



Review

Effectiveness of learning strategy instruction on academic performance: A meta-analysis

A.S. Donker^{a,*}, H. de Boer^a, D. Kostons^a, C.C. Dignath van Ewijk^b, M.P.C. van der Werf^a^a Groninger Institute for Educational Research, University of Groningen, Grote Rozenstraat 3, 9712 TG Groningen, The Netherlands^b Department of Psychology, University of Mannheim, 68131 Mannheim, Germany

ARTICLE INFO

Article history:

Received 10 April 2013

Revised 11 November 2013

Accepted 12 November 2013

Available online 21 November 2013

Keywords:

Self-regulated learning

Metacognition

Learning strategies

Academic performance

Meta-analysis

ABSTRACT

In this meta-analysis the results of studies on learning strategy instruction focused on improving self-regulated learning were brought together to determine which specific strategies were the most effective in increasing academic performance. The meta-analysis included 58 studies in primary and secondary education on interventions aimed at improving cognitive, metacognitive, and management strategy skills, as well as motivational aspects and metacognitive knowledge. A total of 95 interventions and 180 effect sizes demonstrated substantial effects in the domains of writing (Hedges' $g = 1.25$), science (.73), mathematics (.66) and comprehensive reading (.36). These domains differed in terms of which strategies were the most effective in improving academic performance. However, metacognitive knowledge instruction appeared to be valuable in all of them. Furthermore, it was found that the effects were higher when self-developed tests were used than in the case of intervention-independent tests. Finally, no differential effects were observed for students with different ability levels. To conclude, the authors have listed some implications of their analysis for the educational practice and made some suggestions for further research.

© 2013 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	2
1.1. Self-regulated learning and metacognition	2
1.2. Learning strategies	2
1.2.1. Cognitive strategies	3
1.2.2. Metacognitive Strategies	3
1.2.3. Management strategies	3
1.3. Motivation and metacognitive knowledge	3
1.3.1. Motivational aspects	3
1.3.2. Metacognitive knowledge	4
1.4. Instructing learning strategies: findings from earlier meta-analyses	4
1.4.1. Effective strategies	4
1.4.2. Student characteristics	4
1.4.3. Outcome variables and measures	5
1.5. The current study	5

* Corresponding author. Tel.: +31 503639116.

E-mail address: a.s.donker-bergstra@rug.nl (A.S. Donker).

2.	Method	5
2.1.	Literature search and eligibility criteria	5
2.2.	Coding	6
2.2.1.	Learning strategies	6
2.2.2.	Student characteristics	7
2.2.3.	Outcome measures	7
2.3.	Meta-analysis	7
2.3.1.	Random and mixed effects models	7
2.3.2.	Calculating the effect size and regression coefficient	7
2.3.3.	Method of analysis	8
3.	Results	8
3.1.	Descriptives	8
3.2.	Effective strategies	8
3.3.	Student characteristics	12
3.4.	Outcome measures and effectiveness	13
3.5.	Publication bias	13
4.	Conclusion and discussion	14
4.1.	Effective strategies	14
4.2.	Student characteristics	15
4.3.	Outcome measures	16
4.4.	Publication bias	16
4.5.	Practical recommendations	16
4.6.	Limitations	17
Appendix A.	Strategies – categories and examples	18
Appendix B.	Key characteristics of the studies included in the meta-analysis	19
References	24
References: Articles included in the Meta-Analysis.	24

1. Introduction

1.1. Self-regulated learning and metacognition

Self-regulated learners are students who are capable of supporting their own learning processes by applying domain-appropriate learning strategies (e.g., Boekaerts, 1997; Zimmerman, 1990, 1994). Self-regulated learning can be described as: “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior, guided and constrained by their goals and the contextual features in the environment” (Pintrich, 2000, p. 453). In short: students who are able to self-regulate their learning are active, responsible learners who act purposefully (i.e. use learning strategies) to achieve their academic goals. To this end, they need meta-cognitive knowledge; knowledge and awareness about their own cognition (Flavell, 1976, 1979).

The term ‘metacognition’ is not new in this field, and it is sometimes used interchangeably with self-regulation (Dinsmore, Alexander, & Loughlin, 2008). This is because self-regulation includes the regulation of cognition, which relates to (cognitive) strategies and metacognition. Whereas metacognition is more narrowly defined and refers only to knowledge regarding cognition (Dinsmore et al., 2008), self-regulated learning is broader in a sense, as it comprises both the knowledge and control of not only cognition, but also of motivation.

Students have to acquire knowledge, as it is required to apply learning strategies. Furthermore, in order to become effective self-regulated learners, they have to practice the actual application of this knowledge. However, becoming a self-regulated learner is not an end in itself; it is a means to another end, namely to improve academic performance, as it is demonstrated that self-regulated learners usually do well in education (e.g., Zimmerman, 1990). Research (Dignath, Büttner, & Langfeldt, 2008; Hattie, Biggs, & Purdie, 1996) has suggested a causal relationship between strategy use and performance: using the proper learning strategies improves academic performance. As not all students spontaneously master the use of learning strategies and certainly not in the most effective way, students require additional instruction of learning strategies.

1.2. Learning strategies

Learning strategies are defined as “processes (or sequences of processes) that, when matched to the requirements of tasks, facilitate performance” (Pressley, Goodchild, Fleet, & Zajchowski, 1989, p.303). Learning strategies have been repeatedly demonstrated to be positively correlated with academic performance (Alexander, Graham, & Harris, 1998; Hattie et al., 1996; Weinstein, Husman, & Dierking, 2000). They structure the processing of information by facilitating particular activities, such as the planning of learning tasks, goal setting, monitoring the progress toward these goals, making

Download English Version:

<https://daneshyari.com/en/article/355102>

Download Persian Version:

<https://daneshyari.com/article/355102>

[Daneshyari.com](https://daneshyari.com)