser** is a new web database tool, displaying the studies and coding conducted in your review.

- Any changes made in your review are updated live in the database.



The screenshot displays the EPPI-Visualiser interface for a systematic review. The main content area shows the title 'Global emergency remote education in secondary schools during the COVID-19 pandemic' and its introduction. The introduction text states: 'This web database was created by Dr Melissa Bond for the systematic review entitled 'Global emergency remote education in secondary schooling during COVID-19', soon to be published open access and authored by Dr Melissa Bond, Dr Nina Bergdahl, Dr Rosa Mendizabal-Espinosa, Dr Dylan Kneale, Faye Bolan, Poppy Hull, and Fjolla Ramadani. This database was created using EPPI-Visualiser, in conjunction with EPPI-Reviewer. Abstract: The worldwide shift to emergency remote education in 2020, as a result of the COVID-19 pandemic, impacted billions of students and teachers. A range of teaching and learning strategies were employed by schools as a result, despite confusing and sometimes contradictory guidance, with systemic issues such as equity and access impacting heavily. In light of the findings of a recent IPPO evidence snapshot and roundtable event, and in order to gain further insight into how emergency remote education was experienced by secondary school students, parents and educators, a systematic review was conducted, that collates

On the right side, there is a 'Publications by year' chart showing the number of publications for 2020 and 2021. The chart is a horizontal bar chart with orange bars. The x-axis represents the number of publications, ranging from 32 to 46. The y-axis lists the years 2020 and 2021.

Year	Number of Publications
2020	37
2021	44

Below the chart, there is a 'Frequencies: Participant Continent' section. It includes a horizontal bar chart showing the distribution of participants by continent. The x-axis represents the number of participants, ranging from 0 to 46. The y-axis lists the continents: Africa, Asia, Europe, Oceania, Middle East, and North America.

Continent	Number of Participants
Africa	10
Asia	44
Europe	37
Oceania	10
Middle East	10
North America	19

# Software to help conduct QES



# Rayyan

- <https://www.rayyan.ai>

**Keywords for include** [Add new] —

online	1185	🗑
retention	907	🗑
persistence	264	🗑
attrition	235	🗑
dropout	218	🗑
student retention	211	🗑
drop out	115	🗑
student persistence	50	🗑
drop-out	42	🗑
student attrition	40	🗑

[More >>](#)

**Keywords for exclude** [Add new] —

school	233	🗑
high school	50	🗑
knowledge retention	48	🗑
secondary school	26	🗑
learning retention	17	🗑
information retention	6	🗑
content retention	4	🗑

**Labels** —

must read	48
BCS	13
see again	10
READ!	3
doctoral&masters	1
Conceptual Map	1
MOOC in HE	1
TEL?	1

2021-05-28: Sys\_Rev\_DROPOUT Detect duplicates Compute ratings Export Copy New search All reviews

Showing 16 to 22 of 1,804 unique entries Search: [id or title or abstract or author]

Date								Authors	Rating
2020-01-01	<span style="background-color: green; color: white; padding: 2px;">Berrin</span>		<b>Desperately seeking funding: library guides to student funding</b>					Lundy, R.; Curran, R.	
2020-01-01	<span style="background-color: red; color: white; padding: 2px;">Berrin</span>	<span style="background-color: red; color: white; padding: 2px;">Not student retention</span>	<b>Reusable learning objects: a blended learning tool in teac...</b>					Onofrei, G.; Ferry, P.	
2020-01-01	<span style="background-color: green; color: white; padding: 2px;">Berrin</span>	<span style="background-color: blue; color: white; padding: 2px;">BCS</span>	<b>An early warning system to detect at-risk students in online higher educ...</b>					Bañeres, D.; Rodríguez, M.E...	
2020-01-01	<span style="background-color: green; color: white; padding: 2px;">Berrin</span>		<b>Learner analytics in engineering education: A detailed account of practices u...</b>					Kittur, J.; Bekki, J.M.; Brunh...	

**Journal** —

International Review of Resear...	44
Online Journal of Distance Lea...	34
Nurse Education Today	33
Online Learning	33
Computers & Education	33
Computers in Human Behavior	27
Journal of College Student Ret...	22
Proceedings of the European C...	20
Distance Education	20
eLearning & Software for Educ...	20

[More >>](#)

**Authors** —

Hachey, Alyse C.	8
Ice, Phil	7
Wladis, Claire	7
Mayer, Richard E.	6
Uhomoibhi J.	6
Zvacek S.	5
Borup, Jered	4
Wibberley, Christopher	4
Rockinson-Szapkiw, Amanda J.	4
Kotsiantis, S.	4

[More >>](#)

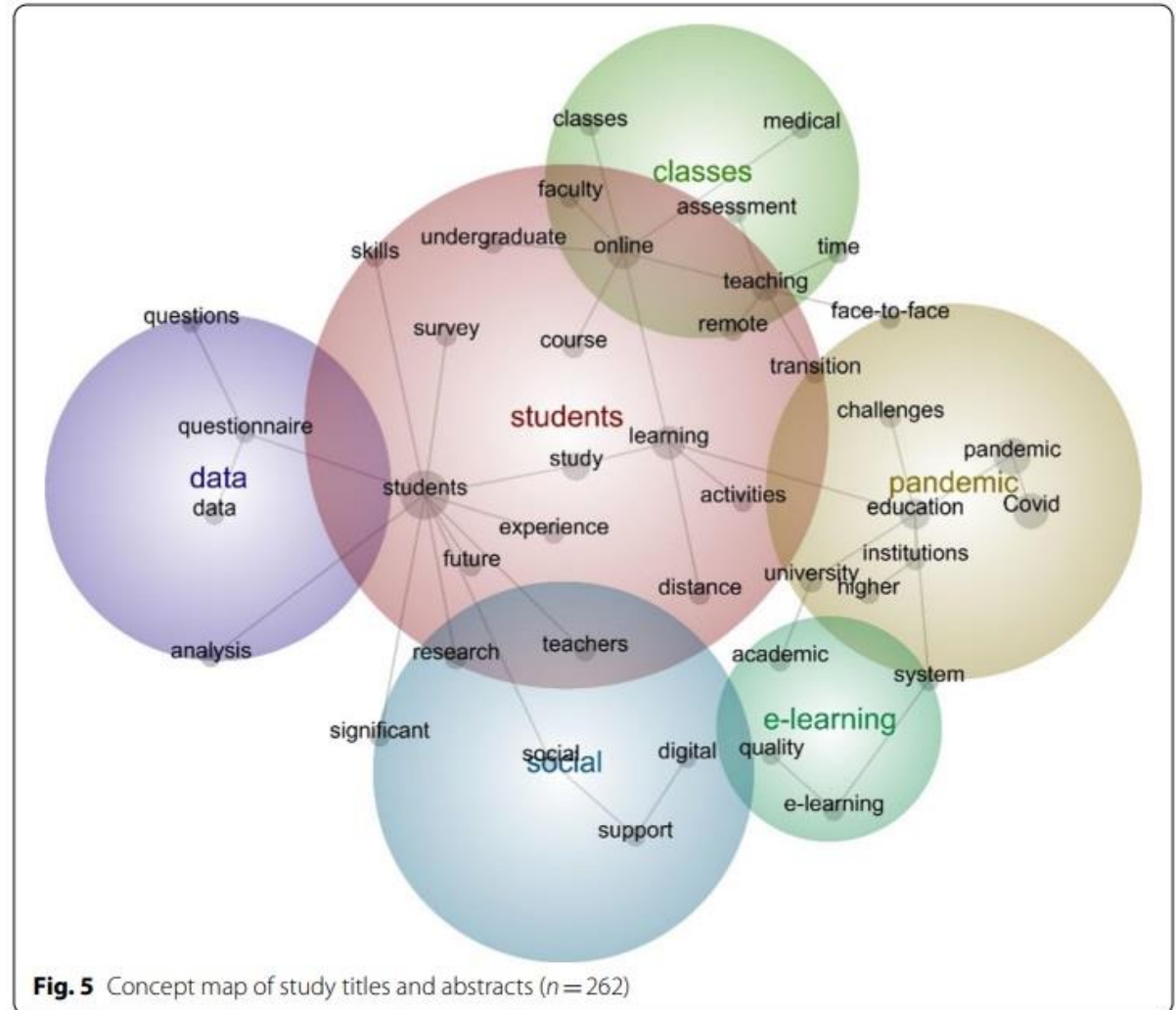
**Inclusion decisions** —

<u>Undecided</u>	0
<u>Maybe</u>	0
<u>Included</u>	632
<u>Excluded</u>	1172

- Keywords to ease spotting irrelevant studies
- Labels to enrich your library
- Overview of the descriptive data

# Leximancer

- Content analysis/text mining
- Semantic relations
- Concept mapping
- Online portal
- Not free
- Free webinars
- Visit: <https://www.leximancer.com/>



# NVivo

**Automated Insights**

Themes	Mentions
water	30
water	22
environment	18
change	18
natural environment	14
industry	14
community	12
quality	12
commercial fishing	11
area	11
strong	11
planning	10
process	10
strong	9
place	9
development	8

Watch on YouTube

NVIVO

## Harness the Power of AI in NVivo

### Rapid, Preliminary Thematic Analysis

AI-powered autocoding for themes quickly identifies and tags recurring noun phrases and groups them in broad topic areas.

### Quick Sentiment Categorization

Easily sort text into predefined emotional categories – providing instant sentiment analysis.

### User-Driven Machine Learning

Automated text analysis increases efficiency by leveraging your initial manual coding patterns using AI.

<https://lumivero.com/products/nvivo/>

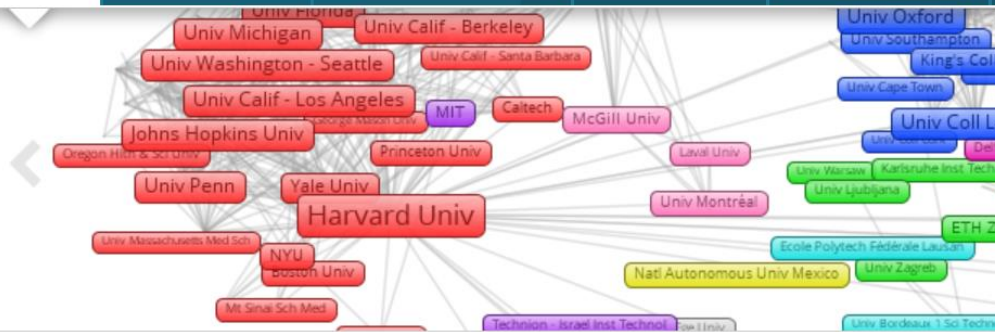


# VOSviewer

Visualizing scientific landscapes

Leiden University | CWTS | CWTS B.V. | Other CWTS sites

Home | Features | Getting Started | Download | Publications | Products | Course | Contact



## Welcome to VOSviewer

VOSviewer is a software tool for constructing and visualizing bibliometric networks. An instance include journals, researchers, or individual publications, and they can be visualized as citation, bibliographic coupling, co-citation, or co-authorship relations. VOSviewer offers a variety of visualization options and filtering capabilities that can be used to construct and visualize co-occurrence networks from a body of scientific literature.

<https://www.vosviewer.com/>

VOSviewer - economics\_journals\_map.txt - economics\_journals\_network.txt

Network Visualization | Density Visualization

File | Items | Analysis

Filter:

232 items (5 clusters):

- Cluster 1 (109 items)
- am econ rev
- am j agr econ
- am j econ sociol
- appl econ
- appl econ lett
- bus hist
- bus hist rev
- camb j econ
- can j econ
- ecol econ
- econ dev cult change
- econ educ rev
- econ geogr
- econ hist rev
- econ inq
- econ j
- econ lett
- econ model
- econ policy
- econ soc
- econ theor
- econ transit
- economet rev
- economet theor
- econometrica
- energ econ
- energ j
- enterp soc

Group items by cluster

Visualization

Scale:

Weights: User-defin...

Labels

Size variation:

Circles

Frames

Max. length: 30

Font: Open Sans

Lines

Size variation:

Min. strength: 0

Max. lines: 500

Colored lines

Curved lines

Colors

Cluster Colors...

Black background

AMERICAN ECONOMIC REVIEW

Item: am econ rev | Cluster: 1 | Links: 115 | Total link strength: 602 | User-defined weight: 602 | VOSviewer version 1.6.7

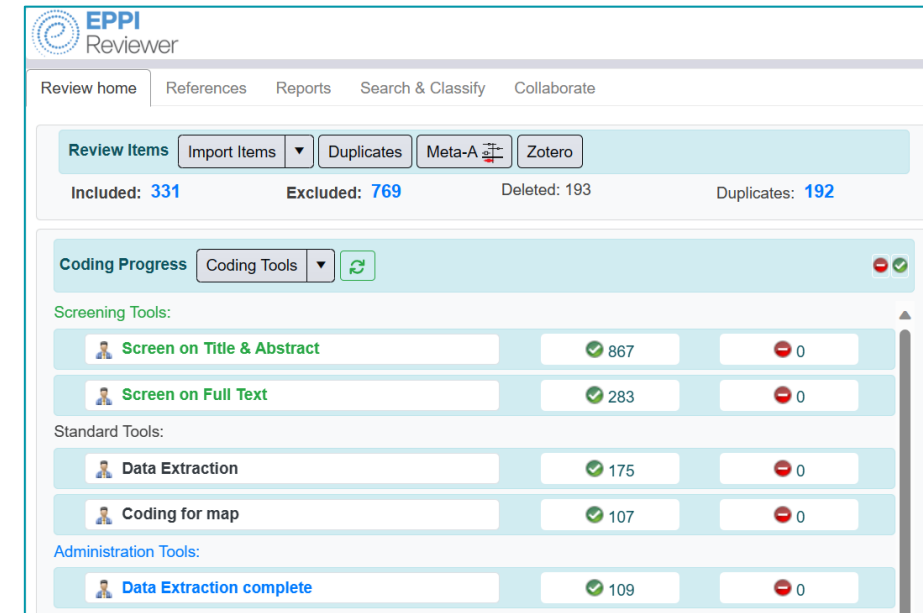


**EPPI-Reviewer** evidence synthesis software was created to support the **methodological work** conducted at the EPPI-Centre.

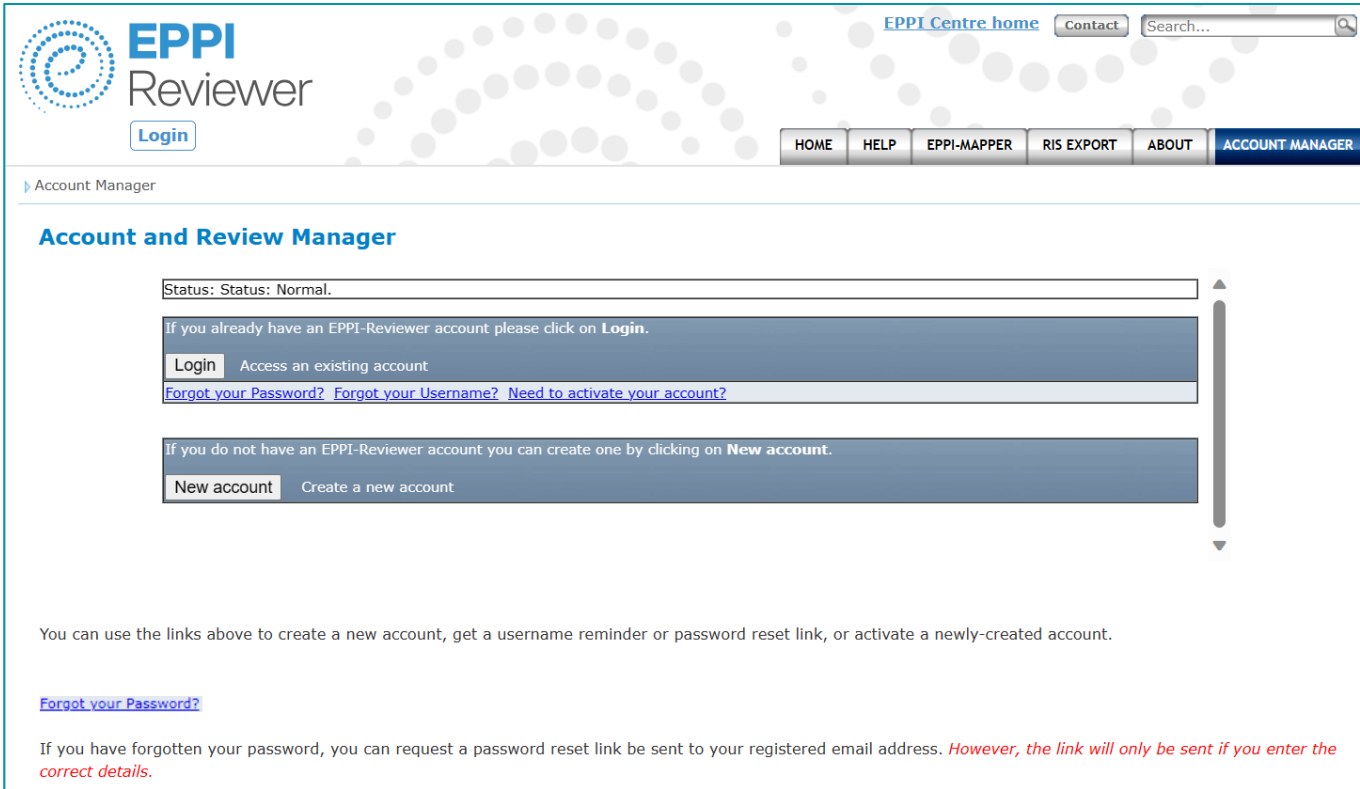
- Web-based - accessed from any device with an internet connection.
- Developed for all types of systematic review.
- Designed for flexibility.

## EPPI-Reviewer helps by:

- keeping your review process explicit and replicable
- enabling you to work with many others in one review
- keeping your data in one place
- helping with large screening loads through priority screening
- enabling updates to your review, including through machine learning
- allowing the easy creation of interactive evidence gap maps



<https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2914>



The screenshot shows the EPPI-Reviewer Account Manager interface. At the top left is the EPPI Reviewer logo with a 'Login' button. To the right are navigation links: EPPI Centre home, Contact, and a search bar. Below these are menu items: HOME, HELP, EPPI-MAPPER, RIS EXPORT, ABOUT, and ACCOUNT MANAGER (which is highlighted). The main content area is titled 'Account and Review Manager' and contains two sections. The first section, 'If you already have an EPPI-Reviewer account please click on Login.', includes a 'Login' button and links for 'Forgot your Password?', 'Forgot your Username?', and 'Need to activate your account?'. The second section, 'If you do not have an EPPI-Reviewer account you can create one by clicking on New account.', includes a 'New account' button. Below the main content, there is a note: 'You can use the links above to create a new account, get a username reminder or password reset link, or activate a newly-created account.' and a link for 'Forgot your Password?'. At the bottom, a note states: 'If you have forgotten your password, you can request a password reset link be sent to your registered email address. However, the link will only be sent if you enter the correct details.'

- Create a new account.
- Activate your account.
- Login using your EPPI-Reviewer username and password to manage your account and reviews.
  - When sharing reviews in particular.
- Forgotten password and username facility.

<https://eppi.ioe.ac.uk/eppireviewer-web>

- Works with modern browsers (Firefox, Safari, Chrome).
- Works on web-enabled devices, e.g. smartphones and tablets.
- Uses the same data as EPPI-Reviewer 4.

EPPI Reviewer

EPPI Centre Evidence for Policy & Practice

Username:

Password:

[Login](#) [Forgot Password?](#) [Create Account](#)

Visit the [EPPI-Reviewer Gateway](#) for Account and Review Management, Documentation, Support and the RIS export utility. [Follow Us on Twitter](#)

For Cochrane/Campbell Authors: click [HERE](#) to login with your Cochrane account. [More info...](#)

EPPI Reviewer

Review home | References | Reports | Search & Classify | Collaborate

Review Items | Import Items | Duplicates | Meta-A | Zotero

Included: 331 Excluded: 769 Deleted: 193 Duplicates: 192

Coding Progress | Coding Tools

Screening Tools:

Screen on Title & Abstract	867	0
Screen on Full Text	283	0


Standard Tools:

Data Extraction	175	0
Coding for map	107	0

Administration Tools:

Data Extraction complete	109	0
--------------------------	-----	---

- Based on same tech as Google Docs and Gmail.
- PubMed and OpenAlex integrated.
- Machine learning incl. priority screening


 EPPI Reviewer Feedback Help Support... Melissa Bond Logout

[Review home](#) [References](#) [Reports](#) [Search & Classify](#) [Collaborate](#)







[Review Items](#) [Import Items](#) [Duplicates](#) [Meta-A](#) [Zotero](#)

**Included: 331** **Excluded: 769** Deleted: 193 Duplicates: **192**







[My Reviews](#) [My Work](#) [Sources](#)

**Coding Progress** [Coding Tools](#) 










**Screening Tools:**

 <b>Screen on Title &amp; Abstract</b>	 867	 0
 <b>Screen on Full Text</b>	 283	 0

**Standard Tools:**

 <b>Data Extraction</b>	 175	 0
 <b>Coding for map</b>	 107	 0

**Administration Tools:**

 <b>Data Extraction complete</b>	 109	 0
 <b>Full text retrieval</b>	 287	 0
 <b>Type &amp; Method</b>	 274	 0

Your account expires on: 31 Dec 2023

[Edit Account](#)

Current review is private (does not expire).

[Edit Review](#) [Create Review](#) [Setup Visualisations...](#)

[Site Admin...](#) Latest feedback:

[Codes](#)

- Quick overview of included, excluded, deleted and duplicate items.
- Can also create a new review from here instead of from the account manager.

[My Reviews ↑](#)
[My Work ↓](#)
[Sources ↓](#)

ID	Review Name	Last Access:
32017	Language Bias in Ed Tech Evidence Synthesis	8 Feb 2023
35930	AI in Education Meta Review	8 Feb 2023
18000	Artificial Intelligence Review	4 Feb 2023
36163	SenseAI Business Review	4 Feb 2023
31584	Learning Analytics & Student Engagement	4 Feb 2023
24034	COVID19 and Higher Education Systematic	31 Jan 2023

↑ Codes ↓

[My Reviews ↓](#)
[My Work ↑](#)
[Sources ↓](#)

Codes to apply	Group	Allocated	Started	Remaining
Screening on T&A	First 100 English studies	100	100	0
Screening on T&A	Rest of the sample - Group 1	174	174	0

Your account expires on: 31 Dec 2023

↑ Codes ↓

[My Reviews ↓](#)
[My Work ↓](#)
[Sources ↑](#)

SOURCES Manage sources Report

Name	Items	Deleted	Duplicates
FIS Bildung Block 1	324	0	1
FIS Bildung Block 4	210	0	85
Web of Science first 1000	1000	0	20
Web of Science second 1000	1000	0	29
Web of Science third 1000	1000	0	24
Web of Science 826	826	0	12
Spanish studies	898	0	0

↑ Codes ↓

## My Reviews

- Easily toggle in between reviews you have access to.

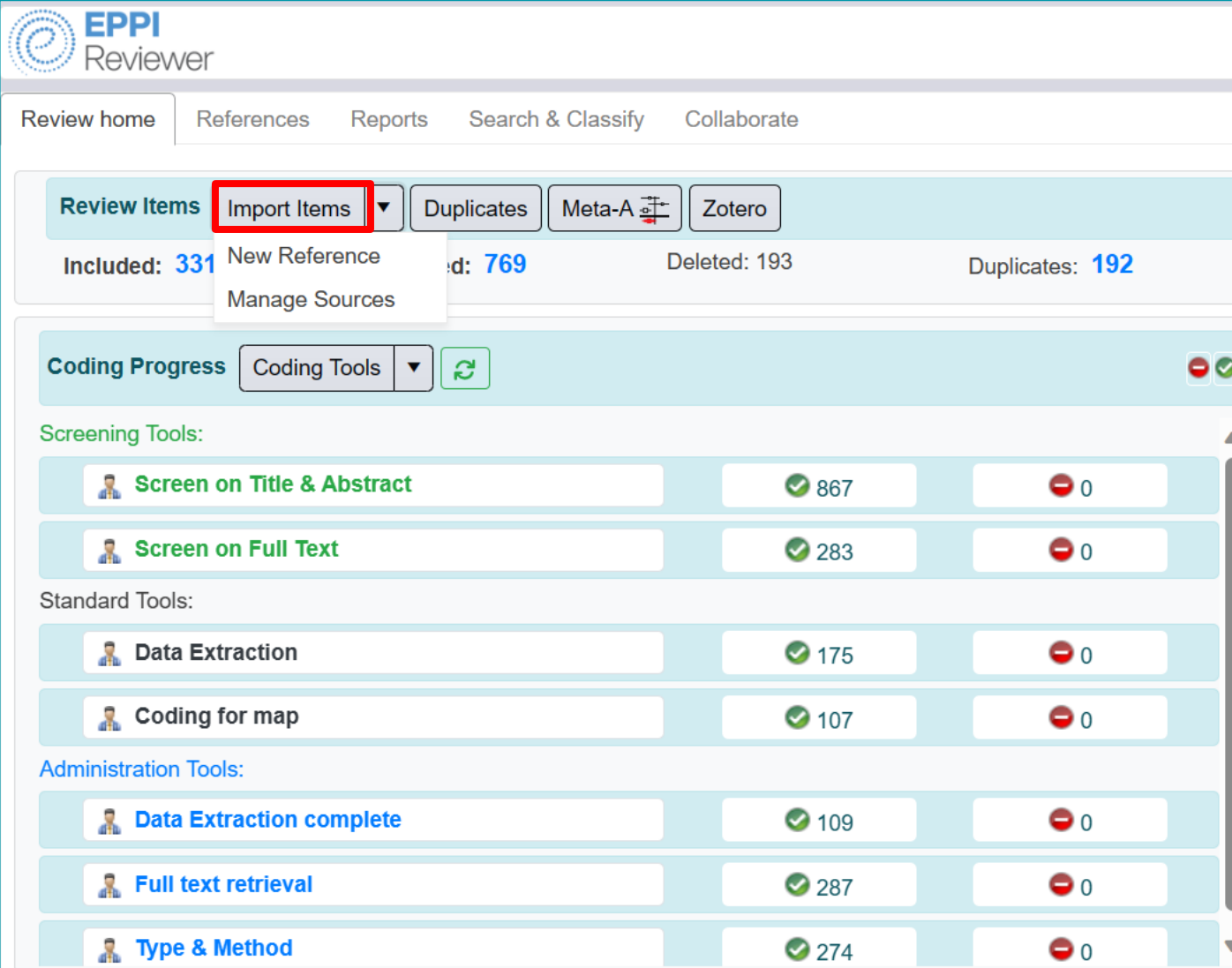
## My Work

- Displays any coding assignments assigned to you.
- Click on a blue number to go to a list of those items.

## Sources

- Lists all imported files.
- Click on Report to produce an itemised record of search meta data.

- Importing items is easy



**EPPI Reviewer**

Review home | References | Reports | Search & Classify | Collaborate

Review Items | **Import Items** | Duplicates | Meta-A | Zotero

Included: **331** | New Reference | id: **769** | Deleted: 193 | Duplicates: **192**

Coding Progress | Coding Tools |

**Screening Tools:**

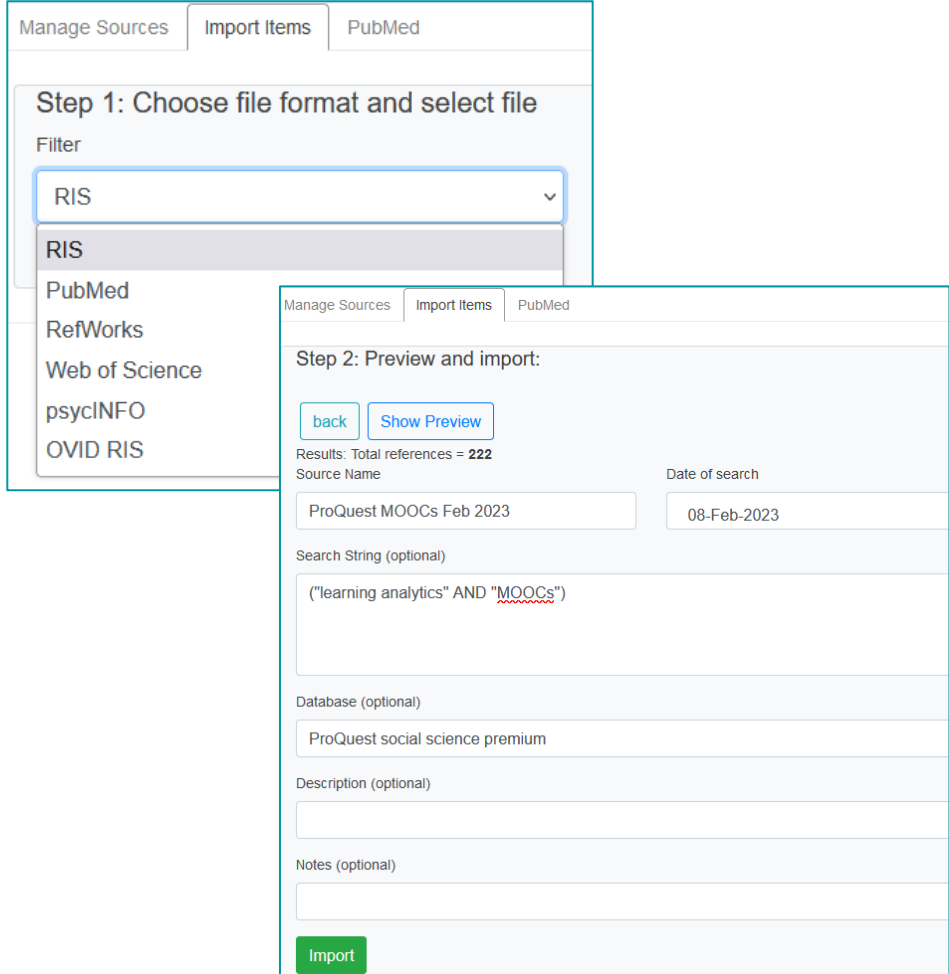
Screen on Title & Abstract	867	0
Screen on Full Text	283	0

**Standard Tools:**

Data Extraction	175	0
Coding for map	107	0

**Administration Tools:**

Data Extraction complete	109	0
Full text retrieval	287	0
Type & Method	274	0



Manage Sources | **Import Items** | PubMed

**Step 1: Choose file format and select file**

Filter

- RIS
- PubMed
- RefWorks
- Web of Science
- psycINFO
- OVID RIS

**Step 2: Preview and import:**

Results: Total references = **222**

Source Name: ProQuest MOOCs Feb 2023 | Date of search: 08-Feb-2023

Search String (optional): ("learning analytics" AND "MOOCs")

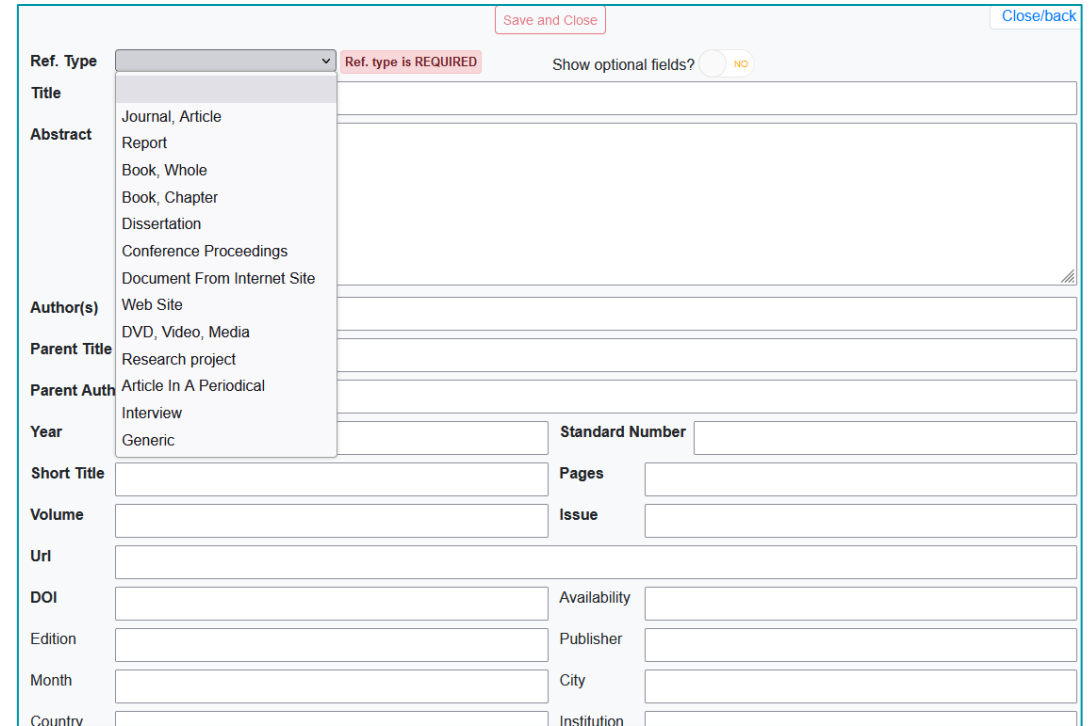
Database (optional): ProQuest social science premium

Description (optional):

Notes (optional):



- Manually add items



Save and Close Close/back

Ref. Type  Show optional fields?  NO

Title

Abstract

Author(s)

Parent Title

Parent Auth

Year  Standard Number

Short Title  Pages

Volume  Issue

Uri

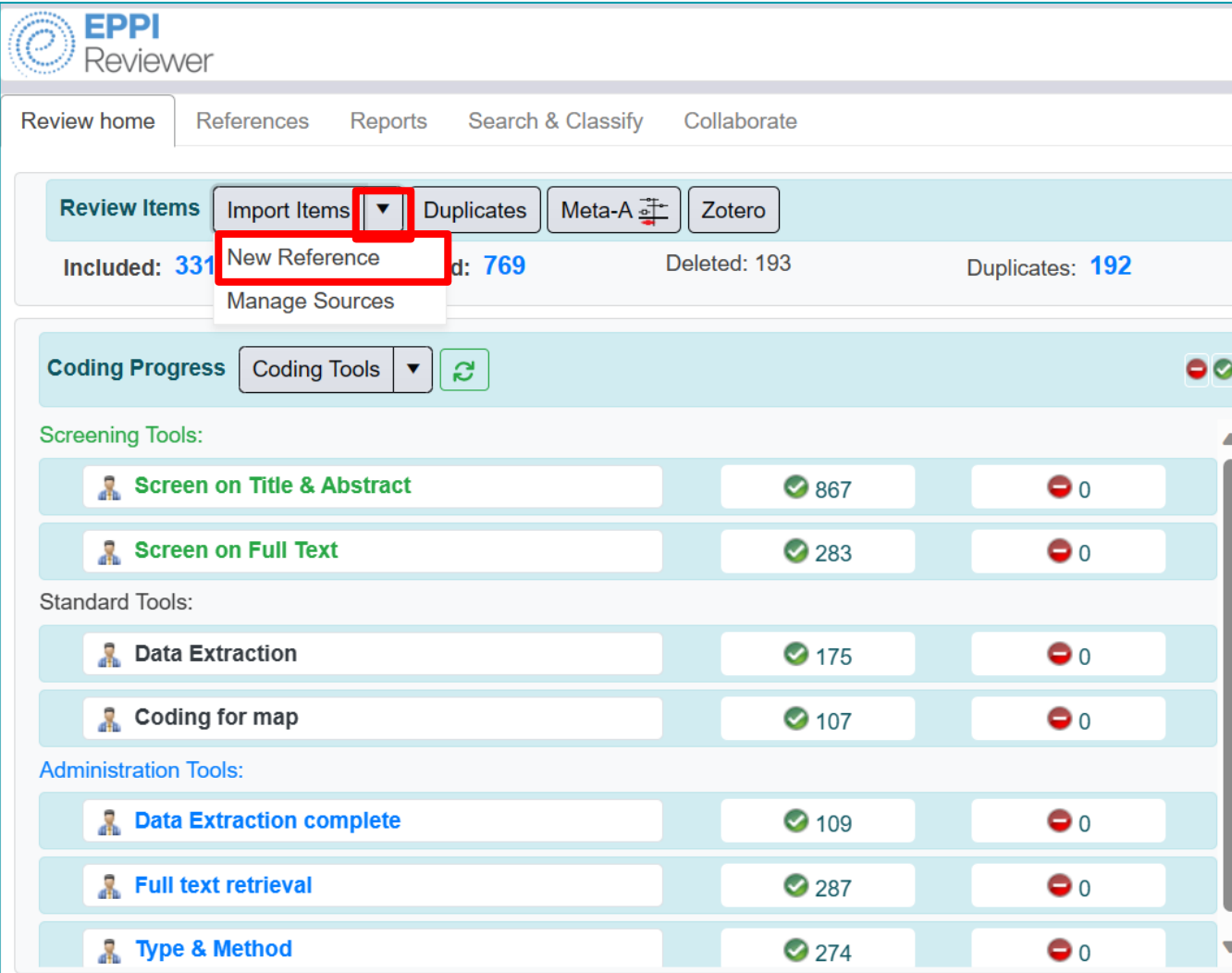
DOI  Availability

Edition  Publisher

Month  City

Country  Institution

➤ *Make sure you choose the correct reference type*



EPPI Reviewer

Review home References Reports Search & Classify Collaborate

Review Items Import Items  Duplicates Meta-A Zotero

Included: 331 New Reference id: 769 Deleted: 193 Duplicates: 192

Manage Sources

Coding Progress Coding Tools

Screening Tools:


Screen on Title & Abstract	867	0
Screen on Full Text	283	0

Standard Tools:

Data Extraction	175	0
Coding for map	107	0

Administration Tools:


Data Extraction complete	109	0
Full text retrieval	287	0
Type & Method	274	0


**EPPI Reviewer**



[Review home](#) | [References](#) | [Reports](#) | [Search & Classify](#) | [Collaborate](#)

[Review Items](#) | [Import Items](#) | **Duplicates** | [Meta-A](#) | [Zotero](#)



**Included: 331**      **Excluded: 769**      Deleted: 193

**Coding Progress** | [Coding Tools](#) | 




Screening Tools:


-  **Screen on Title & Abstract** ✓ 867
-  **Screen on Full Text** ✓ 283

Standard Tools:

-  **Data Extraction** ✓ 175
-  **Coding for map** ✓ 107

Administration Tools:

-  **Data Extraction complete** ✓ 109
-  **Full text retrieval** ✓ 287
-  **Type & Method** ✓ 274


**EPPI Reviewer**


**Duplicates** [Feedback](#)

[Tools...](#) | [Refresh](#) | **Get New Duplicates** | **Mark Automatically** | [More...](#) | 126 groups of possible duplicates loaded (125 marked)

**1st To-Do** | Auto Advance:  | Paging: 1000

Master Item ID:	33058476	Coded count:	1	Uploaded Docs:	0	Pages:	
Pub Type:	Journal, Article	Date:	2016	Source:	ris.ris		
Authors(s):	Hong Jon-Chao ; Hwang Ming-Yueh ; Tai Kai-Hsin ; Kuo Yen-Chun ;						
Title:	Parental monitoring predicts students' prosocial and impulsive tendencies relevant to conseq blended learning environment.						
Pub Name:	Interactive Learning Environments	DOI:	http://dx.doi.org/10.108				
Item ID:	33057893	Coded count:	0	Uploaded Docs:	0	Pages:	
Pub Type:	Journal, Article	Similarity:	0.8006	Date:	2016	Source:	scopus.ris
Authors(s):	Hong J C; Hwang M Y; Tai K H; Kuo Y C;						
Title:	Parental monitoring predicts students' prosocial and impulsive tendencies relevant to conseq blended learning environment						
Pub Name:	Interactive Learning Environments	DOI:	10.1080/10494820.201				
Marked As:	Not checked	<a href="#">A Duplicate</a>	<a href="#">Not a Duplicate</a>	<a href="#">Mark as Master</a>			

- Click **Get New Duplicates** to run the process.
- **Mark Automatically** will speed it up.
- **1st To-Do** takes you to the first possible duplicate in the list.
- Buttons to mark items as duplicate, not a duplicate or master.



**EPPI**  
Reviewer

## Update review

[Feedback](#) [Help](#) [Support...](#)
Melissa Bond
Logout

← →
Bring up-to-date
Keep up-to-date
Match records
Search and browse
OpenAlex Admin
Selected
Show History

Close/back


Autoupdate last run on: 2023-10-05 Matched items: 3021

## Bring review up to date (find related papers)

Add new search for related papers ▾
more details ▾

### Related Paper Searches ↻

Description	Mode	Date from	Date run	All included	With this code	Status			
Bi-citation and recommendations	Bi-Citation AND Recommendations		2 Nov 2021	<input type="checkbox"/>	INCLUDE on title & abstract	Complete	Not imported	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">🗑️</span> <span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">Import</span>	1430
Citing papers	Cited by		2 Nov 2021	<input type="checkbox"/>	INCLUDE on title & abstract	Complete	Not imported	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">🗑️</span> <span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">Import</span>	510
Citing papers	Cited by	1 Nov 2021	9 Nov 2022	<input type="checkbox"/>	INCLUDE on full text	Complete	Imported	<span style="background-color: red; color: white; padding: 2px 5px; border-radius: 3px;">🗑️</span> <span style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">Import</span>	50



**EPPI**  
Reviewer

## Update review

[Feedback](#)
[Help](#)
[Support...](#)
Melissa Bond
[Logout](#)

←
→
Bring up-to-date
Keep up-to-date
Match records
Search and browse
OpenAlex Admin
Selected
Show History

[Close/back](#)

Autoupdate last run on: 2023-10-05 Matched items: 5060

### Keep review up-to-date (subscribe review to auto-updates)

[Create new auto-update subscription ▾](#)

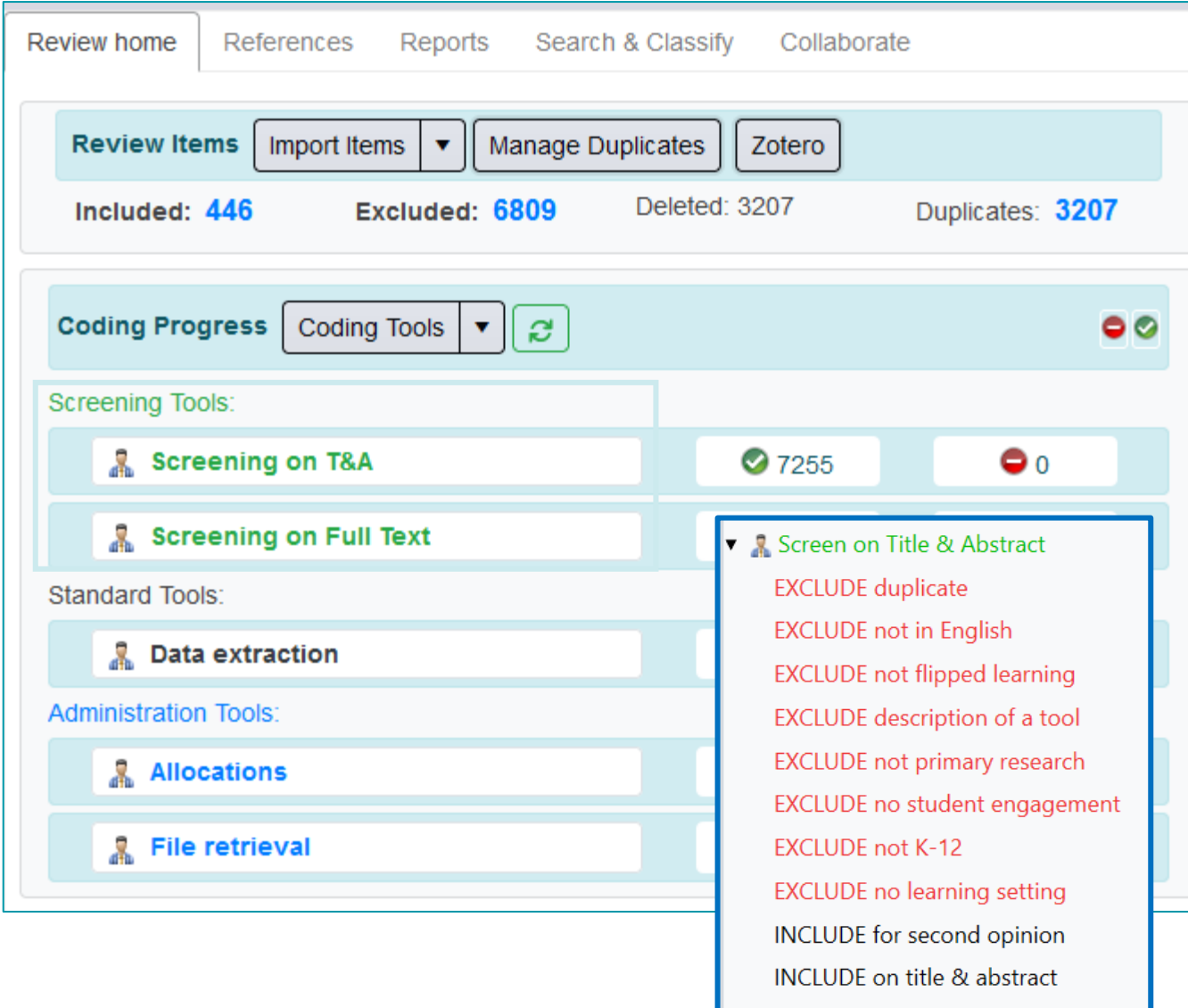
[more details ▾](#)

#### Auto update tasks (they run when new data arrive) 🔄

Description	All included?	Only with this code?
Auto update based on first review items	false	Living review as of 7 Jan 2021 <span style="float: right; color: red;">🗑️</span>

#### Items found at each task execution

Description	All included?	With this code	"Study Type" classifier	User Classifier	Version	Date	
Auto update based on first review items	false	Living review as of 7 Jan 2021			2023-10-19	19 Oct 2023	<a href="#">Refine/Import</a> <span style="float: right;">17655 <span style="color: red;">🗑️</span></span>
Auto update based on first review items	false	Living review as of 7 Jan 2021			2023-10-05	5 Oct 2023	<a href="#">Refine/Import</a> <span style="float: right;">40915 <span style="color: red;">🗑️</span></span>
Auto update based on first review items	false	Living review as of 7 Jan 2021			2023-08-20	21 Aug 2023	<a href="#">Refine/Import</a> <span style="float: right;">27285 <span style="color: red;">🗑️</span></span>
Auto update based on first review items	false	Living review as of 7 Jan 2021			2023-07-12	12 Jul 2023	<a href="#">Refine/Import</a> <span style="float: right;">45043 <span style="color: red;">🗑️</span></span>



The screenshot shows a web interface for a screening tool. At the top, there are navigation tabs: "Review home", "References", "Reports", "Search & Classify", and "Collaborate". Below this is a "Review Items" section with buttons for "Import Items", "Manage Duplicates", and "Zotero". It displays statistics: "Included: 446", "Excluded: 6809", "Deleted: 3207", and "Duplicates: 3207". The "Coding Progress" section includes a "Coding Tools" dropdown and a refresh icon. Under "Screening Tools", there are two active tools: "Screening on T&A" (7255 included, 0 excluded) and "Screening on Full Text". A dropdown menu for "Screen on Title & Abstract" is open, listing various exclusion and inclusion criteria. Below the screening tools are "Standard Tools" (Data extraction) and "Administration Tools" (Allocations, File retrieval).

Review home | References | Reports | Search & Classify | Collaborate

Review Items | Import Items | Manage Duplicates | Zotero

Included: 446 | Excluded: 6809 | Deleted: 3207 | Duplicates: 3207

Coding Progress | Coding Tools | Refresh

Screening Tools:

- Screening on T&A | 7255 | 0
- Screening on Full Text

Standard Tools:

- Data extraction

Administration Tools:

- Allocations
- File retrieval

Screen on Title & Abstract

- EXCLUDE duplicate
- EXCLUDE not in English
- EXCLUDE not flipped learning
- EXCLUDE description of a tool
- EXCLUDE not primary research
- EXCLUDE no student engagement
- EXCLUDE not K-12
- EXCLUDE no learning setting
- INCLUDE for second opinion
- INCLUDE on title & abstract

- Displayed in green.
- Allow 2 types of codes:
  - Include
  - Exclude
- Allows include v exclude comparisons.

The screenshot shows a web interface for screening. At the top, there are navigation tabs: Review home, References, Reports, Search & Classify, and Collaborate. Below this is a 'Review Items' section with buttons for 'Import Items', 'Manage Duplicates', and 'Zotero'. It displays statistics: Included: 446, Excluded: 6809, Deleted: 3207, and Duplicates: 3207. The 'Coding Progress' section has a 'Coding Tools' dropdown and a refresh icon. Under 'Screening Tools', there are three items: 'Screening on T&A' (7255 included, 0 excluded), 'Screening on Full Text', and 'Screen on Title & Abstract' (which is expanded to show a list of include/exclude criteria). Under 'Standard Tools', there is 'Data extraction'. Under 'Administration Tools', there are 'Allocations' and 'File retrieval'.

- Displayed in green.
- Allow 2 types of codes:
  - Include
  - Exclude
- Allows include v exclude comparisons.
- Can be in normal or comparison (double coding) data entry mode.

Comparison mode

The diagram shows two screening tool cards. The top card is 'Screen on Title & Abstract' and the bottom card is 'Screen on Full Text'. A red box highlights the two person icons on the left side of the top card, indicating that two different reviewers are used for this mode.

Normal mode



The screenshot shows a web interface for screening. At the top, there are navigation tabs: 'Review home', 'References', 'Reports', 'Search & Classify', and 'Collaborate'. Below this is a 'Review Items' section with buttons for 'Import Items', 'Manage Duplicates', and 'Zotero'. It displays statistics: 'Included: 446', 'Excluded: 6809', 'Deleted: 3207', and 'Duplicates: 3207'. The 'Coding Progress' section has a 'Coding Tools' dropdown and a refresh button. Under 'Screening Tools', there are three items: 'Screening on T&A' (7255 included, 0 excluded), 'Screening on Full Text', and 'Screen on Title & Abstract'. A dropdown menu is open for 'Screen on Title & Abstract', listing various include and exclude criteria. Below this are 'Standard Tools' (Data extraction) and 'Administration Tools' (Allocations, File retrieval).

**Screening Tools:**

- Screening on T&A: 7255 (green checkmark), 0 (red minus)
- Screening on Full Text
- Screen on Title & Abstract (dropdown menu):
  - EXCLUDE duplicate
  - EXCLUDE not in English
  - EXCLUDE not flipped learning
  - EXCLUDE description of a tool
  - EXCLUDE not primary research
  - EXCLUDE no student engagement
  - EXCLUDE not K-12
  - EXCLUDE no learning setting
  - INCLUDE for second opinion
  - INCLUDE on title & abstract


**Standard Tools:**


- Data extraction

**Administration Tools:**

- Allocations
- File retrieval

- Displayed in green.
- Allow 2 types of codes:
  - Include
  - Exclude
- Allows include v exclude comparisons.
- Can be in normal or comparison (double coding) data entry mode.

**Comparison mode**  **Screen on Title & Abstract**

**Normal mode**  **Screen on Full Text**

- Can only have one level of hierarchy.
  - Enables easier production of frequency reports and reconciliation.

Add new codes

Edit codes

Navigation

Auto Advance

To edit an item record, click on the **Edit** button

The screenshot shows the EPPI Reviewer interface. On the left is a coding tool with a list of exclusion and inclusion criteria. On the right is the 'Item Details' view for a dissertation. The title and abstract are highlighted with green boxes. Navigation and control buttons are visible at the top.

**EPPI Reviewer** | Feedback | Help | Support... | Melissa Bond | Logout

Navigation: First | Previous | Next | Last | Item 2 of 100

Auto Advance  | Show terms  | Close/back

Item Details | Links | Arms | Timepoints | PDF | Coding Record

Ref. Type: Dissertation | Find on: | Show optional fields? NO | Edit

Buttons: Add relevant term | Add irrelevant term | Remove term | Show/Hide Terms | Change Style

**Title:** A technology leader's role in initiating a flipped classroom in a high school math class

**Abstract:** A mixed methods study was conducted to measure the effectiveness of a flipped classroom in a high school discrete mathematics course. In the flipped classroom, students watched videos of the teacher's lesson for homework while completing problems during class. Two sections of the course were involved in the study, with one group receiving the treatment of a flipped classroom, while the other section remained a traditional classroom. In the traditional classroom, the teacher delivered instruction during the class and students completed problems for homework. Students in both sections took a pre and post assessment on the content of the list processing algorithms and bin packing over a 2-week time period to measure their performance in the class and to compare the two groups. Members of the treatment group were also administered the Student Attitude Survey before and after the implementation of the flipped classroom to see if the treatment of a flipped classroom changed their engagement level toward mathematics. Students who scored with high

Coding tool

Info box

Title

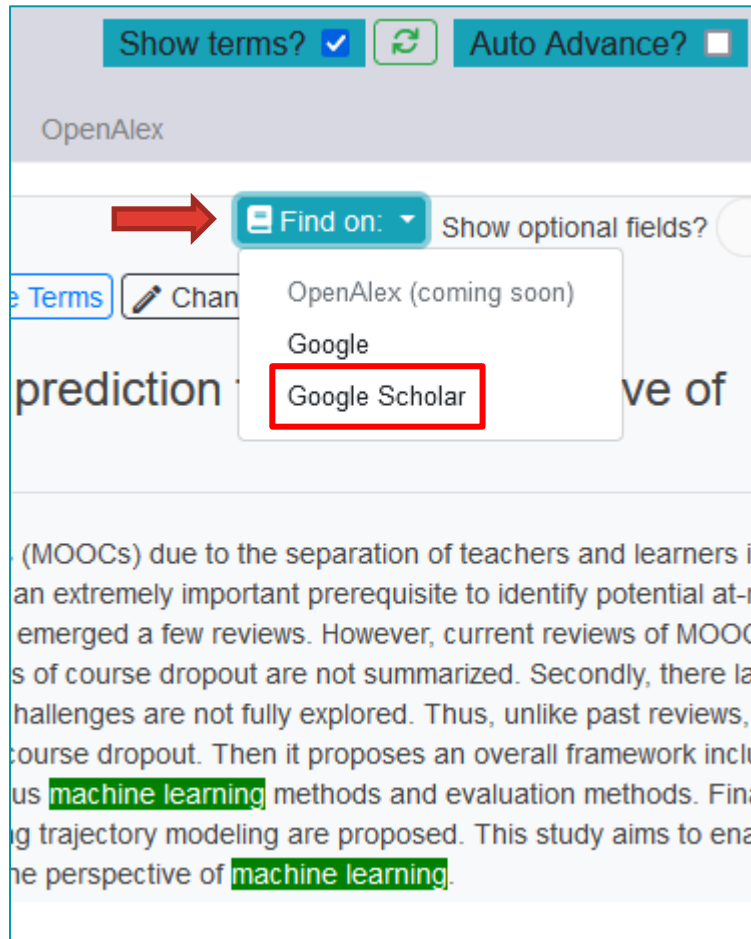
Abstract

## Customise phrases

## Show relevant and irrelevant terms

The screenshot displays the EPPI Reviewer interface. On the left, a 'Review Term' panel lists terms: 'flipped classroom', 'flipped learning', 'high school', and 'review'. Each term has a 'Relevant?' checkbox (checked for the first three) and icons for adding or deleting the term. The main area shows 'Item Details' for a 'Dissertation' titled 'A technology leader's role in initiating a flipped classroom in a high school math class'. The text contains several terms highlighted in green: 'flipped classroom' and 'high school'. A toolbar above the text includes buttons for 'Add relevant term', 'Add irrelevant term', 'Remove term', 'Show/Hide Terms', and 'Change Style:'. The top navigation bar includes 'First', 'Previous', 'Next', 'Last', 'Item 2 of 100', 'Auto Advance', 'Show terms' (checked), and 'Close/back'. The top right corner shows 'Feedback', 'Help', 'Support...', 'Melissa Bond', and 'Logout'.

## Add terms or change the style



- ❖ Use Google or Google Scholar to locate PDFs, or click on the blue URL or DOI text.

Url	<a href="https://doi.org/10.1080/10494820.2022.2124425">DOI</a>	Availability	
Edition		Publisher	
Month		City	
Country		Institution	Yuncheng Univ, Maths & Informat Technol Sch, Yuncheng, Peoples R China
<b>Comments</b>	Times Cited in Web of Science Core Collection: 0 Total Times Cited: 0 Cited Reference Count: 62	<b>Keywords</b>	MOOC dropout prediction online learning learning behaviors
Created by: Melissa Bond Source: Web of Science		Created on: 13/10/2022 Edited by: Melissa Bond Duplicate IDs:	

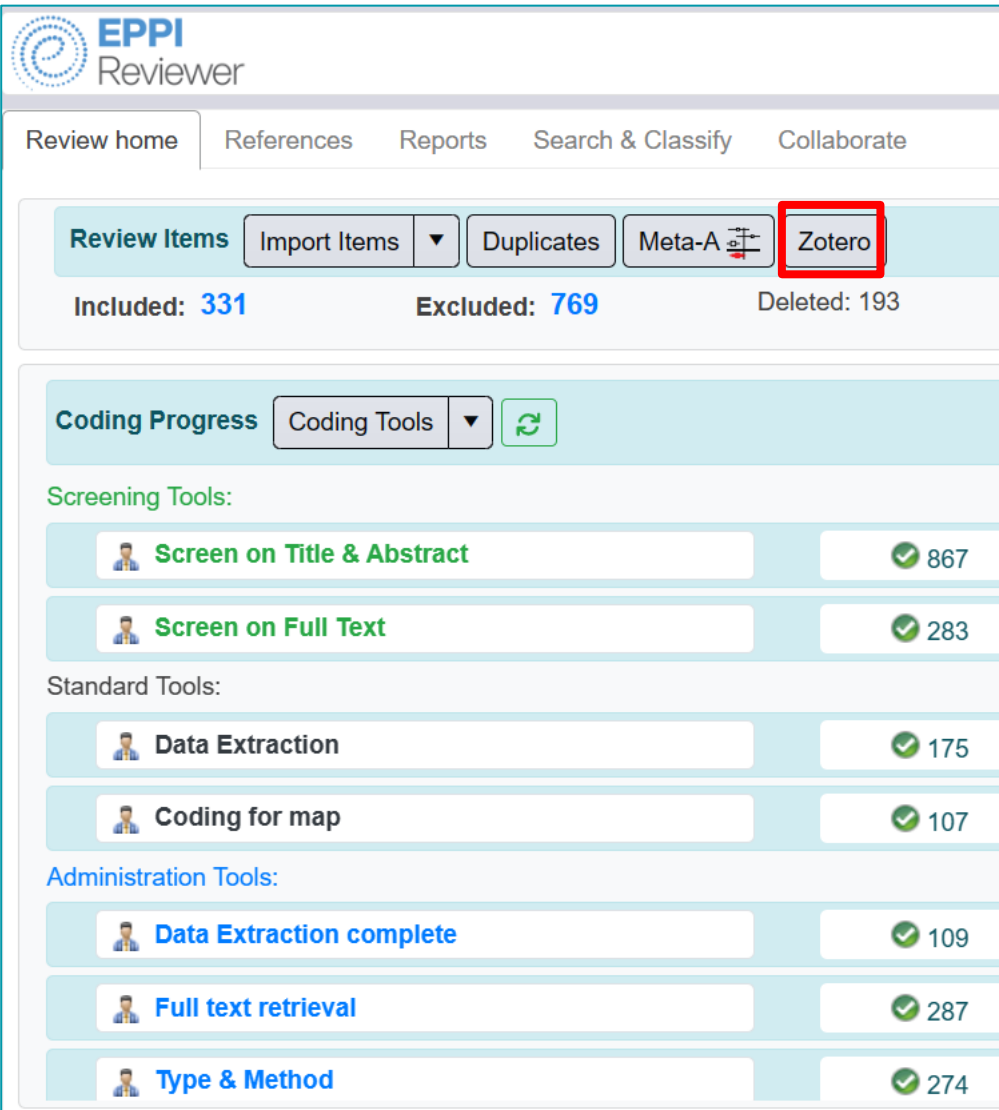
  

[Upload](#)

**Documents:**

Id	Ref	File Name	Actions
904029	A systematic review... (Chen)	A systematic review for MOOC dropout prediction from the perspective of machine learning.pdf	<a href="#">Download</a>

- ❖ Scroll to the bottom of the item record and click on the blue Upload button.



**EPPI Reviewer**  
 Review home | References | Reports | Search & Classify | Collaborate

Review Items | Import Items | Duplicates | Meta-A | **Zotero**

Included: 331 | Excluded: 769 | Deleted: 193

Coding Progress | Coding Tools

**Screening Tools:**

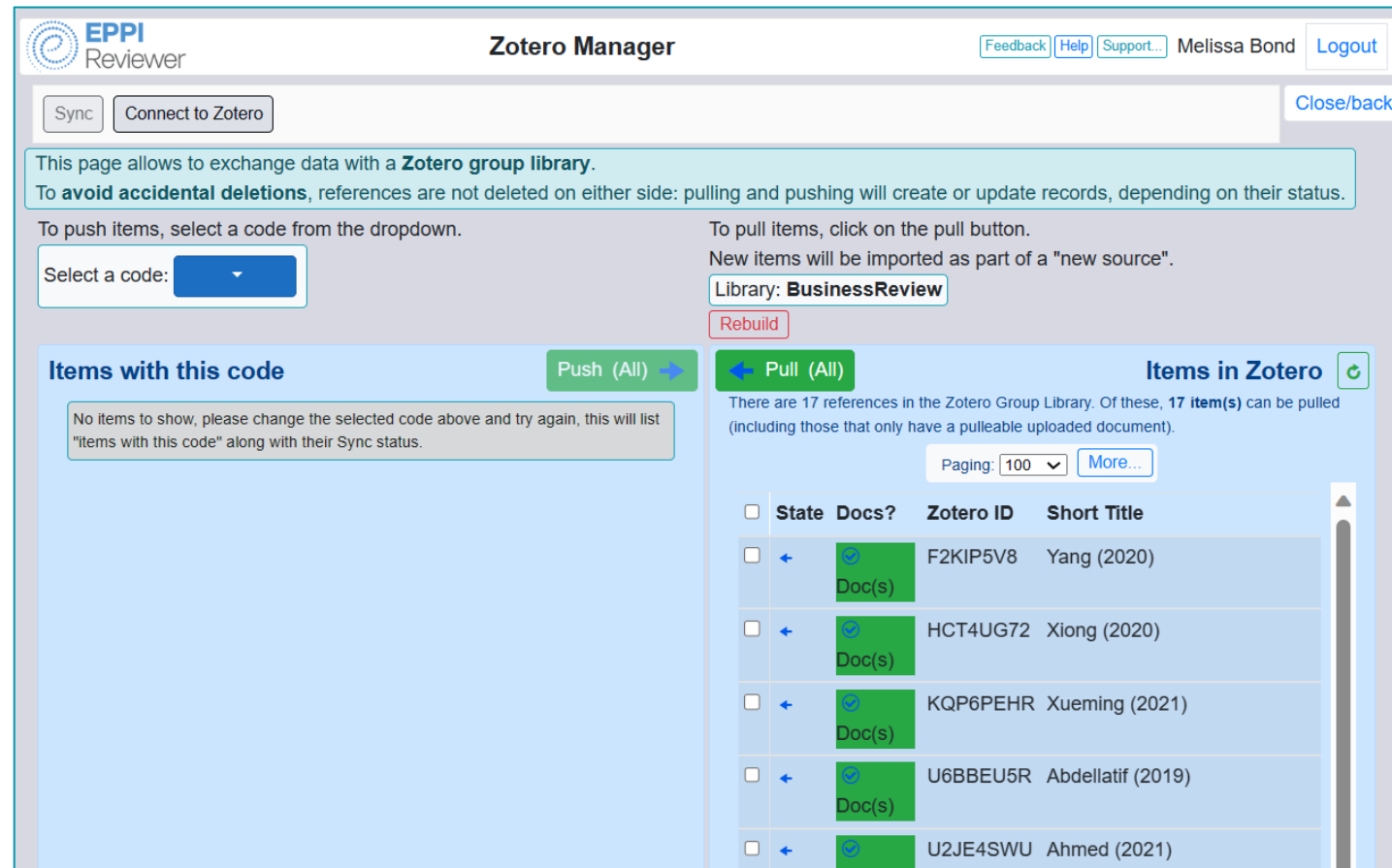
- Screen on Title & Abstract: 867
- Screen on Full Text: 283

**Standard Tools:**

- Data Extraction: 175
- Coding for map: 107

**Administration Tools:**

- Data Extraction complete: 109
- Full text retrieval: 287
- Type & Method: 274



**EPPI Reviewer** | **Zotero Manager** | Feedback | Help | Support... | Melissa Bond | Logout

Sync | Connect to Zotero | Close/back

This page allows to exchange data with a **Zotero group library**.  
 To **avoid accidental deletions**, references are not deleted on either side: pulling and pushing will create or update records, depending on their status.

To push items, select a code from the dropdown.  
 Select a code:

To pull items, click on the pull button.  
 New items will be imported as part of a "new source".  
 Library: **BusinessReview** | Rebuild

**Items with this code** | Push (All)

No items to show, please change the selected code above and try again, this will list "items with this code" along with their Sync status.

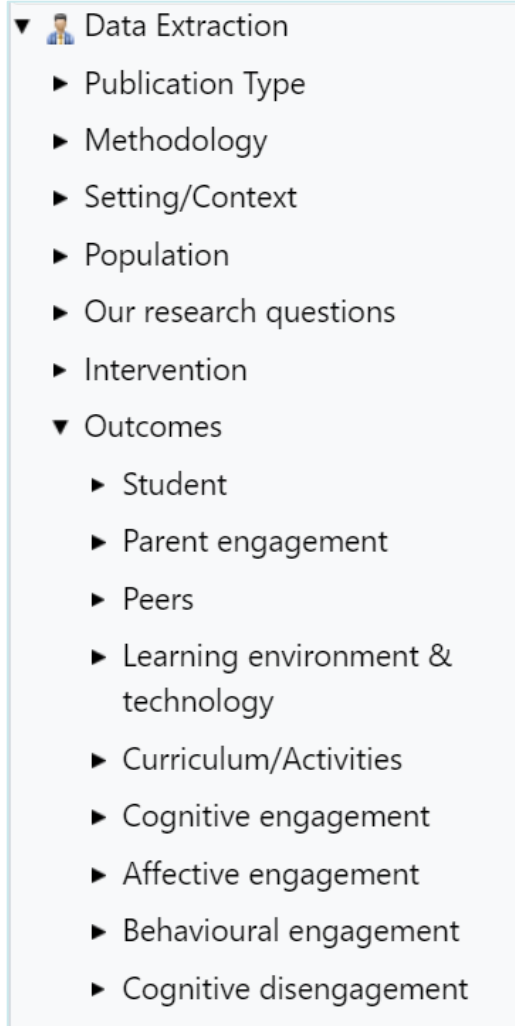
**Pull (All)** | **Items in Zotero**


There are 17 references in the Zotero Group Library. Of these, 17 item(s) can be pulled (including those that only have a pulleable uploaded document).  
 Paging: 100 | More...

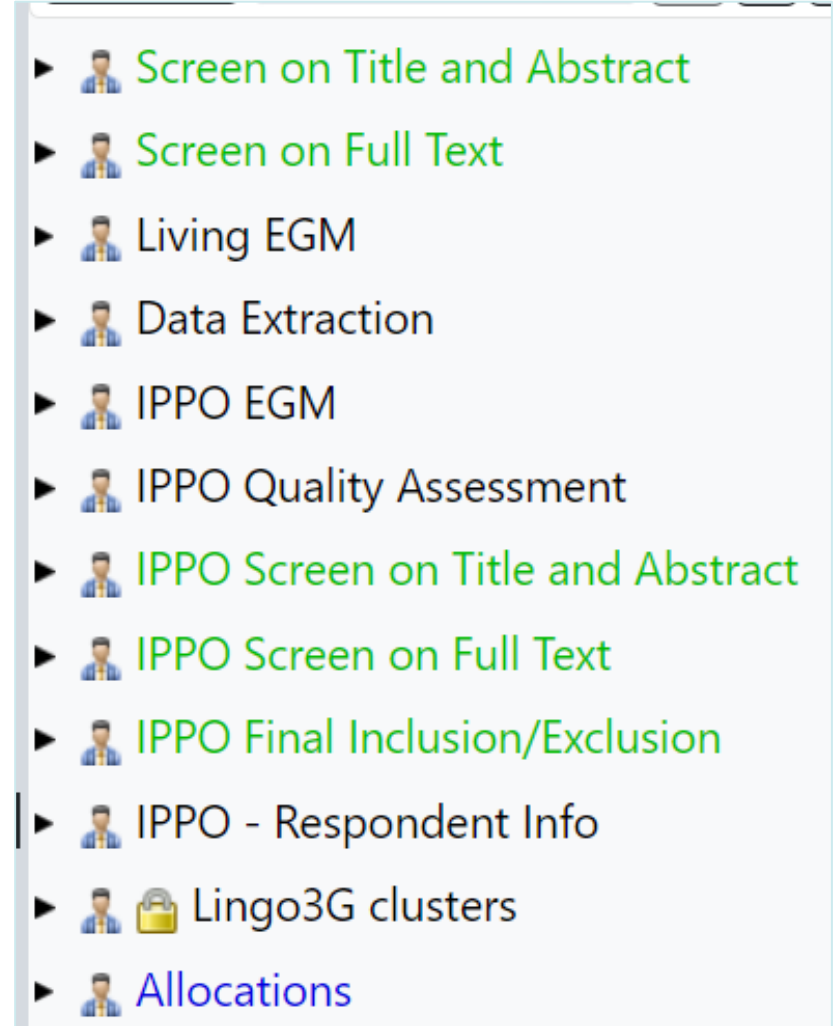
<input type="checkbox"/>	State	Docs?	Zotero ID	Short Title
<input type="checkbox"/>	←	Doc(s)	F2KIP5V8	Yang (2020)
<input type="checkbox"/>	←	Doc(s)	HCT4UG72	Xiong (2020)
<input type="checkbox"/>	←	Doc(s)	KQP6PEHR	Xueming (2021)
<input type="checkbox"/>	←	Doc(s)	U6BBEU5R	Abdellatif (2019)
<input type="checkbox"/>	←	Doc(s)	U2JE4SWU	Ahmed (2021)














- Link to a Zotero Group Library and bulk import PDFs.
  - Only free for up to 300MB

- Complex coding tools supported
- Both quantitative and qualitative codes
- Coding tools allow for multi-stage reviews to occur within the one review
- Consider your coding tool first, if you're going to create EGMs



- ▼  Data Extraction
  - ▶ Publication Type
  - ▶ Methodology
  - ▶ Setting/Context
  - ▶ Population
  - ▶ Our research questions
  - ▶ Intervention
- ▼ Outcomes
  - ▶ Student
  - ▶ Parent engagement
  - ▶ Peers
  - ▶ Learning environment & technology
  - ▶ Curriculum/Activities
  - ▶ Cognitive engagement
  - ▶ Affective engagement
  - ▶ Behavioural engagement
  - ▶ Cognitive disengagement



- ▶  Screen on Title and Abstract
- ▶  Screen on Full Text
- ▶  Living EGM
- ▶  Data Extraction
- ▶  IPPO EGM
- ▶  IPPO Quality Assessment
- ▶  IPPO Screen on Title and Abstract
- ▶  IPPO Screen on Full Text
- ▶  IPPO Final Inclusion/Exclusion
- ▶  IPPO - Respondent Info
- ▶   Lingo3G clusters
- ▶  Allocations



# Hands-on QES Activity

Today, you'll be working on a systematic review exploring the experiences of mothers undertaking doctoral education (e.g., PhD, EdD).



EPPI Reviewer

Welcome to EPPI Reviewer 6

Feedback Help Support... Melissa Bond Logout

EPPI Reviewer 6 supports all modern browsers and can be used on Windows, Macs, Tablets and Smartphones (iOS and Android)

Starting with version 6.15, EPPI Reviewer 6 (formerly known as "Web") is **feature-complete**: it supports all functionalities available in EPPI-Reviewer 4, meaning that it is not *necessary* to use version 4 in order to complete any task. EPPI Reviewer 6 also contains numerous functionalities not available in version 4. However, both versions operate on the same data, so users can decide to use one version or the other, based on their personal preference.

We encourage all users to provide feedback and suggestions via the "Feedback" button above, or by contacting [EPPIsupport@ucl.ac.uk](mailto:EPPIsupport@ucl.ac.uk).

Create Review


ID	Review Name	Last Access: ↓	Coding UI
43900	<a href="#">Doctoral education and motherhood - QES Practice</a>	2 Nov 2023	<a href="#">Coding UI</a>
38649	<a href="#">Review of reviews: programming</a>	2 Nov 2023	<a href="#">Coding UI</a>

# RQs & Inclusion / exclusion criteria

1. Where, when and by whom has research on doctoral education and motherhood been published?
2. What are the characteristics of and methods used in doctoral education and motherhood research?
3. How is research on doctoral education and motherhood theoretically grounded?
4. What macro, exo, meso and micro level factors impact doctoral mothers?

Inclusion	Exclusion
Mothers undertaking doctoral study	Any participants other than mothers
Focused on the experiences	Not empirical research
Empirical primary research	Secondary research
Published in English	Published in a language outside of English
Journal articles, conference papers, book chapters	Reviews, editorials, abstracts only

# Screening in EPPI Reviewer



[Feedback](#) [Help](#) [Support...](#)

Melissa Bond [Logout](#)

[Review home](#) [References](#) [Reports](#) [Search & Classify](#) **[Collaborate](#)**

[Distribute Work](#)

[Create reference groups](#)

[Create new code](#)

[Create coding assignment](#)

[Create comparison](#)

[Auto Comparison\(s\)](#)

### Reviewers

ID	Name
8451	Melissa Bond
19219	Astrid Guldbrandsen
24900	Camilla Hagevold
24916	Elin Nordbø
24929	Ellinor Waaland
24906	Maximiliaan Thijssen
24930	Merete Haugstad
24941	Wenche Olivia Sigurdson

### Coding Assignments [Collapse](#)

Id ↓	Name	Study Group	Codes to apply	Allocated	Started	Remaining	
135640	Wenche Olivia Sigurdson	Group 4 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135639	Merete Haugstad	Group 3 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135638	Maximiliaan Thijssen	Group 3 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135637	Ellinor Waaland	Group 2 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135636	Elin Nordbø	Group 2 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135635	Camilla Hagevold	Group 1 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>
135634	Astrid Guldbrandsen	Group 1 screening T&A	Screening on Title & Abstract	16	0	16	<a href="#">Delete</a>

# Screening in EPPI Reviewer

EPPI Reviewer

Review home | References | Reports | Search

Import Items | Cluster | Coding Report

First | Previous | Page: 1 of 1 | Next

Showing work allocation remaining: Group 4 sc

<input type="checkbox"/>	ID	Short title↑
<input type="checkbox"/> <b>GO</b>	I 91988350	Kenny (2014)
<input type="checkbox"/> <b>GO</b>	I 91988351	Kinney (2015)
<input type="checkbox"/> <b>GO</b>	I 91988352	Kuperberg (2009)

EPPI Reviewer

123

Screening on Title & Abstract

- EXCLUDE duplicate [Info](#)
- EXCLUDE not solely mothers [Info](#)
- EXCLUDE not solely on doctoral education [Info](#)
- EXCLUDE not focused on the experience [Info](#)
- EXCLUDE not empirical [Info](#)
- EXCLUDE not primary research [Info](#)
- EXCLUDE out of review scope [Info](#)
- EXCLUDE not in English [Info](#)
- EXCLUDE book review, editorial, abstract, brief communication, obituary, news article [Info](#)
- INCLUDE on title & abstract [Info](#)

Item Details

First | Previous | Next | Last | Item 1 of 16

Item Details | Links Arms Timepoints | PDF | Coding Record

Ref. Type: **Book, Chapter**

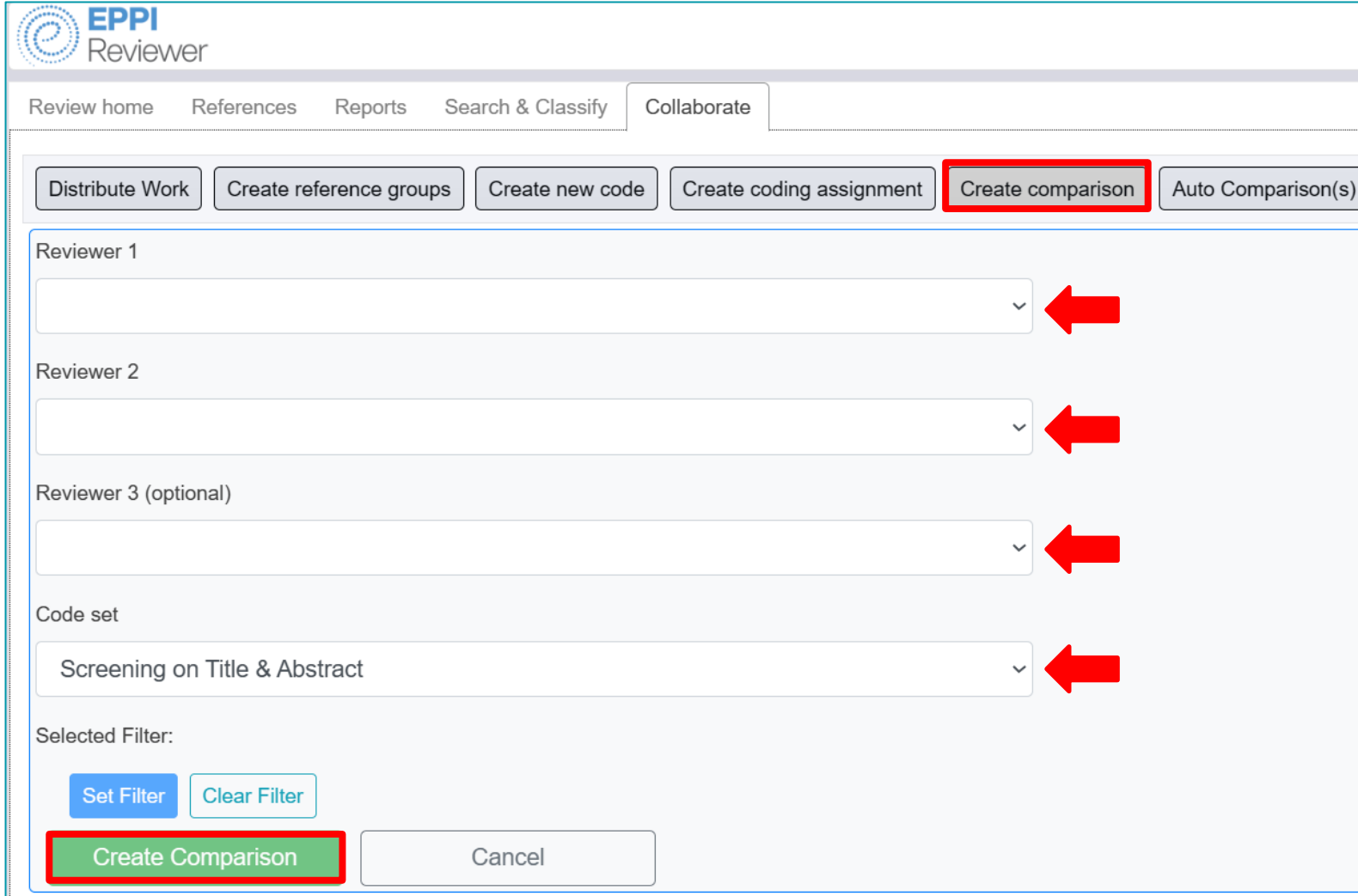
[Add relevant term](#) [Add irrelevant term](#) [Remove term](#) [Show/Hide Terms](#) [Change Style](#)

## Leadership found

**Abstract:**  
Carolyn Kenny is an Indigenous scholar with Choctaw and Ukrainian ancestry and adopted into the... working in Canada and the United States and has presented her work internationally in two areas-Indigenous Human Development and Indigenous Studies with a PhD from Antioch University in Leadership and chapters, and articles on these topics. She is the mother of Josh Kenny and Shannon Lee Kenny and Madison. © 2015 Taylor & Francis.

<b>Author(s)</b>	Kenny Haida ; C ;		
<b>Book Title</b>	Indigenous Leadership in Higher Education		
<b>Item is</b>	Included	<b>ID</b>	91988350
<b>Editors</b>			
<b>Year</b>	2014	<b>ISBN</b>	97

# Reconciling screening decisions



EPPI Reviewer

Review home References Reports Search & Classify Collaborate

Distribute Work Create reference groups Create new code Create coding assignment **Create comparison** Auto Comparison(s)

Reviewer 1  
▼ ←

Reviewer 2  
▼ ←

Reviewer 3 (optional)  
▼ ←

Code set  
Screening on Title & Abstract ▼ ←

Selected Filter:  
Set Filter Clear Filter

**Create Comparison** Cancel

1. In the Collaborate tab, click on 'Create Comparison'.
2. Select the reviewer names involved.
3. Leave the code set as 'Screening on Title & Abstract'.
4. Click on 'Create Comparison'.


### Comparisons Collapse

Codes applied from this set	Reviewer 1	Reviewer 2	(Reviewer 3)	(Only with this code)	Date	Quick Rep.	Details	Delete
Screen on T&A	Melissa Bond	Shannon Mason			11 Nov 2021	<a href="#">Run</a>	<a href="#">View</a>	<a href="#">Delete</a>

The statistics are based on the status of the database at the time the comparison was created.

Full  ←

	Agreements	Disagreements
Melissa Bond Vs. Shannon Mason	<a href="#">94 / 100 (list)</a> <a href="#">Complete &amp; Lock</a> <a href="#">Complete</a>	<a href="#">6 / 100 (list)</a> <a href="#">Reconcile</a>



[Feedback](#)
[Help](#)
[Support...](#)
 Melissa Bond
 [Log](#)

### Reconciliation

Items List
Close/ba

[Show Detailed Tree-View](#)

	Item	Melissa Bond	Shannon Mason
<input checked="" type="checkbox"/>	<a href="#">65602788</a> Ahluwalia-Cameron (2021)	<span style="background-color: red; color: white; padding: 2px;">Un-Complete</span> <input type="text" value="INCLUDE on title &amp; abstract"/>	<input type="text" value="EXCLUDE not empirical"/>
<input type="checkbox"/>	<a href="#">64411597</a> Behboodi (2017)	<span style="background-color: green; color: white; padding: 2px;">Complete</span> <span style="background-color: blue; color: white; padding: 2px; margin-left: 5px;">Complete &amp; Lock</span> ←	<span style="background-color: green; color: white; padding: 2px;">Complete</span> <span style="background-color: blue; color: white; padding: 2px; margin-left: 5px;">Complete And Lock</span> ←
<input type="checkbox"/>	<a href="#">65604250</a> Bober (2017)	<span style="background-color: green; color: white; padding: 2px;">Complete</span> <span style="background-color: blue; color: white; padding: 2px; margin-left: 5px;">Complete &amp; Lock</span>	<span style="background-color: green; color: white; padding: 2px;">Complete</span> <span style="background-color: blue; color: white; padding: 2px; margin-left: 5px;">Complete And Lock</span>



# Getting frequencies and officially excluding

EPPI Reviewer

Review home References Reports Search & Classify Collaborate

Feedback Help Support... M

Edit Tools With this Code

Screening on Title & Abstract

Screening on Full text

Data extraction

Coding allocations

Screening on T&A allocations

- Group 1 screening T&A
- Group 2 screening T&A
- Group 3 screening T&A
- Group 4 screening T&A

Screening on full text allocations

Data extraction allocations

Frequencies and crosstabs Configurable reports Run Reports

Rows: Screening on Title & Abstract Set Get Frequencies

Columns: Not set (only used for Crosstabs) Set

Filter: Not set (optional) Set Filter Clear Filter

Get Frequencies Get CrossTab

Included  Excluded  Both

Current code: Screening on Title & Abstract

No data to show.

# Getting frequencies and officially excluding

Review home | References | Reports | Search & Classify | Collaborate

Import Items | Cluster | Coding Report | **In/Exclude** | Export to RIS | Run Reports

**Assign documents as Included or Excluded**

Assign these items:

Assign as:  Included  Excluded

**Assign** | Cancel

First | Previous | Page: 1 of 1 | Next | Last | Showing 64 items of 64 | [View Options](#)

Showing Included Items

	<input checked="" type="checkbox"/>	ID	Short title↑	Title
<a href="#">GO</a>	<input checked="" type="checkbox"/>	I 91988307	Abbasoglu (2018)	Birth and employment transitions of women in Turkey: The emer incompatibility
<a href="#">GO</a>	<input checked="" type="checkbox"/>	I 91988308	Abdolhosseini (2017)	Effects of Pomegranate and Spearmint Syrup on Nausea and Vc Pregnancy: A Randomized Controlled Clinical Trial

1. Click on the blue number of items next to an exclusion code.
2. Select all of the items by clicking in the checkbox at the top of the column.
3. Click on the 'In/Exclude' button.
4. Choose 'Selected documents'.
5. Change the toggle to 'Excluded'.
6. Click 'Assign'.
7. Repeat for all items given an exclude code.

# Data extraction

▼  Data extraction

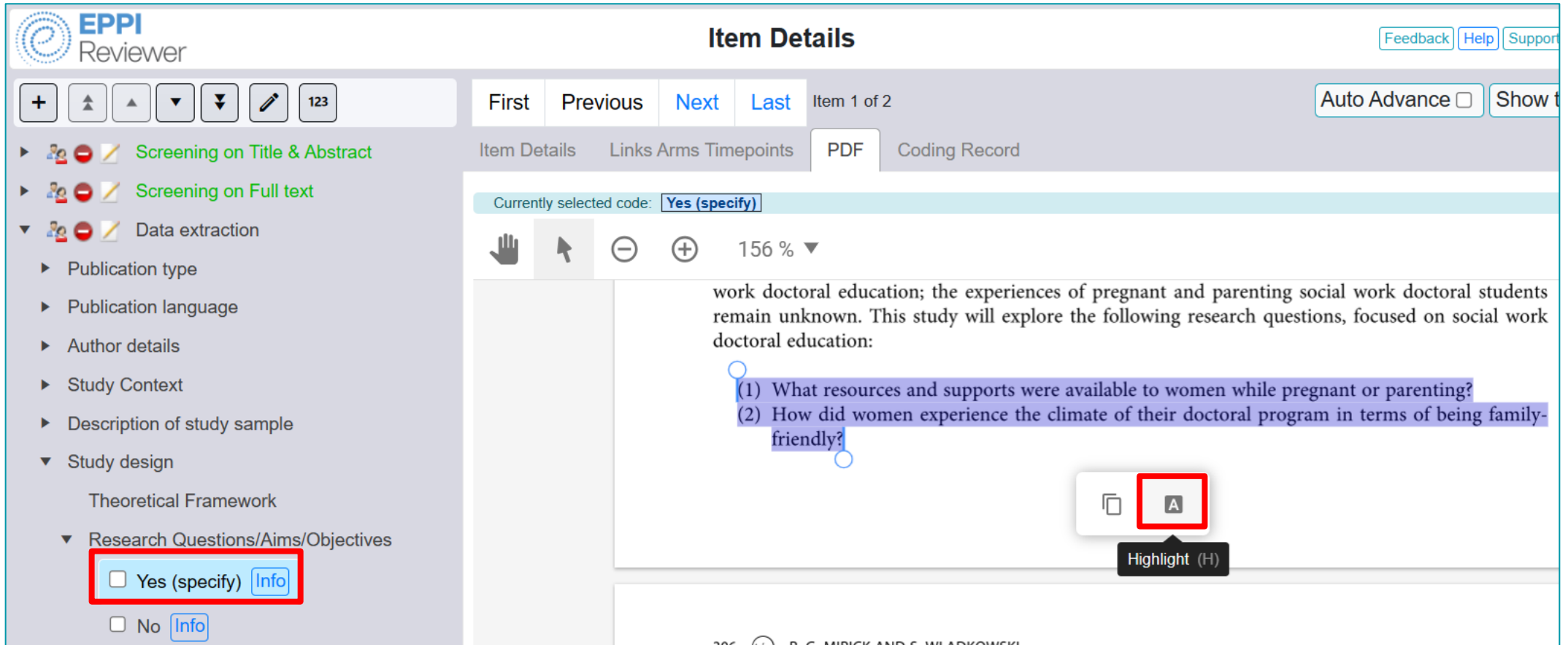
- ▶ Publication type
- ▶ Publication language
- ▶ Author details
- ▶ Study Context
- ▶ Description of study sample
- ▶ Study design
- ▶ Methodology

Factors affecting mothers in doctoral education



What other codes do we need to add under 'Factors affecting mothers in doctoral education', based on this framework?

# Data extraction



The screenshot displays the EPPI Reviewer software interface. The main window is titled "Item Details" and shows a list of items on the left and a detailed view of the selected item on the right. The selected item is "Data extraction" under the "Research Questions/Aims/Objectives" category. The "Yes (specify)" option is selected and highlighted with a red box. The text of the research question is displayed in the main view, with the question text highlighted in blue. A red arrow points to the highlighted text. A tooltip for the "Highlight (H)" button is visible, indicating that the text is highlighted.

EPPI Reviewer

Item Details

Feedback Help Support

123

First Previous Next Last Item 1 of 2

Auto Advance  Show t

Item Details Links Arms Timepoints PDF Coding Record

Currently selected code: Yes (specify)

156 %

work doctoral education; the experiences of pregnant and parenting social work doctoral students remain unknown. This study will explore the following research questions, focused on social work doctoral education:

(1) What resources and supports were available to women while pregnant or parenting?

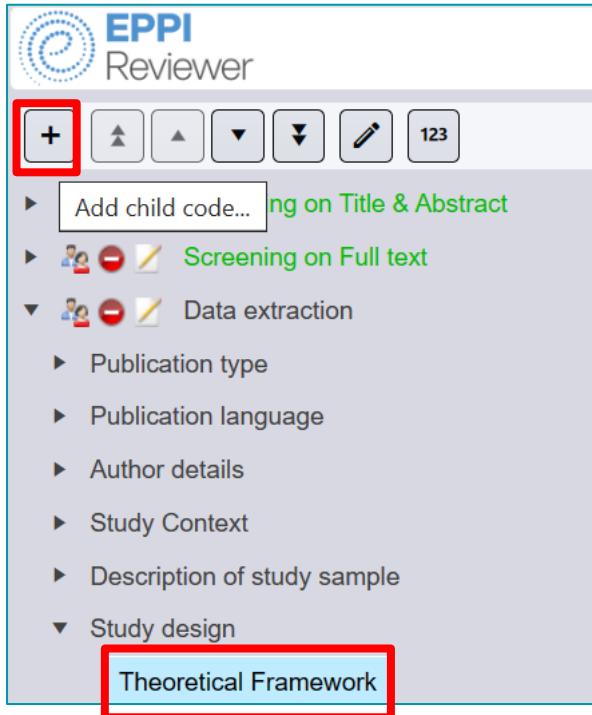
(2) How did women experience the climate of their doctoral program in terms of being family-friendly?

Highlight (H)

Yes (specify) Info

No Info

# Inductive coding



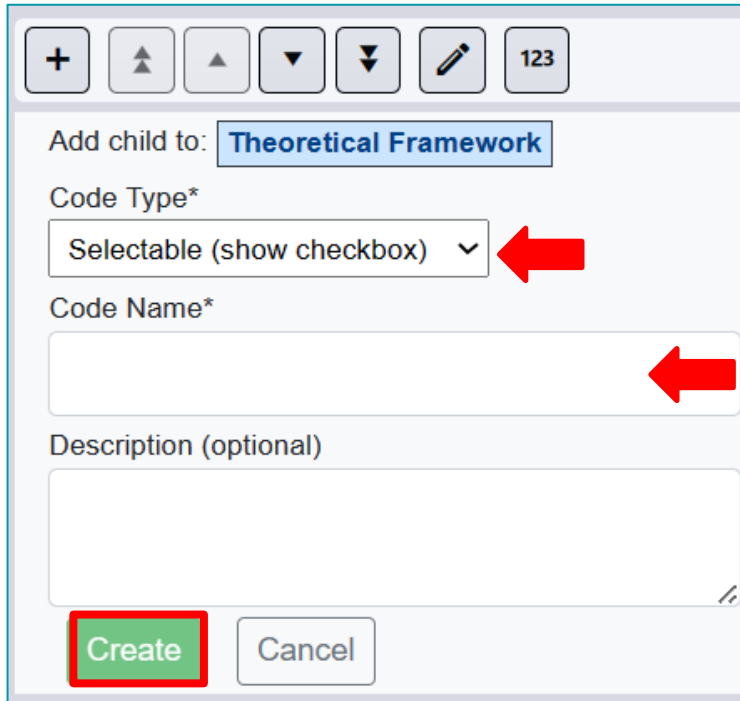
EPPI Reviewer

+ [Up] [Down] [Edit] 123

Add child code... [Click on Title & Abstract](#)

- ▶ [Screening on Full text](#)
- ▼ [Data extraction](#)
  - ▶ Publication type
  - ▶ Publication language
  - ▶ Author details
  - ▶ Study Context
  - ▶ Description of study sample
  - ▼ Study design
    - Theoretical Framework**

**Create** Cancel



+ [Up] [Down] [Edit] 123

Add child to: **Theoretical Framework**

Code Type\*  
Selectable (show checkbox) ▼

Code Name\*

Description (optional)

**Create** Cancel

1. Click on the parent code (e.g., Theoretical Framework).
2. Click on the + icon.
3. Choose 'Selectable (show checkbox)'.
4. Type in a code name (e.g., Theory of Transformation).
5. Click 'Create'.

# Synthesising information

Review home   References   Reports   Search & Classify   Collaborate

Frequencies and crosstabs   Configurable reports   Run Reports

Rows: Theoretical framework   **Set**   Get Frequencies

Columns: *Not set (only used for Crosstabs)*   **Set**

Filter: *Not set (optional)*   **Set Filter**   Clear Filter

**Get Frequencies**   Get CrossTab    Included    Excluded    Both   Current code: Theoretical framework

Show results as:  Table    Pie chart    Bar chart    Show 'None of the codes above'   **Export**

Code	Count
No clear framework	21
Bourdieu - family capital/ sociological thought	2
transnationalism, space and place	1

Edit Tools   With this Code   [Print] [Refresh] [Export]

- ▶ Screen on T&A
- ▶ Screen on Full text
- ▼ Data extraction
  - ▶ Publication type
  - ▶ Publication language
  - ▶ Type of research
  - ▶ Author details
  - ▶ Study Context
  - ▶ Target population
  - ▼ Study design
    - ▶ Scope of study
    - ▶ Data collection
    - ▶ **Theoretical framework**
    - ▶ Funding
    - ▶ Factors affecting mothers in doctoral education



# Synthesising information

	A	B
1	Code	Count
2	Positive self-perceptions & self-efficacy	30
3	Self-regulation	25
4	Understanding	24
5	Learning from peers	23
6	Focus/concentrate	20
7	Critical thinking	18
8	Teaching self & peers	17
9	Deep learning	16
10	Reflection	
11	Setting learning goals	
12	Preference for challenging tasks	
13	Operational reasoning	

1. This information can be reported in a table, as well as narratively.
2. Then, create a [configurable report](#), open it in Excel and see what evidence you coded under each heading (or perhaps the top five, if you have a lot of codes).

A	M
Short Title	Positive self-perceptions & self-efficacy quotes
Abdelrahman (2017)	<p>[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 6: <i>Before my experience with the module, I paid little attention to writing in English. I only focus on completing the number of words required to finish a writing assignment</i></p> <p>[Abdelrahman et al - Flipped Learning for ESL Writing in a Sudanese School.pdf] Page 7: <i>Before using the module, English was the most difficult subject in school. I don't write because I am weak in English. Now, I am completely changed. I am more confident in using and writing English, even outside school</i> "subject in school. I don't write because I am weak in English. Now, I am completely changed. I am more</p>
Avery (2018)	<p>[Avery 2018.pdf] Page 10: <i>"It helped me to become more responsive during class time."</i> "I am better at working with others."</p>
Bergstresser, (2018)	<p>[Bergstresser.pdf] Page 72: <i>Overall, students in the flipped classroom scored higher numbers on the survey in both science and history classes in self-belief (mean flipped= 5.73, mean traditional= 5.5)</i></p>

# Synthesising information

Read through all of the evidence you've gathered across each study under that code and see if there are any commonalities or differences.

Summarise the studies and include one or two examples.

## 4.4.3. *Cognitive engagement and flipped learning*

Found slightly less in the studies in this review, cognitive engagement was coded through 12 different indicators (see [Table 4](#) for the top five), with the flipped learning approach enhancing *positive self-perceptions & self-efficacy* in more than a quarter of studies, and found in 50% of studies using Google Classroom (see [Table 8](#)). Research reported enhanced student subject self-efficacy ([Abdelrahman et al., 2017](#), pp. 60–70; [Chaipidech & Srisawasdi, 2016](#)) and technology self-efficacy ([Chang & Hwang, 2018](#); [Huang & Hong, 2016](#)), with [Hwang and Lai \(2017\)](#) finding that a flipped learning approach using an interactive eBook was more effective for students with lower self-efficacy. Again, whilst some students did not obtain higher results in exams using the flipped approach, they were “not disappointed” because they “became more confident” and “more comfortable to pose questions to the teachers and friends” (Middle school student, [Lee, 2018](#), p. 850). There was, however, still quite a number of studies that reported increased content *understanding* (e.g., [Kong, 2015](#)), even if only in one aspect or topic of instruction more than others (e.g., [Kirvan, Rakes, & Zamora, 2015](#)).

# Extra Hands-on Activities

You can choose to start your own review, ask questions, or you can choose to complete an extra pre-prepared hands-on task:

- [Hands-on practice task #1](#)
- [Hands-on practice task #2 – Education specific](#)
- [Setting up a shared review](#)
- [Setting up a data-extraction coding tool](#)
- [Setting up coding assignments](#)



Folder link:

[https://drive.google.com/drive/folders/14YsQjvHqaXJmEqiUQIQI9EHw6n11Zw7t?usp=drive\\_link](https://drive.google.com/drive/folders/14YsQjvHqaXJmEqiUQIQI9EHw6n11Zw7t?usp=drive_link)

# Further information

[EPPI-Reviewer Account Manager](#) – sign up to a free one month trial.

- ▶ [Importing references](#) into EPPI-Reviewer
- ▶ [Managing duplicates](#) in EPPI-Reviewer
- ▶ [Editing codes and coding tools](#)
- ▶ [Creating reference groups and allocating coding assignments](#)
- ▶ [Understanding data entry modes, double coding and reconciliation](#)
- ▶ [Pushing items from EPPI-Reviewer to Zotero and importing bulk PDFs](#)
- ▶ [Line by line PDF coding](#)
- ▶ [Creating a comparison report](#)
- ▶ [Using the Reports tab](#)
- ▶ [Introduction to interactive evidence gap maps](#)
- ▶ [Creating an interactive EGM using EPPI-Mapper](#)
- ▶ [Introduction to EPPI-Visualiser](#)

# Contact Information

## Dr Melissa Bond



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- Twitter: [https://twitter.com/misc\\_nerd](https://twitter.com/misc_nerd)
- Website: <http://drmelissabond.weebly.com/>
- ResearchGate: <https://www.researchgate.net/profile/Melissa-Bond-5>
- LinkedIn: <https://www.linkedin.com/in/bondmelissa/>
- YouTube: <https://www.youtube.com/user/EPPIReviewer4>



- Bedenlier, S., Bond, M., Buntins, K., Zawack-Richter, O., & Kerres, M. (2020). Learning by doing? Reflections on conducting a systematic review in the field of educational technology. In O. Zawacki-Richter, M. Kerres, S. Bedenlier, M. Bond, & K. Buntins (Eds.), *Systematic reviews in educational research: Methodology, perspectives and application*. Heidelberg: Springer Open, Verlag für Sozialwissenschaften. [https://doi.org/10.1007/978-3-658-27602-7\\_7](https://doi.org/10.1007/978-3-658-27602-7_7)
- Boland, A., Cherry, M. G., & Dickson, R. (2017). *Doing a systematic review: A student's guide* (2nd edition). Thousand Oaks, CA: SAGE Publications.
- Bond, M. (2020). Facilitating student engagement through the flipped learning approach in K-12: A systematic review. *Computers & Education*, 151, 1-36. <https://doi.org/10.1016/j.compedu.2020.103819>
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