International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

Data literacy for teaching from data team building. A systematic review

INPLASY2023100073
doi: 10.37766/inplasy2023.10.0073
Received: 07 October 2023
Published: 21 October 2023

Sandoval, F[1]; López, JA[2]; Gajardo, C[3].

Corresponding author:
Fabian Sandoval Ríos

fabiansandovalrios@gmail.com

Author Affiliation:
University of Granada.

ADMINISTRATIVE INFORMATION

Support - I have no financial support.

Review Stage at time of this submission - Risk of bias assessment.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023100073

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 October 2023 and was last updated on 21 October 2023.

INTRODUCTION

Review question / Objective The objective of this systematic review is to examine the effects of data literacy training through the formation of data teams in education.

Rationale The systematic review on data literacy in education, focusing on teachers and the formation of data teams among them, is justified by the need to prepare educators to tackle the challenges of the digital age. Teachers play a fundamental role in shaping future generations, and in an increasingly data-driven world, it is essential for them to be proficient in interpreting and effectively using data. The formation of data teams among teachers can enhance their skills by fostering collaboration and knowledge exchange. This systematic review aims to examine and synthesize the available evidence on effective approaches to data literacy in teachers through team formation, which will help identify best practices and strategies to strengthen educators' data handling skills. This, in turn, will contribute to improving the quality of teaching and preparing students for a future in which data competency is essential for personal and professional success.

Condition being studied The development of data literacy skills in teachers will be studied based on the formation of data teams as a literacy strategy.

METHODS

Search strategy The selected databases for this search strategy are WoS, Scopus, and Ebsco Host. The search strategy for the selected databases will use the elements of the PICO question, considering broad terms for the intervention (data literacy) and for the outcomes (decision making), as well as incorporating (education) as a special situation in which intervention is performed. These terms will be expanded using the ERIC thesaurus, and additionally an instructional services librarian

assisted in the development of term selection. Terms within and across concepts will be combined by the Boolean operators “OR” and “AND” respectively. No restrictions will be used for the date, language, or country of publication. The terms associated with population/participants and comparators will not be used to avoid narrowing the search too much and missing studies that may be useful for this review.
A draft search strategy has been developed in Scopus and will be modified according to the specifics of each database: (TITLE-ABS-KEY ("data literacy" OR "data literacy training" OR "data literacy for teaching" OR "data literacy program")) AND (TITLE-ABS-KEY ("decision making" OR "data driven decision making" OR "data based decision making" OR "data use" OR "decision-making" OR "decision making skills" OR "information utilization")) AND (TITLE-ABS-KEY ("education" OR "higher education" OR "college*" OR "universit*" OR "tertiary education" OR "preschool education" OR "preschool" OR "primary education" OR "secondary education" OR "secondary schools" OR "high school")).

Participant or population Preschool, primary and secondary teachers, higher education teachers and pre-service teachers. It will not be restricted by gender, age, experience, or ethnicity.

Intervention Interventions focused on data literacy training with data teams.

Comparator Only if possible, the comparator corresponds to people who have not participated in the data literacy intervention with data teams.

Study designs to be included Randomized controlled studies, non-randomized studies, quantitative descriptive studies, qualitative and mixed methods studies will be included.

Eligibility criteria In the study selection, we will include those that investigate the impact on data literacy through interventions involving data teams, while excluding research related to data mining, learning analytics, or big data in education, as well as those that do not specifically address data literacy or do not incorporate data teams in their interventions.

Information sources An exhaustive and systematic computerized search of the electronic databases Scopus, Web of Science and Ebsco Host will be carried out.

Main outcome(s) The main results expected to be found are associated first of all with the characteristics of data literacy interventions that use data team building. Secondly, the levels of self-efficacy in the identification and access to data, in the technological use of data and in the application of data in instruction will be analyzed. It is also expected to find results on the predisposition towards data and associated beliefs. Validated questionnaires such as the 3D-MEA, COA III Scale or the SEDU are available for this purpose.

Additional outcome(s) It is also expected to find results on the advance in knowledge and skills associated with the use of data with data teams, measured through data literacy tests.

Data management The records retrieved in the search will be exported to Rayyan. In this same software, duplicate articles will be eliminated and the titles and abstracts will be read by the authors, in order to select or eliminate articles online, facilitating collaboration between reviewers. The full-text articles will then be extracted into Microsoft Excel software, which will be rigorously designed for proper data extraction. A PRISMA flowchart will be used to graph the selection of studies, including the number of articles at each stage and the reasons for exclusion.

Quality assessment / Risk of bias analysis The risk of bias of the studies will be reviewed by reading their key components such as authorship, participants, disciplines involved, methodology, the way in which the surveys are applied and the context in which the intervention is administered. The quality evaluation will be carried out through the MMAT Mixed Methods Evaluation Tool, version 2018, which has been designed for the evaluation stage of systematic reviews of mixed studies, that is, reviews that include qualitative, quantitative and methods studies. mixed. It allows assessment of the methodological quality of five categories of studies: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies.

Strategy of data synthesis Once the selected articles for review have been extracted, a formal narrative synthesis will be conducted. This entails analyzing the results obtained based on the research question and objectives, using tables and graphical resources to display patterns and common elements among the studies. A descriptive summary will be presented, and an analysis of the findings of the review will be conducted, summarizing the results related to advances in data literacy through the formation of

teams that include teachers and other members of educational communities. The results will also include information about the instruments used for data collection, the characteristics of the included and excluded studies, the participants involved, and the interventions carried out, along with their variations and differences.
To conduct this review, the guidelines outlined in the PRISMA 2020 statement will be followed as a general strategy. This involves mentioning keywords, the search strategy, Boolean operators used, and inclusion and exclusion criteria, in order to fulfill all the elements outlined in this protocol.

Subgroup analysis Nothing planned.

Sensitivity analysis All aspects related to research ethics will be respected when analyzing the data and writing the systematic review.

Language restriction No language restrictions.

Country(ies) involved Chile and Spain.

Other relevant information None.

Keywords data literacy; data team; data driven decision making; data use, professional development; decision making; intervention; systematic review; teacher education.

Dissemination plans This systematic review is expected to be published in an indexed journal associated with research in the field of education. It could also be subject to being presented at conferences or congresses related to the subject.

Contributions of each author

Author 1 - Fabian Sandoval Ríos - Author 1 conceived the review, wrote the search strategy and developed the protocol, read and approved the final version of the manuscript.
Email: fabiansandovalrios@gmail.com
Author 2 - Juan A. López - Author 2 participated in the definition of the search strategy and the selection of databases, contributed in the methodology and experience when reviewing the protocol. He read and approved the final version of the manuscript.
Email: juanlope@ugr.es
Author 3 - Carla Gajardo - Author 3 participated in refining the topic and the search strategy, contributed to the methodology with special emphasis on statistical aspects. She read and approved the final version of the manuscript.
Email: carla.gajardo@udp.cl