

BAR-ILAN UNIVERSITY

**The Impact of Fostering Students' Socially Shared Regulation
Learning During Collaborative Inquiry Base Learning on:
SRL, Co-Regulation, SSRL,
Content Knowledge and Inquiry Skills**

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Abstract

The reforms in science teaching include content that promotes meaningful learning, whose goals prepare learners for mature life in the 21st century. (Science and Technology Chief Inspector, 2017)

In the teaching of science, the development of scientific literacy and higher order thinking are central goals in Israel and around the world. Learning through inquiry is a hallmark of science learning that leads to construct knowledge about the world around us in a scientific perspective. (Epistemic knowledge: knowledge of the way science progresses - how to know, and procedural knowledge of how science works - how do we do it?) In middle school, as part of the ninth grade curriculum, students are required to carry out a complete scientific research process in groups (Science and Technology Curriculum, 2016, p. 58). Dealing with the scientific research process, invites understanding and controlling the scientific contents.

According to Tamir (2007), it is possible to develop a range of skills when learning science by researching: Identifying and formulating a problem, formulating a hypothesis, planning and conducting an experiment, and synthesizing the knowledge gathered during the investigation. Many studies have shown that peer learning promotes exploration skills. Discussions within the peer group allow to clarify things, and to externalize thought processes. In addition, it was found that cooperative learning increases students' motivation and critical thinking and enables them to acquire social and emotional skills. Learning through inquiry invites the development of collaborative skills and orientation processes that occur in-group learning.

The researchers Jarvela & Hadwin (2013) describe three instructional processes that occur in-group learning:

1. Self-Regulation Learning (SRL), the learner's ability to supervise his own learning as an individual within the group.
2. Co-regulation Interactions between group members during collaborative learning.

3. Socially Shared Regulation Learning: The ability of a group to conduct group learning.

Socially Shared Regulation is a new field that has been studied over the last decade as part of the regulation in learning process. This regulation accurses when the group works in a synchronized way to conduct the group learning process. In this process, individuals within the group share and discuss how they perceive the task, its goals, strategies, monitoring and evaluation.

Cultivation by placing "scaffolding", also called support, is a common way to help students in coping with a complicated task in the learning process. The research literature describes various forms of support for learners when the most common is asking self-questions.

In this study, we sought to examine the effect of cultivating collective group-regulation on learning by asking self-questions about Socially Shared Research Learning (SSRL) among ninth-graders on regulating learning processes: Self-Regulation Learning (SRL), co-regulation, Socially Shared Regulation Learning and students' achievements in scientific content knowledge, scientific research skills, and collaborative product. For the study, an array was constructed comprising two research groups, a group that received support for socially shared regulation through self-questioning and a control group, without support.

The students in the research groups studied the subject of ecology as part of the curriculum, carried out the scientific research process and experienced with group research to obtain a collaborative product. The data collection in this study was carried out using the Mixed Method system and included quantitative data collection by offline and on-line reporting, and qualitative data.

The findings of the study show that support in the process of socially shared regulation learning promotes learning processes such as Self-Regulation Learning (SRL), co-regulation and Socially Shared Regulation Learning (SSRL), as well as students' achievements of scientific content knowledge, scientific research skills and collaborative product.