

Evidence-Based Learning (EBL)
The Eight Key EBL Skills

Key EBL Skill 7
Self-Regulation



A
15-minute
Teacher Guide

1

This resource first outlines the benefits of developing self-regulation in the classroom.

2

This resource then has research that supports using self-regulation in the classroom.

Our review of over 200 educational research papers identified eight key thinking and learning skills that have been found in common across this research

Our two-year research review identified these eight key thinking and learning skills:

- Collaborative skills
- Thinking skills
- Peer teaching skills
- Peer assessment
- Self-assessment
- Metacognition
- Self-regulation
- Independent learning

some of these eight skills are needed in different combinations



to develop 21st Century thinking and learning skills



Our two-year research review also identified three key 21st century thinking and learning skills:

- Creative Thinking
- Critical Thinking
- Problem Solving



these three skills need combinations of the skills above

The general order that thinking and learning skills develop:

First	Lower order thinking skills (e.g. remembering)	↓
Next	Higher order thinking skills (e.g. evaluating)	↓
Then	Self-assessment skills	↓
After that	Metacognitive thinking skills	↓
Finally	<p>Self-regulation skills:</p> <p style="text-align: center;">Metacognitive thinking skills + Non-cognitive skills</p> <p>(the attitudes and the behaviours for learning - such as motivation, perseverance and self-belief)</p>	↓

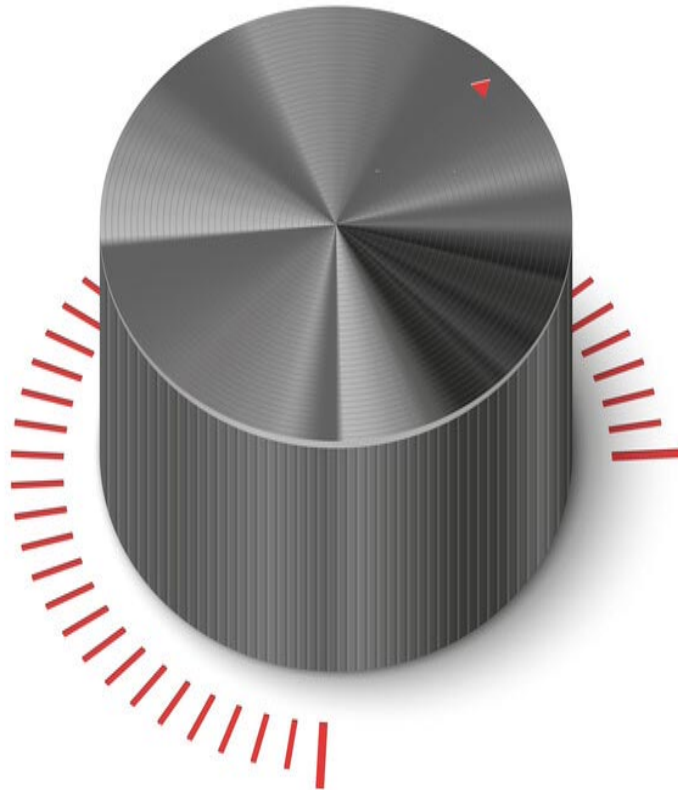
I am a self-regulated dog.

If anyone comes to my house, I am always **motivated** to bark at them non stop and I **persevere** with my barking until they go away.

That is why I LOVE self-regulation!



Introduction to Self-Regulation



Self-regulation refers to the degree to which pupils can regulate (control) aspects of:

- their thinking, their motivation and
- their behaviours during learning.

*Formative Assessment and Self-Regulated Learning:
A Model and Seven Principles of Good Feedback Practice
Nicol and Macfarlane-Dick - www.tlitt.strath.ac.uk*

Introduction to Self-Regulated Learners

Self-regulated learners are learners that set goals for themselves and are then motivated to use a range of strategies to achieve their goals



Self-regulated learning theories generally portray the learner as a goal-directed individual, whose motivation creates the intention to learn and whose use of various learning strategies provide the means of fulfilling that intention to learn.

Self-regulated learners have three types of self-awareness



1

Knowledge of self:

Self-regulated learners know that they learn better when they study in a quiet setting, rather than in front of the television.

2

Knowledge of task:

Self-regulated learners know that it's easier to prepare for a multiple-choice test than writing an essay.

3

Knowledge of strategies:

Self-regulated learners know when and how to use strategies to improve their learning.

Self-regulated learners minimise distractions to their learning and maximise their opportunities to learn



they **minimise**
their distractions

they **maximise**
their opportunities

Self-regulated learners create the maximum opportunities to learn. Self-regulated learners will focus on a task and bring to it the right thinking, attitude, strategies and behaviours to get that task done.

This process might include metacognition, motivation, perseverance and self-efficacy (self-belief).

In doing this, they will have maximised the thinking and learning opportunities for the task and minimised any disruption their attitudes and behaviours might have caused.

This maximising of opportunities and the minimising of distractions enables self-regulated learners to make the best use of their knowledge and skills.

The key components needed for self-regulation are a combination of cognitive thinking skills and non-cognitive skills



Key component 1	lower and higher order thinking	cognitive skills
Key component 2	self-assessment	
Key component 3	metacognition	
Key component 4	motivation	non-cognitive skills
Key component 5	volition	
Key component 6	non-cognitive attitudes and behaviours	this umbrella term is used to cover the non-cognitive behaviours, attitudes, beliefs, abilities, motivation and personality traits needed for self-regulated learning

Key Component 1
Self-Regulation needs Cognition



In his 1956 taxonomy of thinking skills,
Benjamin Bloom divided cognitive
skills into two key parts:

lower order
thinking skills

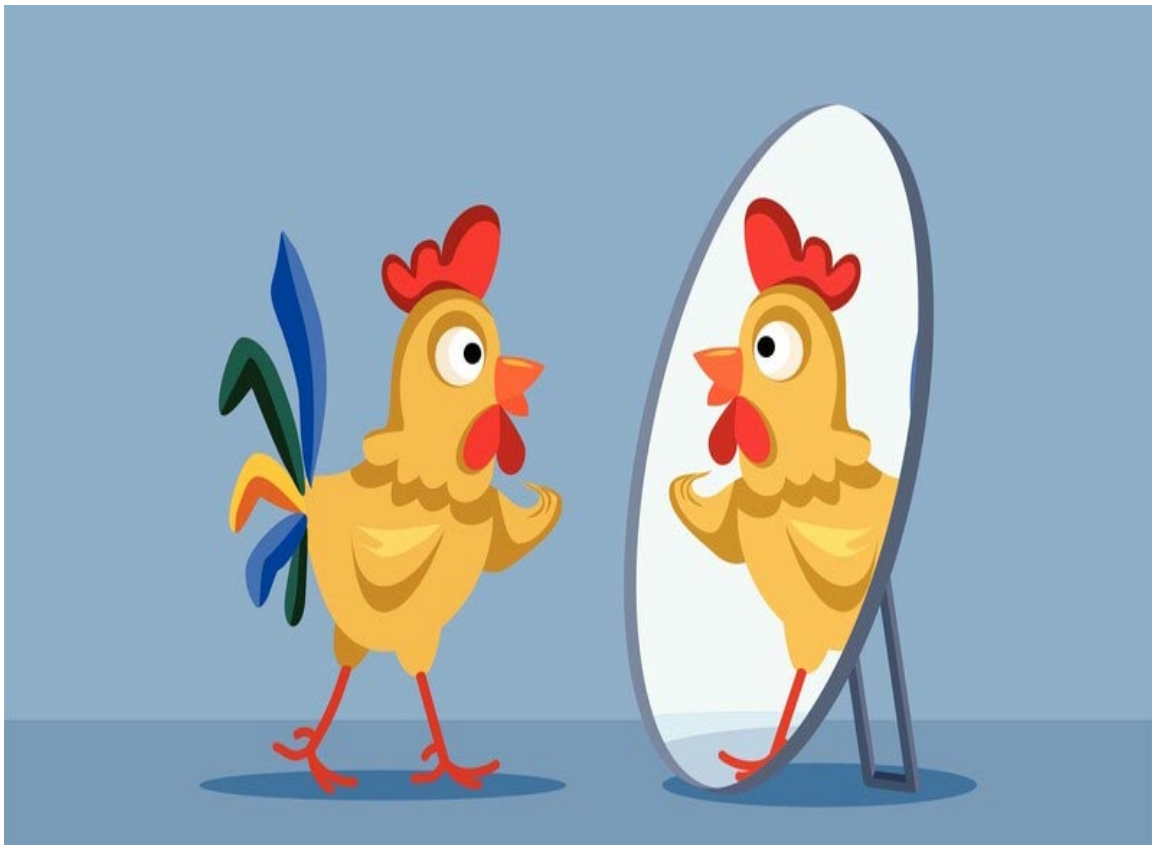
higher order
thinking skills

thinking skills are cognitive skills

Key Component 2

Self-Regulation needs Self-Assessment

Self-Assessment is a cognitive skill



Self-assessment involves pupils monitoring and evaluating their learning. Self-assessment is meant to be formative and help students improve subsequent performance.

Although it shares some similarities with peer assessment, formative self-assessment does not involve giving feedback to a peer, pupil, or partner.

Instead, a student gives feedback to themselves.

Adapted from: Using self-assessment to develop metacognition and self-regulated learners - Amy Siegesmund - FEMS Microbiology Letters May 2017 - academic.oup.com

Key Component 3

Self-Regulation needs Metacognition (I)

In 1979, John Flavell named another type of cognitive thinking in addition to lower order and higher order thinking.

This thinking is called metacognitive thinking (metacognition)

Metacognition is a cognitive skill

Metacognition has two key parts:

1

2

metacognitive
knowledge

(knowing what
the task involves)

metacognitive
regulation

(managing the
doing of the task)

what learners **know**
about the demands of
a particular learning task

what learners **know**
about the different
approaches that they
might use in the task

how learners **manage**
and **control** their
cognitive processes

e.g. choosing the best
strategies for the task
and **changing track**
if the strategies
are not working

*Adapted from: Cambridge Assessment - International Education
Getting Stated with Metacognition - cambridge-community.org.uk*

Key Component 3

Self-Regulation needs Metacognition (II)

For students, having metacognitive skills means that they are able to recognise their own cognitive abilities, direct their own learning, evaluate their performance, and understand what caused their successes or failures.

Metacognition in the Classroom: Benefits & Strategies
March 2021 - www.highspeedtraining.co.uk



When teachers help pupils to develop strong metacognitive abilities, pupils develop a deeper awareness of the learning process and gain control over their own learning.

This leads to:

- increased ability to manage one's own motivation
- enhanced personal capacity for self-regulation
- pupils becoming more self-regulated learners

Using metacognitive strategies to support student self-regulation and empowerment
Professional Practice 2019 - www.education.vic.gov.au

Key Component 3

Self-Regulation needs Metacognition (III)

Pupils cannot self-regulate
if they are not metacognitive



The ability of pupils to effectively self-regulate their learning is dependent on their metacognitive ability.

A lack of metacognitive ability prevents pupils from not only succeeding at an academic level, but also hinders the self-regulated learning that is needed to be a lifelong learner capable of adapting to any learning situation.

Using self-assessment to develop metacognition and self-regulated learners - Siegesmund - Jun 2017 - academic.oup.com

Key Component 4

Self-Regulation needs Motivation

The key components needed for self-regulation are a combination of cognitive thinking skills and non-cognitive skills.



Motivation is a behaviour so it is a non-cognitive skill

Motivation to learn is “indispensable”.

Students who are motivated to reach a goal will engage in self-regulatory activities that they feel will help them achieve that goal.

This self-regulation promotes learning, which leads to a perception of greater competence, which sustains motivation toward the goal and to future goals.

Self-regulated learning can be defined as “the degree to which learners are metacognitively, motivationally, and behaviourally active participants in their own learning process”. (Zimmerman, 2008).

The Role of Motivation in Self-Regulated Learning 2023
Study.Com - study.com

The Association between Motivation, Affect, and Self-regulated Learning
When Solving Problems - Baars et al 2017
Frontiers - www.frontiersin.org

Key Component 5

Self-Regulation needs Volition

“Volition is one of the most significant elements of self-regulation.”



Volition is a
non-cognitive
skill

Volitional competence is marked by the tendency for an individual to increase effort when it is needed and the ability to maintain it despite obstacles or interruptions.

Volitional strategies include aspects of self-management such as persistence, perseverance and what many teachers and parents frequently term 'buckling down to work'.

Volition is one of the most significant elements of self-regulation.

This is what I have learnt about self-regulated dogs:

Self-regulated dogs like me are **motivated** to bark non-stop when we see our lead coming out of the cupboard.

We will **persevere** with our barking while our leads are being put on and the front door opened.

Finally, we have the **volition** to carry on barking as we start our walk, regardless of how *many* times we are told off!

Isn't self-regulation GREAT!



“Researchers have recently begun to lend greater attention to how volitional processes mediate the road from intention to goal attainment.”



Volitional processes are defined as those thoughts and/or behaviours that are directed toward *maintaining* one's intention to attain a specific goal in the face of both internal and external distractions.

(Corno & R. Kanfer, 1993; Snow, Corno & Jackson, 1996)

“Pupils frequently need a collection of volitional strategies to strengthen their resolve to stay task-focused when obstacles to their motivation for learning occur.”



Internal and external obstacles and distractions can arise without warning

A major stumbling block to task engagement and completion is pupils' lack of ability to support their motivation when confronted with obstacles.

Internal and external distractions can arise without warning, leaving pupils to wrestle with the effects of negative emotion or competing goals.

Pupils frequently need a collection of volitional strategies to strengthen their resolve to stay task-focused when obstacles to their motivation for learning occur.

Volition is the pupil's driving force that maintains the effort needed to do the task

Volition is not the same as motivation

motivation	v	volition
motivation is the desire to do something	v	volition is the commitment to doing it
motivation is the incentive or reason to do something	v	volition is the willpower or commitment to get it done

Motivation is the desire to do something; volition is the absolute commitment to getting it done.

Volition vs Motivation - What's the difference? - wikidiff.com

*Going Beyond Motivation to the Power of Volition
Massachusetts Institute of Technology 2003 - sloanreview.mit.edu*

Volition is a cognitive skill



Volition can be defined as the act of making a choice or a making decision. Your volition is the power you have to decide something for yourself.

Volition (or will) is the cognitive process by which an individual decides on and commits to a particular course of action - usually a goal.

To carry out a goal, one must have a representation of a goal, must attribute a positive value to the goal, and must realize that one is not currently in the goal state but could attain this state through their own action.

These are cognitive processes that would then generate an action with the aim of bringing the goal state closer.

*Annual Review of Psychology The Neurocognitive Bases of Human
Volition Patrick Haggard*

Annual Review of Psychology 2018 - braininstitute.us

www.merriam-webster.com - www.collinsdictionary.com

Volition - Wikipedia

Self-regulated learning is a combination of cognitive and non-cognitive skills



+



e.g. evaluating
cognitive skill

e.g. perseverance
non-cognitive skill

Cognitive skills are the core skills your brain uses to think, read, learn, remember, reason, and pay attention. Working together, they take incoming information and move it into the bank of knowledge you use every day at school, at work, and in life.

Non-cognitive skills are the attitudes and behaviours that are needed for learning, such as conscientiousness, perseverance, and motivation. Non-cognitive skills may be broadly defined as personality traits or 'attitudes, feelings, and behaviours'.

(Borghans et al, 2008)

Research has shown that non-cognitive skills are as important for academic performance as cognitive abilities.

Mind Matters 2018 – www.mindmattersjo.com

A Rosetta Stone for non-cognitive skills – Jan 2015 – asiasociety.org

Non-cognitive skills are needed for self-regulation (1)



The non-cognitive skills that are directly related to academic success, include perseverance and goal setting

Non-cognitive skills are any skills that are not cognitive thinking skills. Non-cognitive skills generally describe attitudes and behaviours such as optimism, tolerance and dependability.

Educators and researchers have long suggested that certain non-cognitive skills are important factors in pupil success (*Bandura & Schunk, 1981; Ames & Archer, 1988; Zimmerman, 1990*).

Educators tend to focus on the non-cognitive skills that are directly related to academic success, such as self-efficacy (self-belief), perseverance, and goal setting.

What Do We Know About Developing Students' Non-cognitive Skills?

John Hopkins School of Education

Bjorklund-Young - June 2016 - edpolicy.education.jhu.edu

A Rosetta Stone for Non-Cognitive Skills - Jan 2015 - asiasociety.org

Non-cognitive skills are needed for self-regulation (2)



The term “non-cognitive skills” is used to contrast a variety of behaviours, personality characteristics, and attitudes with academic skills, aptitudes, and attainment.

The concept was introduced by sociologists Bowles and Gintis (1976) to focus on factors other than those measured by cognitive test scores.

The non-cognitive skills needed for self-regulation include goal setting, self-efficacy and perseverance.

Adapted from: Towards Clarity in Research on “Non-Cognitive” Skills: Linking Executive Functions, Self-Regulation, and Economic Development to Advance Life Outcomes for Children, Adolescents and Youth Globally - Jul 2016 - www.ncbi.nlm.nih.gov

Non-cognitive skills also include the right academic behaviours for learning such as completing homework and participating in class



Non-cognitive skills include a range of personality and motivational habits and attitudes that facilitate functioning well in school. Non-cognitive skills reinforce cognitive skills.

Pupils with stronger non-cognitive skills demonstrate higher academic achievement throughout the schooling process (*Gabrieli, Ansel, & Krachman, 2015*).

Pupils' non-cognitive academic behaviours, including regular school attendance, completing homework, and participating in class, are strongly related to measures of academic achievement, such as grades (*Farrington et al, 2012*).

Well-developed non-cognitive skills will help to promote the development of cognitive skills.

*Non-cognitive Skills in the Classroom: New Perspectives on Educational Research - Rosen et al 2010
Research Triangle Institute - www.rti.org*

*What Do We Know About Developing Students' Non-cognitive Skills?
John Hopkins School of Education
Bjorklund-Young - June 2016 - edpolicy.education.jhu.edu*

“Non-cognitive factors and skills are equally or even more important than cognitive factors and skills”



Teamwork
is a
non-cognitive
skill

In the past decades, the prediction of academic success has been considered dependent on cognitive factors such as intelligence and academic abilities.

However, in recent years researchers in education have recognized that non-cognitive factors and skills also play a critical role in educational success and achievement (*Stankov & Lee, 2014*).

Researchers firmly believe that non-cognitive factors and skills are equally or even more important than cognitive factors and skills for both educational and employment potential.

Non-cognitive skills include perseverance, teamwork, decision making, conscientiousness and communication.

*Non-cognitive Skills and Factors in Educational Attainment - Khine et al
Contemporary approaches to research in learning innovations - Vol 9 2016
Sense Publishers*

*Non-Cognitive Skills: What They Are and Why They're Important
June 2022 - Indeed - www.indeed.com*

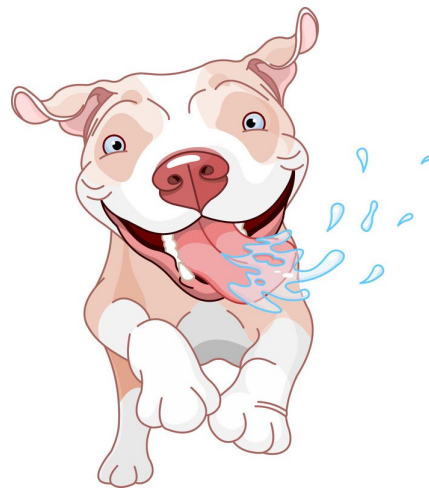
Conclusion

Cognitive Skills
are skills that can be
measured and tested

Non-Cognitive Skills
are skills that cannot be
measured and tested

Cognitive skills, are skills that are used to think, reason, remember and learn. It is often easier to measure cognitive skills because they are used for things like taking exams.

Non-cognitive skills involve communication, interpersonal and social skills, and motivation. These skills cannot be measured or tested.



Learning can
be measure

Motivation cannot
be measure

*Non-Cognitive Skills: What They Are and Why They're Important
June 2022 - www.indeed.com*

The following pages have
3 more research-based
quotes on Self-Regulation



This research could be used for
teacher CPD on the
benefits of self-regulation

Research on Self-Regulation (1)



Self-regulated learners do not simply follow a plan of action; they adapt to changing conditions and know what to do when they encounter problems.



It is the flexible responses to unforeseen circumstances that typify self-regulation and it is important to note that self-regulated learners do not lose sight of their goals or lose positive perceptions of themselves when things do not unfold as planned.

The Role of Self-Regulated Learning in Contextual Teaching
Paris and Winograd - Jan 2001
Research Gate - www.researchgate.net

Research on Self-Regulation (2)



Self-regulated learners are effective learners

Self-regulated learners have control over their learning before, during and after learning experiences.

They are able to effectively evaluate their learning and the gaps in their learning, determine the effectiveness of their learning strategies and make changes to increase effectiveness in future learning experiences.

Adapted from: Using self-assessment to develop metacognition and self-regulated learners - Amy Siegesmund - FEMS Microbiology Letters May 2017 - academic.oup.com

Research on Self-Regulation (3)

Self-regulated learning is a combination of both cognitive and non-cognitive skills

Non-cognitive skills cover a range of abilities such as conscientiousness, perseverance, motivation, adaptability, persistence, resilience, decision making and teamwork. These skills are critically important to pupil achievement, both in and beyond the classroom.

Such is the pace of technological change that it's hard to imagine what the workplace might look like even a few years from now. Schools can help pupils develop non-cognitive or 'soft' skills so that they are able to adapt and thrive in the adult world, whatever form it takes in future.

Furthermore, although some studies draw a conceptual distinction between non-cognitive skills and cognitive skills, it is not possible to disentangle these concepts fully.

All non-cognitive skills involve cognition, and some portion of performance on cognitive tasks is made possible by non-cognitive skills. Usually cognitive and non-cognitive skills interact together, and it is difficult to distinguish them during an activity.

Non-cognitive skills: What are they and why should we care?
Education for Global Development 2023
blogs.worldbank.org

*Non-cognitive skills and other related concepts: towards a better
understanding of similarities and differences*
European Commission 2021 - www.econstor.eu

Where self-regulation belongs in the "thinking skills" continuum

<p>Bloom's 1956 Taxonomy of thinking skills has been used for teaching and learning for over 50 years</p>	● Remembering
	● Understanding
	● Applying
	● Analysing
	● Evaluating
	● Creating
<p>Flavell's theory of metacognition was developed in 1976</p>	● Metacognition
<p>Bandura 1986 Zimmerman and Schunk 2001</p>	● Self-Regulation
<p>The key 21st Century thinking skills</p> <p>These three skills have no single developer but have evolved over thousands of years</p>	● Problem Solving
	● Critical Thinking
	● Creative Thinking

APPENDIX (SSSR)

Socially-Shared Self-Regulation has recently emerged

Socially-shared regulation (SSR) emerged when group members started working together to regulate their cognitions, metacognitions, motivations, emotions, and behaviours in collaborative learning settings.

European Journal of Psychology of Education
Järvelä & Hadwin 2013 - www.researchgate.net

In socially-shared regulation of learning,
group members regulate their collective activity

Socially-shared regulation of learning refers to processes by which group members regulate their collective activity. Successful individuals regulate their motivational, cognitive, and metacognitive engagement.

Exploring Socially Shared Regulation in the Context of Collaboration
Journal of Cognitive Education and Psychology - Vol 12 No 3
Springer Link - connect.springerpub.com

In socially-shared regulated learning, the group directs
the learning by taking metacognitive control of the task

Socially-shared regulated learning refers to the collaborative nature of group work where the group directs the learning by taking metacognitive control of the task together through negotiated, iterative (repeated) fine-tuning of cognitive, emotional, behavioral, and motivational states as necessary to accomplish an academic goal.

Self-regulation, co-regulation and shared regulation in collaborative learning environment - Hadwin - January 2017 - www.researchgate.net