

The Impact of Self-Assessment with Goal Setting on Academic Achievement: Results of a Study on Primary School Students in Greece

Anastasia Papanthymou¹ & Maria Darra¹

¹ Department of Primary Education, University of the Aegean, Rhodes, Greece

Correspondence: Anastasia Papanthymou, Department of Primary Education, University of the Aegean, Dimokratias 1, Rhodes, 85132, Greece.

Received: October 6, 2022

Accepted: November 28, 2022

Online Published: December 15, 2022

doi:10.5539/jel.v12n1p67

URL: <https://doi.org/10.5539/jel.v12n1p67>

Abstract

The main purpose of the present study is to investigate the contribution of Self-Assessment with Goal Setting (SAGS), which was implemented with the “self-directed learning” (SDL) method, to the improvement of academic performance in the context of language teaching to sixth-grade students in primary school. The research methodology followed is an experimental design with two groups, one experimental and one control. The research was implemented in public primary schools in Rhodes and lasted for six weeks (from the beginning of March 2022 to the middle of April 2022). The research sample is a convenience sample consisting of 163 students (the control group made up of 78 students and the experimental group consisting of 85 students). According to the findings of the study, the students in the experimental group improved their performance, and this improvement was statistically significant. Specifically, it was observed that after the implementation of SAGS, the mean score for academic achievement of the students in the experimental group was higher than the mean score of academic achievement during the pretest period. Furthermore, the vast majority of students in the experimental group improved their academic achievements, while a very small number of students experienced a decrease in performance and an even smaller number of students did not experience any change in their performance after the intervention. Finally, the students in the experimental group also performed better posttest and improved their performance, in contrast to the students in the control group for whom both lower performance and a deterioration in their performance were observed compared to the experimental group.

Keywords: academic achievement, goal-setting, language, primary school, self-assessment, self-directed learning

1. Introduction

Students’ experience of assessment influences their approach to learning. Also, through the focus on self-assessment practices, the importance of learner participation in assessment practices has been noted (Bourke, 2016). According to Hawe and Parr (2014) the most effective way for students to develop their autonomy is through direct involvement in the creation, assessment, and revision of their work.

Self-assessment serves formative purposes (Ross & Starling, 2008), which contributes to the improvement of the educational process, as argued by D’Andrea and Gosling (2005). Quality improvement is defined as a process where assessments are formative and contribute to improving teaching and learning. Quality improvement lays particular emphasis on learning processes (Elassy, 2015), and, as noted by Chalmers (2008), one of the dimensions of the quality of the educational process is that assessment leads to learning and self-assessment in a form of assessment that is learning-oriented.

MacGregor (2007) notes that clarity of course objectives is a fundamental practice of high-quality learning and teaching, which is characteristic of self-assessment since having clear expectations regarding the objectives (Panadero, Tapia, & Huertas, 2012) and generally having a clear understanding of the criteria and learning objectives (Sebba et al., 2008) are key elements of the self-assessment process. In addition, MacGregor (2007) highlights an additional important practice of designing assessments for early and in-class assessments and focusing specifically on self-assessment, which seems to play its own role in formative assessment (Dann, 1996) as it can be very easily used for formative purposes (Dochy, Segers, & Buehl, 1999).

A study of the relevant literature reveals the need for both students and teachers to become more literate in

assessment, not only to address potential dissatisfaction with assessment but also to make assessment more effective and efficient (Price, Rust, O'Donovan, Handley, & Bryant, 2012; Smith, Worsfold, Davies, Fisher, & McPhail, 2013; Lubbe et al., 2021). Besides, assessment literacy is a key professional requirement of education systems (DeLuca, Lapointe-Mcewan, & Luhanga, 2016; Lubbe et al., 2021).

At the same time, assessment practices in the 21st century need to be revised and redesigned to promote self-directed learning and assessment literacy. Assessment literacy includes, among other things, the development of self-assessment skills (Lubbe et al., 2021), while self-assessment is an important component of self-directed learning, which was originally developed in the field of adult education (Nor & Saeednia, 2009), and is an important skill for successful independent learning (Yu, 2013).

Specifically, the implementation of self-assessment through self-directed learning is an approach where teaching and learning are student-centred and allow the student to take control of their own learning process (Sosibo, 2019). What matters most within many models of self-directed learning (Tremblay & Theil, 1991; Mok & Cheng, 2001; Gibbons, 2002) is the students' ability to self-assess. It is very important to note that the first step in learning to self-direct one's learning is the ability to self-regulate learning activities and task performance (Jossberger, Brand-Gruwel, Boshuizen, & Van de Wiel, 2010).

According to Pintrich (2000) and Clift (2015) there is a need for teachers to promote self-regulated learning directly by explicitly teaching metacognitive strategies. Providing students with opportunities for self-directed practice can help improve their self-regulation (Jossberger et al., 2010).

Furthermore, according to Travers, Morisano, and Locke (2015), goal setting is one of the most powerful and influential theories of academic achievement. Nevertheless, a gap is identified in terms of available relevant research in primary education. Additionally, there is not much research identifying effective instructional strategies that impact academic achievement (Dignath, Büttner, & Langfeldt, 2008; Clift, 2015).

The study of the relevant literature shows that there is no research investigating the effect of self-assessment with goal setting (SAGS) using the educational method of self-directed learning (SDL) on students' performance. This study aims to fill this gap. Specifically, the present research aims to investigate the contribution of SAGS, which is implemented through the educational method of SDL, in improving students' performance in the context of language teaching to sixth-grade students in primary school.

Therefore, the findings of this study are expected to contribute to highlighting the role of SAGS in primary education and whether its implementation can have positive effects on students' academic achievements. Specifically, this research attempts to highlight the role of SAGS as an effective teaching strategy and to confirm the dynamic contribution of goal-setting theory to academic achievement. A classroom atmosphere that has self-assessment and goal setting at the heart of the educational process can lead students toward self-regulation and enhanced achievements (Lee, 1997; Black & Wiliam, 1998; O'Neill, 1998; Oppenheimer, 2001). SAGS have been found to be characteristics of the writing process of students with writing experience. This paper attempts to improve elementary-school students' writing through the process of self-assessment and goal setting.

Furthermore, the findings are expected to demonstrate that self-directed learning can be applied to children, such as sixth-grade students, despite the fact that it was originally developed for adult education, as noted by Nor and Saeednia (2009). In addition, the findings of this study are expected to demonstrate that primary school students' ability in self-directed learning can be developed through teaching learning processes and strategies (Van Deur, 2017) such as SAGS and by positively impacting their achievement.

Furthermore, the findings of this study are expected to prove that metacognitive strategies can be taught to primary school students and that, in particular, students can be taught self-regulation, which can lead to improved academic performance.

Also, this research attempts to adapt the process of SAGS to a known model of SDL, which will constitute the educational intervention and which is an innovation of this work and a new proposal to teachers and those directly involved in education.

In addition, the process of engaging students in the identification of SAGS criteria and the use of these criteria to assess their work, which this research attempts to explore, is expected to highlight the great importance of the self-assessment process in enabling students to better understand their strengths and weaknesses, to work on improving them, to become more responsible for their learning from an early age, and to direct their own learning.

Furthermore, by providing a framework for the implementation of the SAGS, this study is expected to contribute to enhancing assessment literacy, as research participants are expected to become more literate in assessment.

Moreover, the tools with which the teachers got involved throughout the research and the process of self-assessment can motivate them to implement this form of assessment, which is so far a not so familiar process for many teachers in terms of its implementation and its results.

2. Theoretical Approach

2.1 Student Self-Assessment: A Conceptual Approach

Student self-assessment in education involves a wide variety of mechanisms and techniques through which the student describes and assesses the quality of learning processes and their products (Panadero, Brown, & Strijbos, 2016).

Specifically, student self-assessment involves reflection on and monitoring of the processes of the student's work and/or its products. In addition, it may include the description of his/her work such as characteristics of the work and assessment; for instance, how well he/she has done and what it is worth (Brown, Andrade, & Chen, 2015). In particular, student self-assessment is the qualitative assessment of the learning process and the final product that is carried out based on predefined criteria not focused on scoring but on understanding these processes through which the student can learn from his/her mistakes and achievements. Therefore, it is a process of reflection (Panadero & Alonso-Tapia, 2013).

Moreover, student self-assessment is an important element of the assessment process in order for students to receive appropriate feedback and continue to improve (Zapitis, 2011). It is the assessment or the perception of the "value" of an individual's performance and the identification of their strengths and weaknesses in order to improve their learning outcomes, and it is a dynamic technique with which students assess the quality of their work based on certain criteria so that they can learn to work even better in the future (Ross, Hogaboam-Gray, & Rolheiser, 2002).

According to Yan and Brown (2017), student self-assessment is a human and internal psychological process in which the individual assesses the quality of his/her work in the light of internal psychological factors (self-esteem, self-efficacy, motivation, etc.). Moreover, it is a way to enhance the role of students as active participants in their learning and is usually used as a formative assessment in order for students to reflect on learning processes and their outcomes (Sluijsmans, Dochy, & Moerkerte, 1999).

Finally, student self-assessment is seen as a process that students work on to self-regulate their learning. Self-regulation refers to the control one exercises over one's thoughts, actions, emotions, and motivations through personal strategies to achieve one's goals (Panadero & Alonso-Tapia, 2013). It is therefore an active learning process that involves setting learning goals and identifying the approaches and resources needed to achieve those goals, as well as responding to feedback to enhance the final learning outcomes (Ng, 2016).

2.2 Advantages of Student Self-Assessment

Student self-assessment contributes to the cultivation of self-esteem (Taratori-Tsalkatidou, 2015, pp. 96–98; Konstantinou & Konstantinou, 2017, pp. 260–261) and is particularly beneficial for students who do not participate in the educational process due to their low self-esteem. In addition, it promotes the student's self-confidence; helps the student to discover the gaps, errors, and deficiencies in his/her learning; and to identify the causes of any low performance so that the student himself/herself becomes more active and responsible, takes the initiative, and, most importantly of all, through self-assessment realizes that the process of assessment is part of human life (Taratori-Tsalkatidou, 2015, pp. 96–98).

As a result of the implementation of student self-assessment procedures, the fear caused by the pressure to achieve high performance is reduced, the student's readiness and maturity, not only in learning but also social, is cultivated, and, in addition, the student is strengthened to develop the ability of cognitive control (Konstantinou & Konstantinou, 2017, pp. 260–261).

Furthermore, self-assessment compared to peer assessment does not have the pressure of assessing the other person, as in the process of self-assessment the student only assesses himself or herself (Chan, 2010). Furthermore, as Taras (2010) notes, formative assessment theories support the mandatory use of self-assessment as it enhances learning and is one of the most important skills that students need for effective learning, for future professional development, and for lifelong learning. In particular, Wride (2017) highlights that self-assessment prepares students for lifelong learning through discussions about their skills and competencies (including their ability to assess).

Indeed, appropriately organised self-assessment can lead to significant improvements in performance and learning (Nicol & Macfarlane-Dick, 2006), including lifelong learning and deep learning (Leach, 2012). In addition, it

prepares students for their role of participation in a democratic society; makes students feel they have some control over their assessment; develops autonomy, metacognitive skills, and metacognitive engagement; promotes active engagement in learning; enhances personal or intellectual development or social skills; eliminates student anxiety and clarifies the grading process; benefits teachers; promotes better understanding of content; and increases quality and thoughtfulness in assignments (Leach, 2012).

2.3 Self-Assessment with Goal Setting

SAGS involves self-assessment, which involves comparing current performance with the goal (Schunk, 1990). Self-assessments are influenced by the type of standards used, the qualities of the goal, and the importance of goal attainment and performance. Self-assessment can be influenced by the importance of goal attainment since when individuals care little about how they perform, they may not assess their performance or strive to improve.

Goal setting is a process by which students are guided on the next steps in their learning, while metacognitive strategies help students to achieve their learning goals. The five principles of the goal-setting theory in Locke and Latham (1990, as cited in Clift, 2015), who are considered the founders of this field, are (a) clarity; (b) challenge; (c) commitment to the goal, which is reinforced by self-efficacy; (d) feedback which individuals need in order to monitor their progress; and (e) task complexity. The relevant literature argues that goal setting can enhance autonomy and competence, thereby influencing students' intrinsic motivation and abilities, and is a tool for students to actively engage in their learning (Clift, 2015).

The effects of goals on behaviour depend on their properties: specificity, proximity, and level of difficulty. Goals that incorporate specific performance standards are more likely to enhance learning and trigger self-assessments than general goals (i.e., "Do your best"). Specific goals promote self-efficacy because progress is easily measured. Proximal goals are more motivating than distant goals. It is easier to measure progress towards a proximal goal, and the perception of progress increases self-efficacy. Proximal goals are particularly influential in students. The difficulty of the goal or the level of task proficiency required, as assessed against a standard, influences the effort students make to achieve a goal. Given the skills required, individuals put more effort into achieving difficult goals than when the standard is lower. Students may initially doubt whether they can achieve difficult goals, but working towards achieving them builds their self-efficacy (Schunk, 1990).

Next, the POWER goal framework is presented, which is a framework for identifying student learning goals (Clift, 2015). The initials of the POWER goal are explained below.

P: Positive. The reported outcomes will be positive. For example, instead of saying "I don't want to make spelling mistakes," the positive form will say, "I would like to work more on my spelling."

O: Own role (my role). The outcomes should be something that happens as an outcome of the actions of the students themselves and not be dependent on others. For example, they state, "When I write I will apply the quality criteria for writing," instead of, "The teacher will remind me to apply the quality criteria."

W: What specifically? This includes assessing students from the beginning and their own actions needed to achieve the outcomes. For example, a student identifying the resources needs to achieve the following outcomes: "I will need to use my dictionary to see how to spell a word," or "I need to follow the flowchart when I write."

E: Evidence. This includes anything students will collect that relates to progress towards and achievement of outcomes. This evidence can be physical or sensory. For example, "The part of my work that I am proud of is..."

R: Relationship. This refers to the effect of transition and achievement of the outcome on the student's relationship with themselves and/or their peers. For example, awareness of internal barriers to achieving the goal: "What still makes it difficult for me when I write is..."

Besides, well-structured goals should be important enough to motivate, but not too far-reaching to be unattainable.

2.4 Self-Directed Learning

Self-directed learning (SDL) is a humanistic approach in which teachers act as facilitators. In this context, active learning is encouraged and responsibility for learning is extended to the learner. In addition, it promotes children's ability to make good choices, to determine their choices and to be responsible for their decisions. Independent children are more confident and motivated, and their behaviors are not dependent on anyone else (Sumantri & Satriani, 2016).

According to Robinson and Persky (2020), in SDL, the learners set goals, determine how their progress will be assessed, determine the structure and sequence of activities and timetable, identify resources, and seek feedback.

It is worth mentioning that the first step in learning to self-direct one's learning is the ability to self-regulate one's

learning activities and task performance. Self-regulated learning is a micro-level concept that refers to several processes in the context of task performance. SDL may involve self-regulated learning but not the opposite. In other words, a self-directed learner may be self-regulated, but a self-regulated learner may not be self-directed. In this respect, SDL is more concerned with subsequent steps in the learning process (Jossberger et al., 2010).

In order to understand SDL, several models have been proposed (Nor & Saeednia, 2009). One of these models is Mok and Cheng's (2001) model, presented in Figure 1, on which the educational intervention of this research was based.

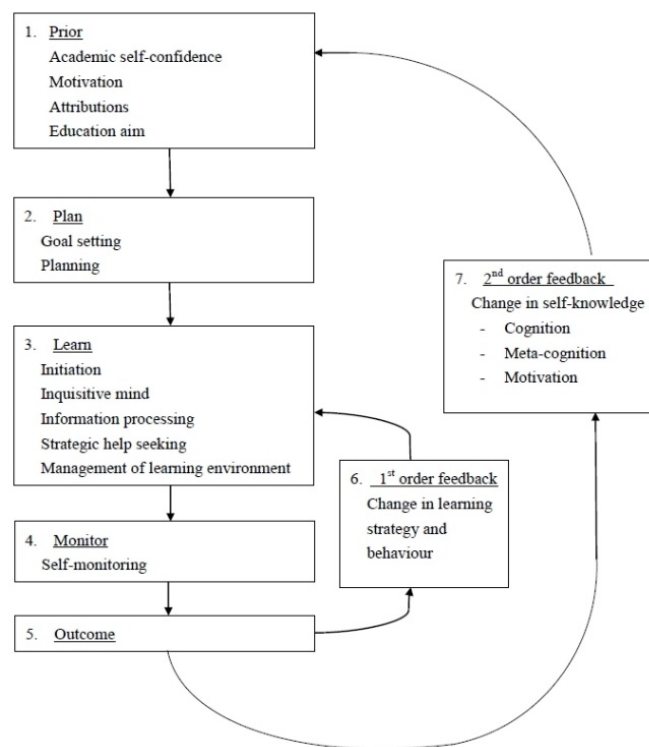


Figure 1. Self directed learning model

Source: Yu, 2013.

2.5 School Performance

School performance is the externalization of what a student has learned as well as the demonstration of what the student knows and has the ability to do after teaching (Papageorgiou, 2017). It is the assessment of how much a student has performed in relation to the educational process (Fasouraki, 2011). According to Tsiplitari (2000, as cited in Tsiga & Nasaina, 2012), performance is the work methodology followed in the learning process whose efficiency is measured by grades. Furthermore, performance is characterized by quantity as well as quality. The main factors that affect school performance are its structure, the goals it has, and finally the quality and the personality of its members.

In terms of its pedagogical substance, school performance should be oriented towards the cognitive, emotional, and mental development of the student, and be based on the principles of reinforcement and encouragement (Konstantinou & Konstantinou, 2017, pp. 177–178). Respectively, the assessment in terms of its pedagogical function should aim at diagnosing the students' abilities, peculiarities, interests, and achievement of learning objectives; identifying and eliminating the students' weaknesses that are diagnosed within the educational process; identifying the methodological weaknesses of teachers; planning the next stages of learning; providing the required feedback; motivating students; and, of course, having a positive effect on learning (Konstantinou & Konstantinou, 2017, p. 196).

2.6 Research in Student Self-Assessment and School Performance

A study of the relevant literature shows that student self-assessment has been implemented at all levels of education.

In detail, in higher education several studies have been identified (Leaf et al., 2009; Ibabe & Jauregizar, 2010; Wolffensperger & Patkin, 2013; Panadero & Romero, 2014; McKeivitt, 2016; Li & Chen, 2016; Machera, 2017; Ndoye, 2017; Rivas & Arrufat, 2016; Sharma et al., 2016; Ozarslan & Ozan, 2016; Ndoye, 2017; Elgadal, 2017; Fraile, Panadero, & Pardo, 2017; Duque Micán & Cuesta Medina, 2017; Martínez, Mon, Álvarez, Fueyo, & Dobarro, 2020) that confirm the positive impact of self-assessment processes on learners' performance and learning.

In secondary education, self-assessment has been implemented in various subjects such as Language (DeMent, 2008; Andrade, Du, & Mycek, 2010), religious education (Fancourt, 2008), geography (Alonso-Tapia & Panadero, 2010; Panadero et al., 2012), physics (Thrasher, 2012; Nikou & Economides, 2016), chemistry (Feldkamp, 2013), mathematics (Yu, 2013; Popelka, 2015), geometry (Hatami, 2015), physical education (Peyton, 2017), computer science (Lazarinis, Verykios, & Panagiotakopoulos, 2017), English, and history, and has been found to contribute to improving student achievement (Yan, Chiu, & Ko, 2020).

Also, self-assessment has been implemented in primary education, in Language (Andrade, Du, & Wang, 2008; Stylianou, 2008; Vasileiadou & Karadimitriou, 2021), in English (Zarra, 2019; Goto & Lee, 2010; Zapitis, 2011; Chalkia, 2012), and in mathematics (Clift, 2015). Specifically, recent research data in primary education shows that student self-assessment contributes to improving school performance and enhancing student learning (Andrade et al., 2008; Chalkia, 2012; Clift, 2015; Goto & Lee, 2010; Harris, Brown, & Harnett, 2015; Stylianou, 2008; Yan, 2018; Zapitis, 2011).

2.7 Research in SAGS and School Performance

Research that focused on investigating the impact of SAGS on students' academic achievement showed that SAGS has positive effects on students (Graham & Harris, 1989a, 1989b; Sawyer, Graham, & Harris, 1992; Lee & Gavine, 2003; Clift, 2015; Chung, Chen, & Olson, 2021). Furthermore, because SAGS involves goal setting, a review of the relevant literature suggests that goal setting improves student achievement (Schunk & Swartz, 1993a, 1993b; Schunk & Rice, 1989, 1991; Smithson, 2012; Moeller, Theiler, & Wu, 2012; Förster & Souvignier, 2014), while according to Peters (2012), the use of self-regulation practices has a positive effect on student achievement.

2.8 Research in SAGS and SDL

In terms of investigating SAGS in combination with SDL, the literature identified research on self-assessment and SDL but no research examining SAGS with SDL.

Specifically in higher education, Hung (2009) investigated how self-assessment could be used by two students learning English as a foreign language when they write in their own electronic portfolio. According to the main findings, both students applied a range of writing, cognitive, memory, and metacognitive self-assessment strategies to approach specific writing tasks. In addition, the collection of electronic portfolios promoted students' self-assessment practice and, thus, encouraged self-directed language learning.

Also, in higher education, Martínez et al. (2020) examined whether online self-assessment improves students' performance. Based on the main findings, online self-assessment improved students' performance and increased their level of satisfaction. Therefore, it is concluded that online self-assessment can help students take on an active role in their learning process, improve their performance, promote self-directed learning, and develop metacognitive skills.

Furthermore, in secondary education, Yu (2013) examined ways in which self-assessment can build high quality self-directed learning processes that help teachers and schools to produce successful and self-directed learners in mathematics. Analytically, Yu (2013) investigated the relationship between the elements of self-assessment and self-directed learning and, in particular, how self-assessment can facilitate self-directed learning. Based on the findings, students who participated in the self-assessment activities gained more benefits than those who did not, and additionally noted that many of the elements of self-directed learning are found in the students' self-assessment task. In particular, it is highlighted that many students can assess their level of understanding, select learning strategies, and implement them. In addition, self-assessment tools help students reflect on their learning and have a positive effect on metacognition and self-directed learning. In addition, self-assessment helps students identify areas in which they are weak. Moreover, self-assessment helps students to gain the ability to self-assess their own learning outcomes as well as the ability to be able to assess how good a learning strategy is. Furthermore, Yu (2013) emphasizes the importance of the teacher helping students to become autonomous.

2.9 Critical Review of Relevant Literature

In conclusion, the study of the relevant literature shows that research on self-assessment has mainly focused on learners in higher education (Panadero et al., 2016) and secondarily on those in secondary education. The biggest

gap is observed in primary education, as not enough research has been conducted to study self-assessment and its relationship with achievement and learning (Elder, 2010). Still, the abovementioned is confirmed by other researchers who highlight the lack of data, which leads to the difficulty in formulating a realistic theory of the process of self-assessment in the primary education context (Keane & Griffin, 2016).

Furthermore, with regard to the investigation of SAGS in combination with academic performance, most of the studies refer to only goal setting as an examined variable and its effect on performance, while there are fewer studies that examine self-assessment with the theory of goal setting, i.e., SAGS.

Finally, the study of the literature regarding SAGS and SDL led to the identification of studies that have examined self-assessment in relation to SDL, but these are few, while no research was identified that links SAGS with SDL or proposes a teaching intervention that applies SAGS in the context of SDL.

3. Method

3.1 Purpose

The main purpose of this research is to investigate the contribution of SAGS, which is implemented with the SDL educational method, to improving the quality of the educational process in the context of language teaching to sixth-grade students in primary school.

Specifically, the research aims to investigate whether the implementation of SAGS within the SDL educational method can contribute to the improvement of students' academic performance. In this context, an SDL educational scenario based on the implementation of SAGS was designed, implemented, and evaluated.

3.2 Research Questions

The research questions posed and which the research attempts to answer are as follows:

First Research Question: Can the implementation of SAGS, which is implemented using the SDL educational method, contribute to the improvement of sixth-grade students' academic achievement in the context of language teaching?

Second Research Question: Is there a statistically significant difference between the mean scores of academic achievement of sixth-grade students who participated in the implementation of SAGS in language teaching and those who did not?

3.3 Null Hypotheses

Alternatively, the null hypotheses of the research are:

H₀₁: The implementation of SAGS, which is implemented with the SDL educational method, does not contribute to the improvement of sixth-grade students' academic achievement in the context of language teaching.

H₀₂: There is no statistically significant difference between the mean scores of academic achievement of sixth-grade students who participated in the implementation of SAGS in language teaching and those who did not.

3.4 Importance of the Research

This research is important and necessary for several reasons. First, research on self-assessment has mainly focused on learners in higher education (Panadero et al., 2016) and secondarily in secondary education. The biggest gap is observed in primary education as not enough research has been conducted to study self-assessment and its relationship with achievement and learning (Elder, 2010). Still, the abovementioned is confirmed by other researchers who highlight the lack of data, which leads to the difficulty in formulating a realistic theory of the process of self-assessment in the primary education context (Keane & Griffin, 2016). This study attempts to contribute to the literature by examining the issue of self-assessment at this particular level and to propose a framework for its implementation.

Furthermore, there is not much research identifying effective instructional strategies that motivate students to take ownership of their learning or examine the impact of these strategies on academic achievement (Dignath et al., 2008; Clift, 2015). The present study attempts to enrich the literature by exploring the issue of the impact of the implementation of SAGS as an instructional strategy on academic achievement.

Moreover, the use and combination of different tools used in this research that were derived from a thorough study of the literature are original features of this research that enhance its importance. In particular, the tools with which the teacher got engaged throughout the research and the process of self-assessment can motivate teachers to use these tools. In addition, teachers and researchers can make use of useful information and materials related to student self-assessment.

Finally, the findings of the present study hope to open a discussion and raise a reflection on the more dynamic presence of student self-assessment in the primary school curriculum.

3.5 Participants

Setting and participants were relevant to the research, and, for the purposes of the study, classes of public primary schools were used, enough so that the number of participants ranged from approximately 130 to 170. Specifically, the survey sample was a convenience sample of students attending sixth-grade in primary schools in Rhodes (Greece). The students who participated in the research came from five public primary schools, specifically from 10 sixth-grade classes, and the teachers ($N = 10$) of PE70 teacher specialization who supported this research did so voluntarily. This research therefore used a convenience sample, as the participants were easily accessible to the researcher, and the teacher worked in a school on the island of Rhodes. In detail, the sample consisted of 163 students, who were divided into two groups. The control group consisted of 78 students from 5 classes of the sixth-grade, and the experimental group consisted of 85 students from 5 classes of the sixth-grade. Additionally, from the 163 students who participated, there were 83 girls and 80 boys.

3.6 Instruments

3.6.1 Flowchart

The flow chart was used as a diagrammatic representation to identify the steps in writing a topic and was intended to facilitate the students' writing in the experimental group. Specifically, the flowchart had at the top the development title of the topic that the students were asked to write about and follow in order to help them structure their writing and follow a proper order of development.

3.6.2 Cause and Effect Diagram, or Ishikawa (Cause and Effect Diagram) or Fishbone

The cause-and-effect diagram, or Ishikawa or fishbone diagram, can be used to represent the learning outcome or goal we want to achieve and the ways in which it can be achieved (Bocala, Henry, Mundry, & Morgan, 2014). The fishbone can show the necessary elements that a work must meet in order to be successfully completed. In this case, the work concerned the written texts that the students were asked to produce, while this particular diagram was used by the experimental group. Specifically, in terms of the items included in the diagram, these relate to grammatical and syntactic rules for each chapter taught to the students.

3.6.3 Brainstorming

The brainstorming method helps to encourage individuals to express their views freely and creatively (Giannaros, 2008) and was used by the teachers and students in the experimental group to jointly identify the quality criteria that the students' work should meet. These criteria relate to the following: a) responsiveness of the written text to the purpose for which it is produced, b) correct use of punctuation, c) correct spelling, d) correct use of many different words, e) comprehensible writing, f) clear writing.

3.6.4 Self-Assessment Worksheet with Goal Setting

The self-assessment worksheet with goal setting was made and used by Clift (2015) in her doctoral research and, with the necessary adaptations, was used for the needs of this research. It consisted of three parts. Part I was a list of learning objectives. The objectives were written in friendly and understandable language for students. Part II consisted of two short questions, "What am I good at?", and, "What do I need to work on more in relation to writing?", while Part III-A consisted of the goal-setting framework, where the students in the experimental group were asked to answer the question, "What should I do next?" Finally, in Part III-B, students were asked to set two learning targets for their next writing task.

3.6.5 Weekly Self-Assessment Questionnaire

The weekly self-assessment questionnaire is an adaptation of the instrument used by DeMent (2008) in her doctoral research. Specifically, students in the experimental group were asked to answer any four of seven questions provided and engaged in a process of reflection on the writing they had done within a week. Specifically, the questions were:

- 1) What are you most proud of in this piece of writing?
- 2) What did you learn about the writing process through this assignment?
- 3) What will you do differently next time you have a writing assignment?
- 4) What is the most exciting or interesting part of this piece of writing? How can you improve on it?
- 5) Have you clearly explained what you mean? Is there any part of your work that might confuse someone reading

it?

6) What is this piece really about? Are there parts that are about something else? Can you cross them out?

7) What still makes it difficult for you to write an assignment?

3.6.6 Worksheet with Guiding Questions

The worksheet with guiding questions was used by Kim (2015) in her research, which was conducted in a secondary-school-mathematics class. It was modified to be used for the purposes of this study. Students in the experimental group were asked to answer guiding questions in detail after completing a writing task. Specifically, students were asked to identify areas in which they performed well and areas in which they needed improvement. In addition, the worksheet with the guiding questions was also completed by the teachers as they provided feedback to each student individually. Specifically, students were asked to answer the following questions:

1) What do you think are the two things in your piece of writing that you did best?

2) What do you think are the two things in your piece of writing you need to improve or revise?

3.6.7 Resources Worksheet

Students in the experimental group were asked to locate and write about the appropriate resources they could use in order to get help for their writing, such as their dictionary, diagrams, language book, etc. A similar worksheet was used by Ashworth (1983), who investigated self-directed learning in primary school.

3.6.8 Goal-Setting Chart

The goal-setting chart was used by the students in the experimental group to set their goals for their writing. A similar chart was used by DeMent (2008) in her doctoral research. Specifically, the goal-setting chart consisted of the following three categories: a) organization, b) conventions, and c) style. Each category consisted of several objectives, and students selected one objective from each category at a time in order to work on it.

3.6.9 Written Test

In order to investigate the effect of SAGS on students' academic achievement, a written test was used. The initial written test (pretest) was the same as the final test (posttest) in order to have validity in terms of differentiation between the first test and the final test. The test was given before and after the educational intervention to both groups (experimental and control) and lasted one teaching hour (45 minutes). During the test, the necessary instructions were given.

Specifically, the aim of this test was to determine the difference in academic performance between the two groups in terms of writing production. For the implementation of this test, Activity 4 in the Student's Language Book (vol. 1, p. 16) was used, which assesses the student's ability to write a story, which is one of the learning objectives of this teaching unit. The grading of the test was based on the informal assessment in Kyriazi and Spantidakis (2001) and was expressed in the scale from 0 to 10 in order to be in line with the assessment system that primary schools use in Greece. This is a valid instrument for assessing writing which was also used by Xanthi (2011) in her doctoral thesis. Specifically, these are three checklists. The first concerns the assessment of the paragraph, the second relates to the assessment of content and productivity, and the third is about the assessment of spelling. Emphasis was placed on ensuring that the grading of the test was fair for all students. Finally, grading was done by two graders: the classroom teacher and the researcher.

3.7 Research Procedure

The research procedure involved five phases, which are presented and analysed in Figure 2.

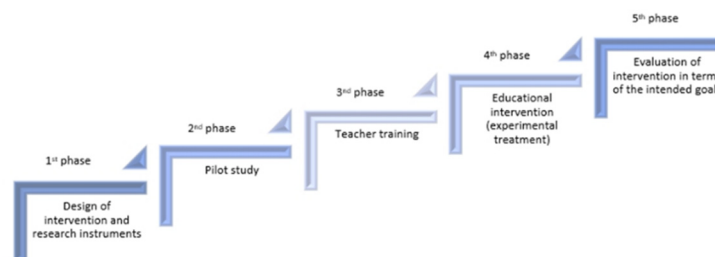


Figure 2. Phases of research procedure

In the first phase, the educational intervention and the research instruments were designed. In the second phase, February 2022, a pilot survey was conducted with 19 sixth-grade students from a primary school class on the island of Rhodes in order to test the instruments that were to be used so that they could be improved if necessary. In particular, the instruments were examined to see if they were understandable to the students, and their completion time was estimated. In the third phase, training was provided to the teachers who participated in the research regarding the implementation of the educational intervention. In detail, the teachers in the experimental group received training on the design and implementation of SAGS in Language, while the control group did not receive similar training. A special training guide on student self-assessment was created for the purposes of the training.

In the fourth phase, the educational intervention (experimental treatment) was applied to the students of the experimental group. Specifically, the quasi-experimental design was chosen. Before the research was conducted, the parents of the students were informed about the research and its purpose through a special detailed form, and parents' written consent was requested in order for their children to participate in the research. The intervention lasted six weeks (early March to mid-April 2022), and both groups received Language instruction seven hours per week, as defined by the allocation of time per subject in sixth-grade of primary school. During the study, the researcher had very frequent contact with the teachers by phone, email, and in person, with strict compliance with COVID-19 protocols. In addition, the researcher visited schools in order to participate in the interventions and supervise the students' self-assessment procedures.

In the last and fifth phase, the intervention was evaluated in terms of its ability to contribute to the improvement of academic performance in the context of language teaching to sixth-grade students in primary school.

3.8 Data Collection Procedure

Data was collected in two phases: once before the intervention and once after the intervention was completed. Specifically, the researcher collected material from all teachers and discarded any materials collected from students who did not participate in the research. It should be noted that the pretest as well as the posttest were alphanumerically coded. This code contained a letter (e.g., A, B, and so on) for each class, and each teacher identified a number (e.g., 1, 2, and so on) for each student in his or her class. The combination of the letter and number formed the alphanumeric code and was used for identification purposes only (e.g., A13). Each teacher knew only the alphanumeric code of their own students in the classroom who participated in the research.

3.9 Data Analysis

Descriptive and inferential statistical analysis was carried out in order to analyse the research data. A significance level of $p < .05$ was used for all analyses to determine if the null hypotheses could be rejected. Confidence limits were set at 95%. Descriptive statistics were used to calculate frequencies and percentages for nominal variables, while mean, standard deviation, median, range, and ranks were calculated for quantitative variables. Inferential statistics were used to test for equality between the experimental and control groups as well as to test the null hypotheses of the study.

All analyses were performed with the statistical program IBM SPSS Statistics 25. In addition, the Microsoft Excel program was also used, in which the data was entered before being transferred to the IBM SPSS Statistics 25 statistical program for processing for analysis. Furthermore, Excel was used to create graphs, specifically graphs showing the percentage of change in the dependent variable of the study, namely students' academic achievement on the pretest and the posttest for the experimental and control groups.

A goodness-of-fit test was performed using a statistical criterion to test if the data followed the normal distribution. Specifically, Kolmogorov-Smirnov (K-S) was used because the sample size was $N = 163 < 50$. This criterion and Lilliefors' correction was used to test the null hypothesis that the shape of the distribution of the data in this study does not differ from the normal distribution (Roussos & Tsaousis, 2011, p. 151). Since the data did not follow a normal distribution, non-parametric criteria were applied to test the statistical hypotheses, while parametric criteria were applied to obtain information related to means and standard deviations.

For the equivalence test, a test of performance was performed, i.e., the students' scores in both the control and experimental groups. In this case, the nonparametric Mann-Whitney/U test was applied. The results showed that the control and experimental groups were equivalent in academic achievement based on the pretest ($U = 3207.500$, $p = .721$).

To test research question one's null hypothesis (H_{01}), the implementation of SAGS, which is implemented with the SDL educational method, does not contribute to the improvement of sixth-grade students' academic achievement in the context of language teaching, the non-parametric Wilcoxon Signed-Rank Test was conducted, while the related t-test samples, which is the parametric analogue of the Wilcoxon Signed-Rank Test, was used to

obtain information on means and standard deviations. In this case, the performance of the experimental group was tested before and after the experimental treatment. A $p < .05$ level of significance was used and confidence limits were set at 95%.

To test research question two's null hypothesis (H_20), there is no statistically significant difference between the mean scores of academic achievement of sixth-grade students who participated in the implementation of SAGS in language teaching and those who did not, the non-parametric, Mann-Whitney U test was conducted. In order to obtain information regarding means and standard deviations the t-test for independent samples, which is the parametric analogue of the Mann-Whitney U test, was utilized. In this case, the performance of students in the control and experimental groups was compared. A $p < .05$ level of significance was used and confidence limits were set at 95%.

Finally, ranks were calculated because the distribution function of the data was not normal. The ranks were used to present the number of negative ranks, positive ranks and ties. Furthermore, the mean of ranks, and the sum of sum of ranks were presented (Roussos & Tsaousis, 2011, p. 513). Significant information was obtained from the ranks regarding the number of students who did or did not show improvement or remained stable in the two groups (control and experimental) as regards to the dependent variable (academic achievement).

3.10 Phases of the Educational Intervention

The educational intervention of this research was based on the model of self-directed learning in Mok and Cheng (2001) and the phases of the educational intervention are presented in detail below.

Phase 1: Priority. In this phase, students' readiness to learn was assessed. Characteristics of readiness for self-directed learning included organization, autonomy, discipline, the ability to communicate effectively, accept constructive feedback, and engage in self-assessment and reflective processes.

Students need to acquire various skills and attitudes related to learning in order to ensure successful self-directed learning. Specifically, in this phase, the current situation, such as students' academic self-confidence, motivation, attributions, and educational aim (moral, emotional, and spiritual autonomy) (Candy, 1991), was assessed. In this phase, the pretests for assessing achievement were given to students.

In particular, the teacher discussed with the students about that skills that are very important, such as autonomy, organisation, discipline, self-assessment, and the importance of students accepting feedback and reflecting. In this way, they were prepared for the process of self-assessment. It is essential that teachers address students' perceptions of self-assessment and engage them in discussions or activities that focus on explaining why self-assessment is important. Also, teachers should expect that students will respond differently to self-assessment opportunities as some students may accept them while others may doubt their value (Ministry of Education of Ontario, 2007).

Phase 2: Plan. In this phase, the objectives were identified and the learning process was designed. The students discussed with the teacher their learning objectives in relation to writing. Setting objectives helps students to be motivated and to think that the objectives are known and achievable, and it is very important to formulate the objectives in a positive way.

Phase 3: Learn. In this phase, students are engaged in their learning. Students need to understand how to approach their learning. This stage includes initiation, inquisitive mind, strategic help seeking, information processing, and management of the learning environment.

In this stage, teachers encouraged students to make use of anything that could help them in the production of their written text as it is (e.g., use of a text belonging to the textual genre they were asked to produce); i.e., students were taught the text that was in each chapter of the language textbook, and this formed the basis and the guide for the written text that they were asked to produce at the end of the chapter. Furthermore, the teachers encouraged the students to make use of their dictionaries, and they were taught the grammatical and syntactic phenomena related to each chapter as these were then used in the production of the written text.

In addition, before each writing activity, the teacher presented to the students a visual representation (fishbone diagram) of the necessary grammatical or syntactic phenomena for the production of written language in each chapter of Language. This tool was used by the teacher throughout the teaching of the chapter, reminding the students of the key elements related to the chapter, since at the end of the chapter the students were asked to produce a written text using these elements.

Furthermore, the flowchart was presented to the students. The flowchart showed the stages of production of the writing topic. The flowchart was utilized during the teaching of a text to show the building blocks of the text and

also when students were asked to produce the writing topic related to the chapter of which the text was part of. In this way, students made the connection between their produced text and the text they had been taught, and they realized that what they were learning in a chapter was directly connected and utilized in producing a quality written text.

Based on the above, the students, together with the teacher determined the resources for achieving the objectives, i.e., the resources they needed for their work (e.g., a dictionary, use of grammatical and syntactic rules, flow charts, etc.) and completed the resources worksheet with the teacher's help. This was used to note the sources that the students could refer to in order to get help with their writing.

Furthermore, students were trained to apply common quality criteria to all their writing and were encouraged to participate in the development of these criteria. These criteria emerged through the brainstorming technique and were clear and unambiguous. Specifically, those were the criteria related to spelling, punctuation, paragraphing, vocabulary, the extent to which the produced writing was relevant to the topic, the appearance of the writing, and the extent to which the writing was comprehensible. In addition, the goal-setting chart was provided in this phase, where students selected goals in terms of writing which were linked to the quality criteria and which they felt they needed to work on.

Phase 4: Monitor. Students monitor the learning process and reflect on it. Self-monitoring reinforces metacognition and learning. In this phase students decide if they are moving in the right direction regarding their work. The student has the responsibility to create his or her own personal level of knowledge (Kalomiris, 2014). This responsibility is linked to the educational context and receives the effects of the educational transaction. Therefore, it is not detached from the educational context. Internal feedback may not be explicit, and it is the teacher who can provide effective feedback that aims to monitor the quality of the learning outcome (Kamilali, 2021).

In this phase we tested in detail the extent to which knowledge had been consolidated. Specifically, students were given a writing production topic and asked to develop it and make use of what they had learned, i.e., to use the material (diagrams, quality criteria, dictionary, etc.). In addition, after completing their work, they were asked to assess it and reflect on the learning objectives they had set. Specifically, in this phase students (a) completed Part I, II, and III-A of the worksheet of SAGS; (b) completed the worksheet with guiding questions; and (c) were asked to answer four of the seven questions of the weekly self-assessment questionnaire. In this way they were able to reflect on the writing production tasks they were involved in during each week.

Phase 5: Outcome. After completing phase 4, students presented the learning outcome, i.e., the produced written text, and in phase 6 they received feedback from both their peers and their teacher.

Phase 6: First Order Feedback. The first feedback concerns changes and improvements in learning strategy and behaviour to enable students to achieve the goals they have set. Feedback can be given by the teacher and by peers (Papaioannou, 2017). After students completed Parts I, II, and III-A of the worksheet of SAGS in a previous phase, they participated in goal-setting meetings where they worked together in groups or pairs and were supervised by the teacher.

Feedback was given from an external source; i.e., a classmate gave students feedback on how well they had done. Based on the meeting and self-assessment, each student completed Part III-B of the worksheet of SAGS, where they had to set two learning goals for their next assignment. In this phase, the teacher collected and provided written feedback on the worksheet of SAGS completed by each student and suggested improvements where needed.

Furthermore, the teacher also completed and gave the students the worksheet with guiding questions. After the first feedback, phases 3, 4, and 5 were repeated in order to improve the students' learning strategies and behaviours or to acquire learning strategies and behaviours that they did not have before.

Phase 7: Second Order Feedback. The second feedback leads to a repetition of the whole intervention in the case where no desired improvement has been observed in the students' cognition, metacognition, and motivation. In this phase, the posttest was taken in order to test if there were any changes in performance at the end of the intervention.

3.11 Success Criteria

The success criteria of this intervention were related to its successful implementation as well as its effectiveness. The intervention met the criterion relating to implementation fidelity very well. In particular, the intervention was implemented in accordance with the initial design and the set timeframes. Moreover, all the instruments designed for the intervention and the written tests were used. In addition, the initial goal for the number of participating students was to be between 130 and 170, which was achieved as 163 students participated. Furthermore, all the objectives and desired outcomes were achieved as the students in the experimental group who participated in the

implementation of SAGS improved the mean scores of their performance (+8.08%) as opposed to the students of control group whose mean scores of their performance decreased (-3.92%).

3.12 The Framework of the Experimental Procedure

The experimental procedure applied in this research was based on the following framework, which was also used by Vasileiadou and Karadimitriou (2021) who studied self-assessment with rubrics in primary education and its effect on students' academic achievement. This framework consists of the following four stages.

1) Development. In order to formulate research questions and research hypotheses; to describe the required actions and the expected results; and to create a training guide, the theoretical framework of the intervention was thoroughly studied. The review of previous relevant studies was the basis for collecting all the necessary empirical data related to the effectiveness of similar interventions and methods applied at different levels of education and in various educational systems. In particular, the results of these studies showed that SAGS contributes to the development of independent learning and helps students to realise the value of their work and achieve improvements in their learning outcomes. In the present study, it was decided that academic performance would be determined by students' scores in writing at the beginning and at the end of the intervention after the implementation of SAGS.

Then, it was decided that the intervention should be based on the model of self-directed learning, as both SAGS and self-directed learning are approaches where teaching and learning are student-centred and allow students to take control of their learning. If students are not provided with self-directed learning opportunities in the form of self-assessment, they may not be able to take responsibility for their learning and become self-directed, autonomous, self-regulated and independent learners (Sosibo, 2019).

2) Feasibility and Piloting. At this stage, the intervention was tested for feasibility and acceptability by students of the same age as the students participating in the study. In February 2022 a pilot study was conducted with 19 sixth-grade students from a primary school class on the island of Rhodes in order to test the instruments that were to be used so that they could be improved if necessary. Particularly, the instruments were examined if they were understandable to the students and their completion time was estimated. Furthermore, the written test was used to identify the process and understand the context within which the intervention was to take place. The target of this process was to avoid problems related to recruitment, compliance, acceptance, and retention. Subsequently, sixth-grade students from five schools in Rhodes were selected to participate in the study, which were the 163 in total that constituted the sample of this research.

3) Evaluation. At this stage, the intervention was evaluated in terms of its fidelity. In detail, the criterion of fidelity is the conformity of the intervention to the initial design. Indeed, the intervention was implemented as initially designed, with the quasi-experimental design being considered the most appropriate for handling the independent variable, i.e., SAGS. Also, a control group was used with a pretest and a posttest. This design was adopted by other similar studies (e.g., DeMent, 2008; Labuhn, Zimmerman, & Hasselhorn, 2010; Magi, Lerikkanen, Poikkeus, Rasku-Puttonen, & Kikas, 2010; Peters, 2012; Clift, 2015).

Therefore, the choice of the design was based on a review of the literature on the methodology of similar studies as well as on the conditions since the classes were already defined; i.e., the students were already divided into classes. More specifically, at the beginning of the intervention, students in both the experimental and control groups completed the pretest in order to test if there were any differences between them. The results showed that the groups were equivalent. Then, the intervention was implemented for a period of six weeks, where students in the experimental group implemented SAGS. At the end of the intervention, students took the posttest for achievement.

In addition, the number of people approached to participate in the research was more than the required number for studies such as this one. In this way, the effects of experimental mortality were avoided, and the final sample included a sufficient number of participants (N = 163) to draw useful conclusions. In particular, this avoided the consequences of reducing the sample due to some classes withdrawing from the research or students withdrawing during a stage of the research because they would not want to participate further or due to COVID-19 conditions. Also, by selecting a large sample, the consequences of the non-participation of students due to different intercultural backgrounds who had difficulties in using the Greek language were avoided.

4) Implementation. The intervention involved teachers who received training in SAGS. A specific training guide was created for the training, which included implementation scenarios such as the teaching intervention of this research. Therefore, teachers and education providers can access it in order to obtain not only theoretical but also practical knowledge. In addition, publications were made in order to disseminate the findings in the research and

educational field. Furthermore, in order to conduct the research, required permission and parental consent was obtained in order to allow for future communication with the participants and access to the data collected.

4. Results

In this section, the academic performance of the students in the experimental group before and after the intervention is compared in order to test if there was an effect on their performance after their participation in the implementation of SAGS. Then, a comparison is made between the experimental and control groups in order to test if there is a difference in performance between the students who participated in SAGS in Language and those who did not. The scoring of performance was based on the 0–10 scale used in primary schools in Greece.

4.1 Comparison of Academic Performance of the Sixth-Grade Students between Pretest and Posttest for Students who Participated in the Implementation of SAGS in Language

Table 1 shows that the students in the experimental group improved their performance significantly in Language ($Z = -6.228$, $p = .000$). Therefore, the null hypothesis (H_01) is rejected.

Table 1. The academic performance of the students of the experimental group before and after the intervention

Group	Pretest				Posttest				Statistical significance	
	M	SD	Mdn	Range	M	SD	Mdn	Range	Z	p
Experimental (n = 85)	5.32	1.99	5.50	7.80	5.75	2.10	5.80	7.80	-6.228	.000

Note. M = Mean; SD = Standard Deviation; Mdn = Median.

Additional and more detailed data on the academic performance of the students of the experimental group are given in Table 2 by ranking.

Table 2. The academic performance of the students of the experimental group based on ranking

	N	Mean Rank	Sum of Ranks
Academic Performance of Experimental Group	Negative Ranks	12 ^a	19.50
	Positive Ranks	62 ^b	40.98
	Ties	11 ^c	
	Total	85	

Note. a. Academic performance after the intervention < Academic performance before the intervention; b. Academic performance after the intervention > Academic performance before the intervention; c. Academic performance after the intervention = Academic performance before the intervention.

4.2 Comparison Between the Academic Performance of Sixth-Grade Students Who Participated in the Implementation of SAGS in Language and Those Who Did not Participate

The results of the analysis show that there is a statistically significant difference in academic achievement between the experimental and control groups ($U = 2506.000$, $p = .005$). Therefore, the null hypothesis (H_02) is rejected. In detail, the students in the experimental group improved their academic performance ($M = 5.75$, $SD = 2.10$, $n = 85$) more than students in the control group ($M = 4.90$, $SD = 1.97$, $n = 78$).

Table 3. The academic performance of the students in the experimental and control group before and after the intervention

Group	Pretest				Posttest				Statistical significance	
	M	SD	Mdn	Range	M	SD	Mdn	Range	U	p
Experimental (n = 85)	5.32	1.99	5.50	7.80	5.75	2.10	5.80	7.80	2506.000	.005
Control (n = 78)	5.10	1.88	5.60	7.40	4.90	1.97	5.40	7.60		

Note. M = Mean; SD = Standard Deviation; Mdn = Median.

Next, Figure 3 presents a graphical representation of the mean pretest and posttest academic achievement of each group. The intervention group showed an improvement in their academic achievement (+8.08%) as opposed to the control group that showed a deterioration in their academic performance (−3.92%).

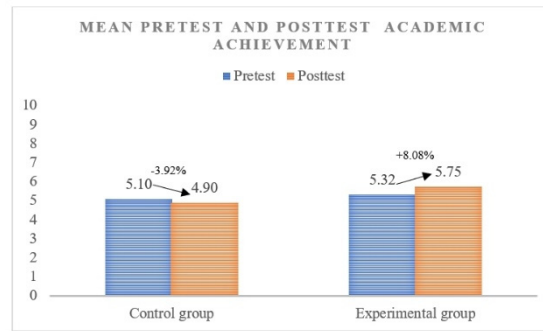


Figure 3. Percentage change in academic achievement for each group

In addition, in Table 4 below, the analysis of ranks provides additional data regarding the academic performance of the students in the control group.

Table 4. The academic performance of the students in the control group based on ranking

		N	Mean Rank	Sum of Ranks
Academic Performance of Control Group	Negative Ranks	36 ^a	29.08	1047.00
	Positive Ranks	17 ^b	22.59	384.00
	Ties	25 ^c		
	Total	78		

Note. a. Academic performance after the intervention < Academic performance before the intervention; b. Academic performance after the intervention > Academic performance before the intervention; c. Academic performance after the intervention = Academic performance before the intervention.

Table 5 below presents the results of the analysis and shows that the deterioration in the performance of students in the control group that did not participate in the implementation of SAGS in Language is statistically significant ($Z = -2.951, p = .003$).

Table 5. The academic performance of the students in the control group before and after the intervention

Group	Pretest				Posttest				Statistical significance	
	M	SD	Mdn	Range	M	SD	Mdn	Range	Z	p
Control (n = 78)	5.09	0.84	5.23	4.05	4.94	0.87	5.01	3.77	-2.951	.003

Note. M = Mean; SD = Standard Deviation; Mdn = Median.

5. Discussion

The findings of the present study show that the implementation of SAGS contributes to the improvement of students' academic performance, as the vast majority of students in the experimental group (73%) improved their academic performance, while a very small percentage of students (14%) showed a deterioration in their performance and an even smaller percentage of students (13%) showed no change in their performance after the intervention. Specifically, students in the experimental group significantly improved their performance language-learning ($Z = -6.228, p = .000$).

The above findings are directly in line with the findings of other relevant studies. Specifically, goal setting improves students' written performance (Schunk & Swartz, 1993a, 1993b) and enhances reading comprehension (Schunk & Rice, 1989, 1991). Moreover, Smithson (2012) found that goal setting improves or maintains students' academic achievement in reading. The positive effect of goal setting on reading was also noted by Förster and Souvignier (2014), while Peters (2012) showed that the use of self-regulation practices improved students' performance in physics. Additionally, Moeller et al. (2012) demonstrated that, in the field of language learning, there is a significant relationship between students' ability to set goals and their language performance. Furthermore, research has found that the processes of self-assessment and goal setting improve the written language of students with learning difficulties (Graham & Harris, 1989a, 1989b; Sawyer et al., 1992). In addition,

Lee and Gavine (2003) found that SAGS can enhance the spelling and punctuation skills of elementary school students.

Furthermore, Clift (2015) demonstrated that SAGS had a positive effect on the academic achievement of primary school students in mathematics, highlighting the fact that when students had the opportunity to engage in processes that are concrete, they could reflect on their learning and make progress. The same is claimed by Chung et al. (2021), who found that engaging students in a planned revision process that included self-assessment, planning, and goal setting positively affected students' performance in writing. On the other hand, the findings of the present study contradict the findings of Hematian, Rezaei, and Mohammadyfar (2017), who investigated the effect of goal setting in the secondary school setting and concluded that goal setting did not have any significant effect on students' achievement.

Furthermore, the findings of the present study showed that there is a statistically significant difference between the experimental and control groups in terms of their mean scores of academic achievement ($U = 2506.000$, $p = .005$). Specifically, students in the experimental group performed better in the posttest ($M = 5.75$, $SD = 2.10$) in contrast to students in the control group, whose performance deteriorated ($M = 4.90$, $SD = 1.97$), which was also statistically significant ($Z = -2.951$, $p = .003$). In the experimental group, the mean score of their performance increased by 8.08%, in contrast to the control group, where the mean score of their performance decreased by 3.92%. Specifically, in the control group, about half of the students (46%) showed a decrease in their performance, while only 22% showed an improvement, with 32% showing no change in their performance. This finding is in line with the findings of other related studies, according to which students who applied the self-assessment procedure in writing made progress, in contrast to those who did not use it (Ross, Rolheiser, & Hogaboam-Gray, 1999; Andrade et al., 2008, 2010; DeMent, 2008; Stylianou, 2008; Vasileiadou & Karadimitriou, 2021).

In addition, the findings of the present study demonstrate that metacognitive strategies can be taught to primary school students. Specifically, this research is consistent with the findings of other related research papers, where teachers used goal setting to teach self-regulation to students, leading to improved academic achievement (Peters, 2012; Clift, 2015).

More specifically, in the present study, the implementation of SAGS to students involved a number of processes (clarity of learning objectives, student engagement in monitoring the learning process, and reflection on the final product or learning outcome) that contributed to students learning to use self-regulation strategies and enhanced their ability to learn. The contribution of these processes to self-regulation and enhanced learning is also noted by other researchers (Nicol & McFarlane-Dick, 2006; Brown & Harris, 2013; Panadero & Alonso-Tapia, 2013).

Through the implementation of the SDL educational method, the students of the experimental group improved their performance. Therefore, self-directed learning can be applied to children such as the sixth-grade elementary school students who participated in the intervention despite the fact that it was originally developed for adult education (Nor & Saednia, 2009). The primary school students' competence in self-directed learning can be developed through teaching effective teaching strategies (Van Deur, 2017), such as SAGS, and can positively affect their performance.

These findings can be used in the wider reference population of the survey. The findings of this research contribute to highlighting in detail the contribution of SAGS to the educational process. This has implications for both teachers and primary school students. It is important for teachers to adopt SAGS and for the students to engage with it through a specific and planned process followed in the intervention, utilizing its specific educational model and teaching materials. By focusing on the teaching materials of the present intervention, namely the tools used by teachers and students, this research provides new tools for sixth-grade language-teaching, which contribute to the improvement of students' performance.

6. Conclusions

Based on the findings of this research and the above analysis, the following conclusions can be drawn.

SAGS implemented with the SDL educational method in the context of language teaching to the sixth-grade of primary school contributed to the improvement of the students' performance and therefore is an effective teaching strategy.

Specifically, the findings of the study showed that the students in the experimental group improved their performance, and that this improvement was statistically significant. Specifically, it was observed that after the implementation of SAGS, the academic achievement posttest mean scores of the students in the experimental group were higher than the academic achievement pretest mean scores.

Moreover, the vast majority of students in the experimental group improved their academic performance, while a

very small number of students experienced a decrease in performance, with an even smaller number of students not experiencing any change in their performance after the intervention. Finally, the students in the experimental group both performed better and improved their performance in the posttest in contrast to the students in the control group, for whom both lower performance compared to the experimental group and a decrease in their own relative performance were observed.

Regarding the theoretical implications of the research, it is noted that the findings of the present study support the theory of self-directed learning and enrich the literature with a teaching intervention that teachers can use to develop self-directed learning behaviours in primary school students.

Furthermore, self-assessment and SDL are learner-centred processes and therefore this research contributes to enriching the literature with a learner-centred teaching intervention that teachers can use to promote students' self-directed learning.

Moreover, primary school students can be taught metacognitive strategies, and therefore, it is important for teachers to provide students with opportunities to develop such strategies that contribute to their self-regulation through SAGS.

In addition, the research has practical implications for those involved in education such as the Ministry of Education, the Pedagogical Institute, etc. In particular, the aim now is for schools to help students acquire skills necessary for life and become more literate in assessment. However, in order to do this, it is necessary that students and teachers have the time needed to implement innovative self-assessment educational interventions, such as the teaching intervention mentioned in this research.

In addition to time, it is important for the educational stakeholders involved to ensure that primary teachers are trained in teaching interventions related to student self-assessment. Training for this form of assessment is important to start at the undergraduate level. It is good for future teachers to be exposed to self-assessment methods from their initial training, while for practicing teachers, it is important to train them in self-assessment and how it can be implemented. A very good example of implementation concerning the process of self-assessment is the intervention mentioned in this research, which had a proven positive effect on students.

Finally, regarding the training of teachers, the writing of a training guide on self-assessment is also considered important. The training guide, which was formulated for the training of the teachers participating in this research, is a very useful material, which could be the basis for the Institute of Educational Policy of Greece to formulate a training guide on student self-assessment, including scenarios for the implementation of self-assessment processes with positive results for students, such as the teaching intervention mentioned in this research.

Limitations of this study include the choice of a quasi-experimental study (Rovai, Baker, & Ponton, 2014; Clift, 2015) as there was a possibility that the groups were not equivalent, which would pose a threat to internal validity. These threats pose a problem for drawing correct conclusions about the relationship between cause and effect (Creswell, 2012). In order to avoid and reduce this threat, a pretest-posttest design was used. Specifically, a pretest was administered to all participants in order to test for lack of randomization (Campbell & Stanley, 1963) and to satisfy the assumption of equivalence between the two groups, experimental and control.

Another limitation relates to threats that may arise during the experimental process and are linked to the research procedures, in particular the controls. One potential threat to internal validity relates to the fact that participants in the experiment may become familiar with the measurements and may remember the responses in controls made at a later time. To avoid this threat, outcomes were measured only at the beginning and end of the intervention and after a total of six weeks had passed. An additional limitation of the study concerned the interaction of environment and treatment that threatened external validity. This threat was avoided by only selecting public-school students to participate in the study and not students from private schools. In this way, an analysis of the effect of treatment on public school students, who were the subjects of the study, was conducted (Creswell, 2012).

Finally, an additional limitation of this study is geographical, as the research was limited to schools located on the island of Rhodes. Furthermore, the pandemic condition due to COVID-19 during the conduct of the survey was a potential limitation that was avoided as the protocol in place during the 2021–2022 school year for visiting and conducting a survey in schools was strictly followed.

As a suggestion for further research, it would be interesting to investigate the effect of SAGS on other sixth-grade subjects, such as history, mathematics, geography, and physics. In addition, it is also necessary to qualitatively investigate student self-assessment with a quantitative approach in order to triangulate the results and to investigate the effect of self-assessment in relation to variables such as the self-regulation and self-esteem of primary school students. Finally, the development of the self-assessment skills of elementary school students is an interesting

research area that future studies should focus on.

References

- Alonso-Tapia, J., & Panadero, E. (2010). Effects of self-assessment scripts on self-regulation and learning. *Infancia y Aprendizaje*, 33(3), 385–397. <https://doi.org/10.1174/021037010792215145>
- Anastasiadou, A. (2013). Self-assessment: its impact on students' ability to monitor their learning process in the English classroom and develop compensatory strategies. *Research Papers in Language Teaching and Learning*, 4(1), 177–197.
- Andrade, H. L., Du, Y., & Mycek, K. (2010). Rubric-referenced self-assessment and middle school students' writing. *Assessment in Education: Principles, Policy & Practice*, 17(2), 199–214. <https://doi.org/10.1080/09695941003696172>
- Andrade, H. L., Du, Y., & Wang, X. (2008). Putting rubrics to the test: The effect of a model, criteria generation, and rubric-referenced self-assessment on elementary school students' writing. *Educational Measurement: Issues and Practice*, 27(2), 3–13. <https://doi.org/10.1111/j.1745-3992.2008.00118.x>
- Ashworth, F. H. (1983). *Teaching primary children to direct their own learning*. Doctoral dissertation, Simon Fraser University. Retrieved from <https://core.ac.uk/download/pdf/56369711.pdf>
- Black, P., & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in Education*, 5, 7–74. <https://doi.org/10.1080/0969595980050102>
- Bocala, C., Henry, S. F., Mundry, S., & Morgan, C. (2014). *Practitioner Data Use in Schools: Workshop Toolkit*. Retrieved from <https://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=400>
- Bourke, R. (2016). Liberating the learner through self-assessment. *Cambridge Journal of Education*, 46(1), 97–111. <https://doi.org/10.1080/0305764X.2015.1015963>
- Brown, G. T., Andrade, H. L., & Chen, F. (2015). Accuracy in student self-assessment: directions and cautions for research. *Assessment in Education: Principles, Policy & Practice*, 22(4), 444–457. <https://doi.org/10.1080/0969594X.2014.996523>
- Brown, G. T. L., & Harris, L. R. (2013). Student self-assessment. In J. McMillan (Ed.), *The SAGE handbook of research on classroom assessment* (pp. 367–393). <https://doi.org/10.4135/9781452218649.n21>
- Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. USA: Houghton Mifflin Company.
- Candy, P. C. (1991). *Self-direction for lifelong learning*. San Francisco: Jossey-Bass.
- Chalkia, E. (2012). Self-assessment as an alternative method of assessing speaking skills in the sixth grade of a Greek state primary school classroom. *Research Papers in Language Teaching and Learning*, 3(1), 225–239.
- Chalmers, D. (2008). *Teaching and learning quality indicators in Australian universities. Programme on institutional management in higher education (IMHE)*. Outcomes of higher education: quality, relevance, and impact. Retrieved from <http://www.oecd.org/site/eduimhe08/41216416.pdf>
- Chan, C. (2010). *Assessment: Self and Peer Assessment*. Retrieved from <http://ar.cetl.hku.hk/pdf/SelfPeer.pdf>
- Chung, H. Q., Chen, V., & Olson, C. B. (2021). The impact of self-assessment, planning and goal setting, and reflection before and after revision on student self-efficacy and writing performance. *Reading and Writing*, 34(7), 1885–1913. <https://doi.org/10.1007/s11145-021-10186-x>
- Clift, L. D. (2015). *The effects of student self-assessment with goal setting on fourth grade mathematics students: Creating self-regulating agents of learning*. Doctoral dissertation. Available from ProQuest Dissertation & Theses: Full Text (3737145).
- Cresswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Lincoln: Pearson.
- D'Andrea, V., & Gosling, D. (2005). *Improving teaching and learning in higher education: a whole institution approach*. UK: McGraw-Hill Education.
- Dann, R. (1996). Pupil self-assessment in the primary classroom: A case for action. *Education*, 24(3), 55–59. <https://doi.org/10.1080/03004279685200321>
- DeLuca, C., Lapointe-Mcewan, D., & Luhanga, U. (2016). Teacher assessment literacy: A review of international standards and measures. *Educational Assessment, Evaluation and Accountability*, 28(3), 251–272.

<https://doi.org/10.1007/s11092-015-9233-6>

- DeMent, L. (2008). *The relationship of self-evaluation, writing ability, and attitudes toward writing among gifted Grade 7 language arts students*. Doctoral dissertation. Available ProQuest Dissertation & Theses: Full Text (3342482).
- Dignath, C., Büttner, G., & Langfeldt, H. (2008). How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis on self-regulation training programmes. *Educational Research Review*, 3(2), 101–129. <https://doi.org/10.1016/j.edurev.2008.02.003>
- Dochy, F., Segers, M., & Buehl, M. M. (1999). The relation between assessment practices and outcomes of studies: The case of research on prior knowledge. *Review of Educational Research*, 69(2), 145–186. <https://doi.org/10.3102/00346543069002145>
- Duque Micán, A., & Cuesta Medina, L. (2017). Boosting vocabulary learning through self-assessment in an English language teaching context. *Assessment & Evaluation in Higher Education*, 42(3), 398–414. <https://doi.org/10.1080/02602938.2015.1118433>
- Elassy, N. (2015). The concepts of quality, quality assurance and quality enhancement. *Quality Assurance in Education*, 23(3), 250–261. <https://doi.org/10.1108/QAE-11-2012-0046>
- Elder, A. D. (2010) Children's self-assessment of their school work in elementary school. *Education*, 38(1), 5–11. <https://doi.org/10.1080/03004270802602044>
- Elgadal, H. A. (2017). *The effect of self-assessment on inexperienced EFL students' writing during revision*. Doctoral dissertation, University of Birmingham. Retrieved from <https://etheses.bham.ac.uk/id/eprint/7558/>
- Fancourt, N. P. M. (2008). *Self-assessment in religious education*. Doctoral dissertation, University of Warwick. Retrieved from http://wrap.warwick.ac.uk/1108/1/WRAP_THESIS_Fancourt_2008.pdf
- Fasouraki, R. X. (2011). *Self-esteem and school performance of students*. Master's Thesis, University of the Aegean. Retrieved from <http://hdl.handle.net/11610/14381>
- Feldkamp, L. M. (2013). *Effects of self-assessment on student learning in high school chemistry*. Master's thesis, Montana State University. Retrieved from <https://scholarworks.montana.edu/xmlui/handle/1/2781>
- Förster, N., & Souvignier, E. (2014). Learning progress assessment and goal setting: Effects on reading achievement, reading motivation and reading self-concept. *Learning and Instruction*, 32(2014), 91–100. <https://doi.org/10.1016/j.learninstruc.2014.02.002>
- Fraile, J., Panadero, E., & Pardo, R. (2017). Co-creating rubrics: The effects on self-regulated learning, self-efficacy and performance of establishing assessment criteria with students. *Studies in Educational Evaluation*, 53(2017), 69–76. <https://doi.org/10.1016/j.stueduc.2017.03.003>
- Giannaros, K. (2008). *Analysis of quality tools*. Master Thesis, University of Piraeus. Retrieved from <https://dione.lib.unipi.gr/xmlui/handle/unipi/7352>
- Gibbons, P. (2002). *Scaffolding language, scaffolding learning*. Portsmouth: Heinemann.
- Goto, B. Y., & Lee, J. (2010). The effects of self-assessment among young learners of English. *Language Testing*, 27(1), 5–31. <https://doi.org/10.1177/0265532209346370>
- Graham, S., & Harris, K. R. (1989a). Components analysis of cognitive strategy instruction: Effects on learning disabled students' compositions and self-efficacy. *Journal of Educational Psychology*, 81, 353–361. <https://doi.org/10.1037/0022-0663.81.3.353>
- Graham, S., & Harris, K. R. (1989b). Improving learning disabled students' skills at composing essays: Self-instructional strategy training. *Exceptional Children*, 56, 201–214. <https://doi.org/10.1177/001440298905600305>
- Harris, L. R., Brown, G. T., & Harnett, J. A. (2015). Analysis of New Zealand primary and secondary student peer-and self-assessment comments: Applying Hattie and Timperley's feedback model. *Assessment in Education: Principles, Policy & Practice*, 22(2), 265–281. <https://doi.org/10.1080/0969594X.2014.976541>
- Hatami, A. (2015). The effect of collaborative learning and self-assessment on self-regulation. *Educational Research and Reviews*, 10(15), 2164–2167. <https://doi.org/10.5897/ERR2015.2349>
- Hawe, E., & Parr, J. (2014). Assessment for learning in the writing classroom: An incomplete realisation. *Curriculum Journal*, 25(2), 210–237. <https://doi.org/10.1080/09585176.2013.862172>

- Hematian, F., Rezaei, A. M., & Mohammadyfar, M. A. (2017). On the effect of goal setting on self-directed learning, achievement motivation, and academic achievement among students. *Modern Applied Science, 11*(1), 37–47. <https://doi.org/10.5539/mas.v11n1p37>
- Hung, S. (2009). Promoting self-assessment strategies: An electronic portfolio approach. *Asian EFL Journal, 11*(2), 129–146. Retrieved from http://70.40.196.162/June_2009_EBook.pdf#page=129
- Ibabe, I., & Jauregizar, J. (2010). Online self-assessment with feedback and metacognitive knowledge. *Higher Education, 59*(2), 243–258. <https://doi.org/10.1007/s10734-009-9245-6>
- Jossberger, H., Brand-Gruwel, S., Boshuizen, H., & Van de Wiel, M. (2010). The challenge of self-directed and self-regulated learning in vocational education: A theoretical analysis and synthesis of requirements. *Journal of Vocational Education and Training, 62*(4), 415–440. <https://doi.org/10.1080/13636820.2010.523479>
- Kalomiris, H. K. (2014). *Development of e-portfolio with the method of self-directed learning*. Master's thesis, University of Piraeus. Retrieved from <https://dione.lib.unipi.gr/xmlui/handle/unipi/6163>
- Kamilali, D. (2022). *Self directed learning*. Retrieved from <https://dkamilali.wordpress.com/my-phd/%CE%B1%CF%85%CF%84%CE%BF%CE%BA%CE%B1%CF%84%CE%B5%CF%85%CE%B8%CF%85%CE%BD%CF%8C%CE%BC%CE%B5%CE%BD%CE%B7-%CE%BC%CE%AC%CE%B8%CE%B7%CF%83%CE%B7-self-directed-learning-sdl/>
- Keane, L., & Griffin, C. P. (2016). Testing the limits of self-assessment: A critical examination of the developmental trajectories of self-assessment processes. *Irish Teachers' Journal, 3*(2), 37–51.
- Kim, P. H. (2015). *Feedback and revision: a self-assessment intervention*. Doctoral dissertation. Available from ProQuest Dissertations and Theses: Full Text (3732046).
- Konstantinou, X. I., & Konstantinou, I. X. (2017). *Evaluation in Education: The evaluation of the educational project, the teacher and the student as theory and practice*. Athens: Gutenberg.
- Kyriazi, O., & Spantidakis, I. (2001). Ways of evaluating the difficulties in the production of the written word and the social difficulties of primary school students. *Motivation, 3*, 35–78.
- Labuhn, A. S., Zimmerman, B. J., & Hasselhorn, M. (2010). Enhancing students' self-regulation and mathematics performance: The influence of feedback and self-evaluative standards. *Metacognition Learning, 5*, 173–194. <https://doi.org/10.1007/s11409-010-9056-2>
- Lazarinis, F., Verykios, V. S., & Panagiotakopoulos, C. (2017). *A Mobile Application for User Regulated Self-Assessments*. Retrieved from <https://files.eric.ed.gov/fulltext/ED579199.pdf>
- Leach, L. (2012). Optional self-assessment: some tensions and dilemmas. *Assessment & Evaluation in Higher Education, 37*(2), 137–147. <https://doi.org/10.1080/02602938.2010.515013>
- Leaf, D. E., Leo, J., Leaf, D. E., Leo, J., Smith, P. R., Yee, H., ... Pillinger, M. H. (2009). SOMOSAT: Utility of a web-based self-assessment tool in undergraduate medical education. *Medical Teacher, 31*(5), 211–219. <https://doi.org/10.1080/01421590802650118>
- Lee, D., & Gavine, D. (2003). Goal-setting and self-assessment in Year 7 students. *Educational Research, 45*(1), 49–59. <https://doi.org/10.1080/0013188032000086118>
- Lee, E. P. (1997). The learning response log: An assessment tool. *English Journal, 86*, 41–44. <https://doi.org/10.2307/820779>
- Li, Y., & Chen, L. (2016). Peer-and self-assessment: A Case Study to Improve the Students' Learning Ability. *Journal of Language Teaching and Research, 7*(4), 780–787. <https://doi.org/10.17507/jltr.0704.20>
- Lubbe, A., Mentz, E., Olivier, J., Jacobson, T. E., Mackey, T. P., Chahine, I. C., ... de Beer, J. (2021). *Learning through assessment: An approach towards self-directed learning*. Durbanville: AOSIS Publishing. <https://doi.org/10.4102/aosis.2021.BK280>
- MacGregor, R. R. (2007). *The essential practices of high-quality teaching and learning*. Retrieved from <http://www.riverarts.8m.net/lessons/Collaboration/EssentialPracticesofHighQualityTeaching%20and%20Learning.pdf>
- Machera, R. P. (2017). Teaching Intervention Strategies that Enhance Learning in Higher Education. *Universal Journal of Educational Research, 5*(5), 733–743. <https://doi.org/10.13189/ujer.2017.050505>
- Magi, K., Lerkkanen, M. K., Poikkeus, A. M., Rasku-Puttonen, H., & Kikas, E. (2010). Relations between achievement goal orientations and math achievement in primary grades: A follow-up study. *Scandinavian*

- Journal of Educational Research*, 54(3), 295–312. <https://doi.org/10.1080/00313831003764545>
- Martínez, V., Mon, M. A., Álvarez, M., Fueyo, E., & Dobarro, A. (2020). E-self-assessment as a strategy to improve the learning process at university. *Education Research International*, 2020, 1–9. <https://doi.org/10.1155/2020/3454783>
- McKevitt, C. T. (2016). Engaging Students with Self-Assessment and Tutor Feedback to Improve Performance and Support Assessment Capacity. *Journal of University Teaching and Learning Practice*, 13(1), 1–20. <https://doi.org/10.53761/1.13.1.2>
- Ministry of Education of Ontario. (2007). *The Literacy and Numeracy Secretariat*. Retrieved from <http://mibibliotecatec.weebly.com/uploads/5/4/5/7/54577939/studentselfassessment.pdf>
- Moeller, A. J., Theiler, J. M., & Wu, C. (2012). Goal setting and student achievement: A longitudinal study. *The Modern Language Journal*, 96(2), 153–169. <https://doi.org/10.1111/j.1540-4781.2011.01231.x>
- Mok, M. M. C., & Cheng, Y. C. (2001). Teacher self learning theory in a networked environment. In Y. C. Cheng, K. W. Chow & K. T. Tsui (Eds.), *New teacher education for the future: international perspectives* (pp.109–144). The Netherlands: Kluwers academic publishers.
- Ndoye, A. (2017). Peer/Self Assessment and Student Learning. *International Journal of Teaching & Learning in Higher Education*, 29(2), 255–269.
- Ng, E. M. (2016). Fostering pre-service teachers' self-regulated learning through self-and peer assessment of wiki projects. *Computers & Education*, 98, 180–191. <https://doi.org/10.1016/j.compedu.2016.03.015>
- Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education*, 31(2), 199–218. <https://doi.org/10.1080/03075070600572090>
- Nikou, S. A., & Economides, A. A. (2016). The impact of paper-based, computer-based and mobile-based self-assessment on students' science motivation and achievement. *Computers in Human Behavior*, 55, 1241–1248. <https://doi.org/10.1016/j.chb.2015.09.025>
- Nor, M. M., & Saeednia, Y. (2009). Exploring self-directed learning among children. *International Journal of Human and Social Sciences*, 4(9), 658–663.
- O'Neill, P. (1998). From the writing process to the responding sequence: Incorporating self-assessment and reflection in the classroom. *Teaching English in the Two-Year College*, 26, 61–70.
- Oppenheimer, R. J. (2001). Increasing student motivation and facilitating learning. *College Teaching*, 49(3), 96–98. <https://doi.org/10.1080/87567550109595857>
- Ozarslan, Y., & Ozan, O. (2016). Self-Assessment Quiz Taking Behaviour Analysis in an Online Course. *European Journal of Open, Distance and E-learning*, 19(2), 15–31. <https://doi.org/10.1515/eurodl-2016-0005>
- Panadero, E., & Alonso-Tapia, J. (2013). Self-assessment: theoretical and practical connotations, when it happens, how is it acquired and what to do to develop it in our students. *Electronic Journal of Research in Educational Psychology*, 11(2), 551–576. <https://doi.org/10.14204/ejrep.30.12200>
- Panadero, E., Brown, G. T., & Strijbos, J. W. (2016). The future of student self-assessment: a review of known unknowns and potential directions. *Educational Psychology Review*, 28(4), 803–830. <https://doi.org/10.1007/s10648-015-9350-2>
- Panadero, E., & Romero, M. (2014). To rubric or not to rubric? The effects of self-assessment on self-regulation, performance and self-efficacy. *Assessment in Education: Principles, Policy & Practice*, 21(2), 133–148. <https://doi.org/10.1080/0969594X.2013.877872>
- Panadero, E., Tapia, J. A., & Huertas, J. A. (2012). Rubrics and self-assessment scripts effects on self-regulation, learning and self-efficacy in secondary education. *Learning and Individual Differences*, 22(6), 806–813. <https://doi.org/10.1016/j.lindif.2012.04.007>
- Papageorgiou, K. A. (2017). Alternative assessment proposals for primary education. *Proceedings of the 9th International Conference on Open & Distance Education*, 9, 150–159. <https://doi.org/10.12681/icodl.1120>
- Papaioannou, A. (2017). *e-SEL tutoring using the Self-Directed Learning (SDL) model: development of a technologically supported environment apT² e-SEL tutoring, using the Self-Directed Learning (SDL) model, and the objectives of Social and Emotional of Learning (SEL) in higher education*. Master's Thesis,

- University of Piraeus. Retrieved from <https://dione.lib.unipi.gr/xmlui/handle/unipi/10210>
- Peters, E. E. (2012). Developing content knowledge in students through explicit teaching of the nature of science: Influences of goal setting and self-monitoring. *Science & Education*, 21, 881–898. <https://doi.org/10.1007/s11191-009-9219-1>
- Peyton, C. (2017). *Students' Perception of the Self-Assessment Process in High School Physical Education*. Master's thesis, Illinois State University. Retrieved from <https://www.proquest.com/openview/6081204e1305aef1b3801b5c83d73af3/1?pq-origsite=gscholar&cbl=18750>
- Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of Self-regulation* (pp. 451–502). USA: Academic Press. <https://doi.org/10.1016/B978-012109890-2/50043-3>
- Popelka, E. (2015). *Improving the accuracy of middle school students' self-assessment, peer assessment, and mathematics achievement*. Doctoral dissertation, University of Louisville. Retrieved from <https://ir.library.louisville.edu/etd/2324/>
- Price, M., Rust, C., O'Donovan, B., Handley, K., & Bryant, R. (2012). *Assessment literacy: The foundation for improving student learning*. Oxford: Oxford Brookes University.
- Rivas, M. R., & Arrufat, M. J. G. (2016). University Students' Perceptions of Electronic Rubric-Based Assessment. *Digital Education Review*, 30, 220–233.
- Robinson, J. D., & Persky, A. M. (2020). Developing self-directed learners. *American Journal of Pharmaceutical Education*, 84(3), 292–296. <https://doi.org/10.5688/ajpe847512>
- Ross, J. A., Hogaboam-Gray, A., & Rolheiser, C. (2002). Student self-evaluation in grade 5–6 mathematics effects on problem-solving achievement. *Educational Assessment*, 8(1), 43–58. https://doi.org/10.1207/S15326977EA0801_03
- Ross, J. A., Rolheiser, C., & Hogaboam-Gray, A. (1999). Effects of self-evaluation training on narrative writing. *Assessing Writing*, 6(1), 107–132. [https://doi.org/10.1016/S1075-2935\(99\)00003-3](https://doi.org/10.1016/S1075-2935(99)00003-3)
- Ross, J. A., & Starling, M. (2008). Self-assessment in a technology-supported environment: The case of grade 9 geography. *Assessment in Education: Principles, Policy & Practice*, 15(2), 183–199. <https://doi.org/10.1080/09695940802164218>
- Roussos, P., & Tsaousis, G. (2011). *Statistics in the behavioral sciences using SPSS*. Athens: Topos Books.
- Rovai, A. P., Baker, J. D., & Ponton, M. K. (2014). *Social science research design and statistics: A practitioner's guide to research methods and IBM SPSS analysis* (2nd ed.). Chesapeake, VA: Watertree Press.
- Sawyer, R. J., Graham, S., & Harris, K. R. (1992). Direct teaching, strategy instruction, and strategy instruction with explicit self-regulation: Effects on the composition skills and self-efficacy of students with learning disabilities. *Journal of Educational Psychology*, 84, 340–352. <https://doi.org/10.1037/0022-0663.84.3.340>
- Sebba, J., Crick, R. D., Yu, G., Lawson, H., Harlen, W., & Durant, K. (2008). *Systematic review of research evidence of the impact on students in secondary schools of self and peer assessment*. Retrieved from <https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2415>
- Schunk, D. H. (1990). Goal setting and self-efficacy during self-regulated learning. *Educational Psychologist*, 25(1), 71–86. https://doi.org/10.1207/s15326985ep2501_6
- Schunk, D. H., & Rice, J. M. (1989). Learning goals and children's reading comprehension. *Journal of Reading Behavior*, 21, 279–293. <https://doi.org/10.1080/10862968909547677>
- Schunk, D. H., & Rice, J. M. (1991). Learning goals and progress feedback during reading comprehension instruction. *Journal of Reading Behavior*, 23, 351–364. <https://doi.org/10.1080/10862969109547746>
- Schunk, D. H., & Swartz, C. W. (1993a). Goals and progress feedback: Effects on self-efficacy and writing achievement. *Contemporary Educational Psychology*, 18, 337–354. <https://doi.org/10.1006/ceps.1993.1024>
- Schunk, D. H., & Swartz, C. W. (1993b). Writing strategy instruction with gifted students: Effects of goals and feedback on self-efficacy and skills. *Roeper Review*, 15, 225–230. <https://doi.org/10.1080/02783199309553512>
- Sharma, R., Jain, A., Gupta, N., Garg, S., Batta, M., & Dhir, S. K. (2016). Impact of self-assessment by students on their learning. *International Journal of Applied and Basic Medical Research*, 6(3), 226–229.

- <https://doi.org/10.4103/2229-516X.186961>
- Sluijsmans, D., Dochy, F., & Moerkerte G. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education*, 24(3), 331–350. <https://doi.org/10.1080/03075079912331379935>
- Smith, C. D., Worsfold, K., Davies, L., Fisher, R., & McPhail, R. (2013). Assessment literacy and student learning: the case for explicitly developing students 'assessment literacy'. *Assessment & Evaluation in Higher Education*, 38(1), 44–60. <https://doi.org/10.1080/02602938.2011.598636>
- Smithson, M. (2012). The Positive Impact of Personal Goal Setting on Assessment. *The Canadian Journal of Action Research*, 13(3), 57–73. <https://doi.org/10.33524/cjar.v13i3.61>
- Sosibo, Z. C. (2019). Self-assessment: A learner-centred approach towards transforming traditional practices and building self-directed learners. *South African Journal of Higher Education*, 33(5), 76–97. <https://doi.org/10.20853/33-5-3586>
- Stylianou, M. (2008). *The students' self-assessment based on the Portfolio assessment, as a means of developing communication skills and in particular understanding and production of written language*. Master's Thesis, Aristotle University of Thessaloniki. <https://doi.org/10.26262/heal.auth.ir.110705>
- Sumantri, M. S., & Satriani, R. (2016). The Effect of Formative Testing and Self-Directed Learning on Mathematics Learning Outcomes. *International Electronic Journal of Elementary Education*, 8(3), 507–524.
- Taras, M. (2010). Student self-assessment: Processes and consequences. *Teaching in Higher Education*, 15(2), 199–209. <https://doi.org/10.1080/13562511003620027>
- Taratori-Tsalkatidou, E. (2015). *School Evaluation: Evaluation of the school unit, the teacher and the student's performance*. Thessaloniki: Kyriakidis S.A.
- Thrasher, B. L. (2012). *The effects of student self-assessment in science*. Master's thesis, Montana State University. Retrieved from <https://scholarworks.montana.edu/xmlui/handle/1/2423>
- Travers, C. J., Morisano, D., & Locke, E. A. (2015). Self-reflection, growth goals, and academic outcomes: A qualitative study. *The British Psychological Society*, 85, 224–241. <https://doi.org/10.1111/bjep.12059>
- Tremblay, N. A., & Theil, J. P. (1991). A conceptual model of autodidacticism. In H. B. Long & Associates (Eds.), *Self-directed learning: Consensus & conflict* (pp. 29–51). Norman: Oklahoma Research Center for Continuing Professional and Higher Education,
- Tsiga, E., & Nasaina, E. (2012). *The contribution of self-esteem to school performance of students* (pp. 1–8). Proceedings of the Hellenic Institute of Applied Pedagogy and Education. Retrieved from http://www.elliepek.gr/documents/60_synedrio_eisigiseis/81_Tsiga_Nasaina.pdf
- Van Deur, P. (2017). *Managing Self-Directed Learning in Primary School Education: Emerging Research and Opportunities*. USA: IGI GLOBAL. <https://doi.org/10.4018/978-1-5225-2613-1>
- Vasileiadou, D., & Karadimitriou, K. (2021). Examining the impact of self-assessment with the use of rubrics on primary school students' performance. *International Journal of Educational Research Open*, 2, 1–9. <https://doi.org/10.1016/j.ijedro.2021.100031>
- Wolffensperger, Y., & Patkin, D. (2013). Self-assessment of self-assessment in a process of co-teaching. *Assessment & Evaluation in Higher Education*, 38(1), 16–33. <https://doi.org/10.1080/02602938.2011.596925>
- Wride, M. (2017). *Assessment: Guide to Self-Assessment*. Retrieved from <https://www.tcd.ie/CAPSL/assets/pdf/Academic%20Practice%20Resources/Guide%20to%20Student%20Self%20Assessment.pdf>
- Xanthi, S. (2011). *Design, implementation and evaluation of educational activities with educational software in teaching language to students with learning difficulties*. Doctoral dissertation, National and Kapodistrian University of Athens. Retrieved from <https://www.didaktorika.gr/eadd/handle/10442/25881>
- Yan, Z. (2018) Student self-assessment practices: the role of gender, school level and goal orientation. *Assessment in Education: Principles, Policy & Practice*, 25(2), 183–199. <https://doi.org/10.1080/0969594X.2016.1218324>
- Yan, Z., & Brown, G. T. (2017). A cyclical self-assessment process: towards a model of how students engage in self-assessment. *Assessment & Evaluation in Higher Education*, 42(8), 1247–1262. <https://doi.org/10.1080/02602938.2016.1260091>
- Yan, Z., Chiu, M. M., & Ko, P. Y. (2020). Effects of self-assessment diaries on academic achievement, self-

regulation, and motivation. *Assessment in Education: Principles, Policy & Practice*, 27(5), 562–583. <https://doi.org/10.1080/0969594X.2020.1827221>

Yu, T. (2013). *The use of self-assessment to facilitate self-directed learning in mathematics by Hong Kong secondary school students*. Doctoral dissertation, Durham University. Retrieved from http://etheses.dur.ac.uk/6995/1/YuTW_2013_final_v5.pdf

Zapitis, M. (2011). *The effects of self-evaluation training on writing of students in grades 5 & 6*. Master's thesis, University of Toronto. Retrieved from <https://www.bac-lac.gc.ca/eng/services/theses/Pages/item.aspx?idNumber=1032925933>

Zarra, P. (2019). *Peer-assessment and self-assessment practices of young students for the development of written language*. Master's thesis, Hellenic Open University. Retrieved from <https://apothesis.eap.gr/handle/repo/43957>

Copyrights

Copyright for this article is retained by the author, with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).