

## TEACHING PEER REVIEW PROCESS TO MIDDLE SCHOOL STUDENTS BY USING ONLINE CONCEPT MAPPING ACTIVITIES

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**Abstract.** Peer review process is a long-known practice in the sciences in order to validate scientific claims that can be put forth in academic papers. In fact, scientific journals rely on peer review process to double check scientific claims made by the authors before abstract/poster/oral presentation or scientific article is published. The peer review process is also an important formative tool for authors allowing the peers to provide formative feedback on the article, thus giving the original authors an opportunity to make the revisions to fulfill the journal scientific requirements. It is known that students demonstrate great difficulties in designing and conducting a research project revealing “surface knowledge” of the publication algorithm. It is the aim of this work to a) teach peer review process to middle school students by using online concept mapping b) improve middle school students’ scientific literacy in order to prepare them for successful transition to High School and university studies. For the empirical work twelve groups of five students were asked to implement a guided inquiry, by means of using online Concept Mapping (Fonseca, A.P., CMC 2016). The main research question was “Can bacteria adhere, form biofilms and degrade plastics?”. The students were asked to gather online scientific data and to analyze research articles provided by their teacher to answer the research question. Students showed to be capable of autonomous work, collecting and interpreting the data in order to find an answer to the proposed inquiry question. They were able to participate in the peer review process, thus demonstrating that it is possible to teach science in the way it is actually practiced by scientists. It is therefore possible to shape middle school students as future scientists, by engaging them in a “guided inquiry” in order to promote deep understanding of the “peer review process”, thus increasing scientific literacy.

**Keywords:** Peer review, middle school students, concept mapping, meaningful learning, scientific literacy