The Power of Metacognition

Swaledale Conference

Alex Quigley

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@EducEndowFoundn

Metacognition…hidden in plain sight

How did you get here today?

- ❑ **Did you plan beforehand?**
- ❑ **Did you monitor your progress (e.g. being on time) along the way?**
- ❑ **Did you evaluate whether you traveled here efficiently? Was it the best route/mode of travel?**

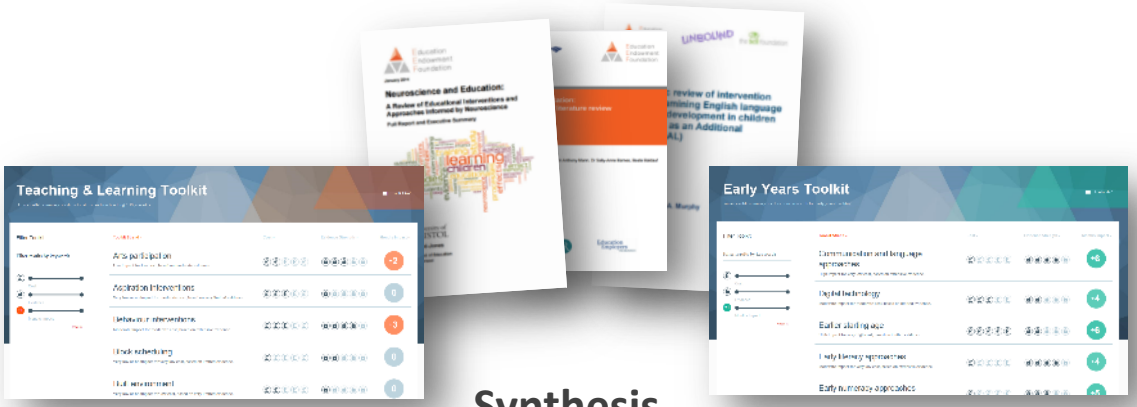
What we do …

Evidence synthesis

Evidence Generation

Evidence Mobilisation

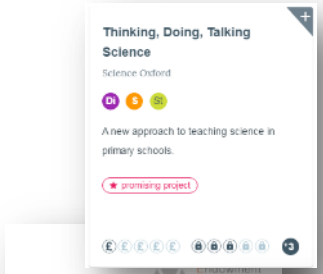
How we do it …

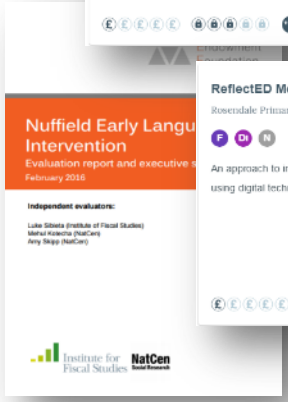


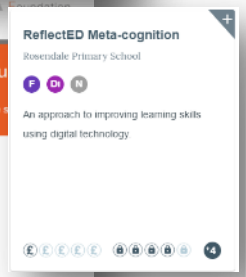
Synthesis

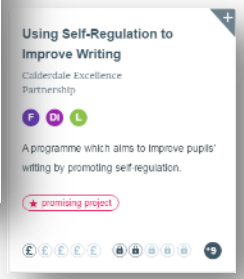
Generation

Mobilisation



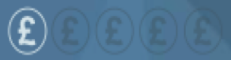






Metacognition and self-regulation

High impact for very low cost, based on extensive evidence.



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Contents

Metacognition and self-regulation

Metacognition and self-regulation approaches aim to help pupils think about their own learning more explicitly, often by teaching them specific strategies for planning, monitoring and evaluating their learning. Interventions are usually designed to give pupils a repertoire of strategies to choose from and the skills to select the most suitable strategy for a given learning task.

Self-regulated learning can be broken into three essential components:

- cognition - the mental process involved in knowing,

Resources

Metacognition and self-regulation
90 KB - *Updated: 30th August, 2018*

Complete Teaching & Learning Toolkit
4 MB - *Generated: 26th July, 2018*

Metacognition and self-reg...
11th June, 2018
EEF_Metacognition_and_self-...

METACOGNITION AND SELF-REGULATED LEARNING

Guidance Report

Education Endowment Foundation

How do we create guidance reports?

Scoping
- Conversations with teachers, academics, providers
- What is the interest in the issue? What are the misconceptions?
- What is the gap between evidence and practice?

Advisory Panel
- Kate Atkins (Rosendale), Alex Quigley (Huntington), Prof David Whitebread (Cambridge), Prof Steve Higgins (Durham) Prof Jonathan Sharples (EEF and UCL). Ellie Stringer

Evidence review
- Undertaken by Prof Daniel Muijs and Prof Christian Bokhove (Southampton)
- Systematic review of evidence and summarizing findings related to questions we're interested in

Draft guidance
- Daniel, Ellie and I draft and edit guidance
- Consult with Panel throughout

Consultation
- Share draft with academics, teachers, Research Schools, developers mentioned.

This is not new!

"I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as fact."

Flavell (1976)

This is not new!

Self-Regula
Overview

Article (PDF Available) *in*
DOI: 10.1207/s15326985ep250

Cite this publication

Barry J. Zimm
41.87 · CUN

Abstract

Educational researcher
academic learning. In th
distinctive features of th
well as my research wit
understanding of the dis
perspective on students

Original Articles

Facilitating and learnin

Kate Wall & Steve Higgin

Pages 39-53 | Published online: 23 F

Download citation http

Full Article Figures & data

Abstract

This paper describes a r
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from the pupils' perspec
dialogue between pupils
process. A range of tem
semiotic tools. They form the basis of a mediated interview by providing an

Original Articles

Developing independent learning in the early years

David Whitebread, Holly Anderson, Penny Coltman, Charlotte Page, Deborah Pino Pasternak & Sanjana Mehta

Pages 40-50 | Published online: 30 Jul 2007

Download citation https://doi.org/10.1080/03004270585200081

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Abstract

This paper describes a research project currently running in Cambridgeshire Foundation Stage settings exploring the development of independent learning in young children. In the first year the project has explored the work of 16 practitioners working with 3–5 year old children, using a range of methodologies including questionnaires, interviews and reflective dialogues (based on video recordings of particular classroom episodes), reflective journals and child assessment checklists. The development of the range of abilities involved in becoming a self-regulating, independent learner has

METACOGNITION AND SELF-REGULATED LEARNING

Guidance Report

Education Endowment Foundation

Education Endowment Foundation

METACOGNITION AND SELF-REGULATED LEARNING

Summary of recommendations

1

Teachers should acquire the professional understanding and skills to develop their pupils' metacognitive knowledge

- Self-regulated learners are aware of their strengths and weaknesses, and can motivate themselves to engage in, and improve, their learning.
- Developing pupils' metacognitive knowledge of how they learn—their knowledge of **themselves as a learner**, of strategies, and of **tasks**—is an effective way of improving pupil outcomes.
- Teachers should support pupils to **plan, monitor**, and **evaluate** their learning.

2

Explicitly teach pupils metacognitive strategies, including how to plan, monitor, and evaluate their learning knowledge

- Explicit instruction in cognitive and metacognitive strategies can improve pupils' learning.
- While concepts like 'plan, monitor, evaluate' can be introduced generically, the strategies are mostly applied in relation to specific content and tasks, and are therefore best taught this way.
- A series of steps—beginning with **activating prior knowledge** and leading to **independent practice** before ending in **structured reflection**—can be applied to different subjects, ages and contents.

3

Model your own thinking to help pupils develop their metacognitive and cognitive skills

- Modelling by the teacher is a cornerstone of effective teaching; revealing the thought processes of an expert learner helps to develop pupils' metacognitive skills.
- Teachers should verbalise their metacognitive thinking (*'What do I know about problems like this? What ways of solving them have I used before?'*) as they approach and work through a task.
- Scaffolded tasks, like worked examples, allow pupils to develop their metacognitive and cognitive skills without placing too many demands on their mental resources.

4

Set an appropriate level of challenge to develop pupils' self-regulation and metacognition

- Challenge is crucial to allow pupils to develop and progress their knowledge of tasks, strategies, and of themselves as learners.
- However, challenge needs to be at an appropriate level.
- Pupils must have the motivation to accept the challenge.
- Tasks should not overload pupils' cognitive processes, particularly when they are expected to apply new strategies.

5

Promote and develop metacognitive talk in the classroom

- As well as explicit instruction and modelling, classroom dialogue can be used to develop metacognitive skills.
- Pupil-to-pupil and pupil-teacher talk can help to build knowledge and understanding of cognitive and metacognitive strategies.
- However, dialogue needs to be purposeful, with teachers guiding and supporting the conversation to ensure it is challenging and builds on prior subject knowledge.

6

Explicitly teach pupils how to organise and effectively manage their learning independently

- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes proficient, can allow pupils to develop skills and strategies before applying them in **independent practice**.
- Pupils will need timely, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

7

Schools should support teachers to develop knowledge of these approaches and expect them to be applied appropriately

- Develop teachers' knowledge and understanding through high quality professional development and resources.
- Senior leaders should provide teachers with time and support to make sure approaches are implemented consistently.
- Teachers can use tools such as 'traces' and observation to assess pupils' use of self-regulated learning skills.
- Metacognition shouldn't be an 'extra' task for teachers to do but should be built into their teaching activities.

Dyw arweinydd Plaid Cymru, Leanne Wood, ddim wedi sicrhau cefnogaeth yr un o Aelodau Seneddol y blaid yn y ras am yr arweinyddiaeth, gyda'r rhan fwyaf yn cefnogi Adam Price i arwain y blaid.

Ddydd Mawrth, fe gyhoeddodd Liz Saville Roberts a Hywel Williams eu bod yn ymuno â Jonathan Edwards, sydd hefyd yn cefnogi Mr Price.

Gan fod Ben Lake yn cefnogi Rhun ap Iorwerth, mae'n golygu fod pedwar AS Plaid Cymru yn cefnogi newid yr arweinydd.

Yn ôl Leanne Wood, fe ddylai'r blaid uno y tu ôl i bwy bynnag fydd yr aelodau yn ei ddewis. Mae Ms Wood yn ymladd i gael ei hail-ethol yn dilyn her gan Adam Price a Rhun ap Iorwerth.

Plaid Cymru's leader Leanne Wood has not ensure the support of one of his MPs in the race for the leadership, with most supporting Adam Price to lead the party.

Tuesday, announced Liz Saville Roberts and Hywel Williams that they joined Jonathan Edwards, who also supported Mr Price.

As Ben Lake Rhun ap Lorwerth support, it means that four Plaid Cymru MP supports changing the leader.

By Leanne Wood, a party must unite behind whoever the members will be chosen. Ms Wood is fighting to be re-elected following a challenge by Rhun ap Lorwerth and Adam Price.

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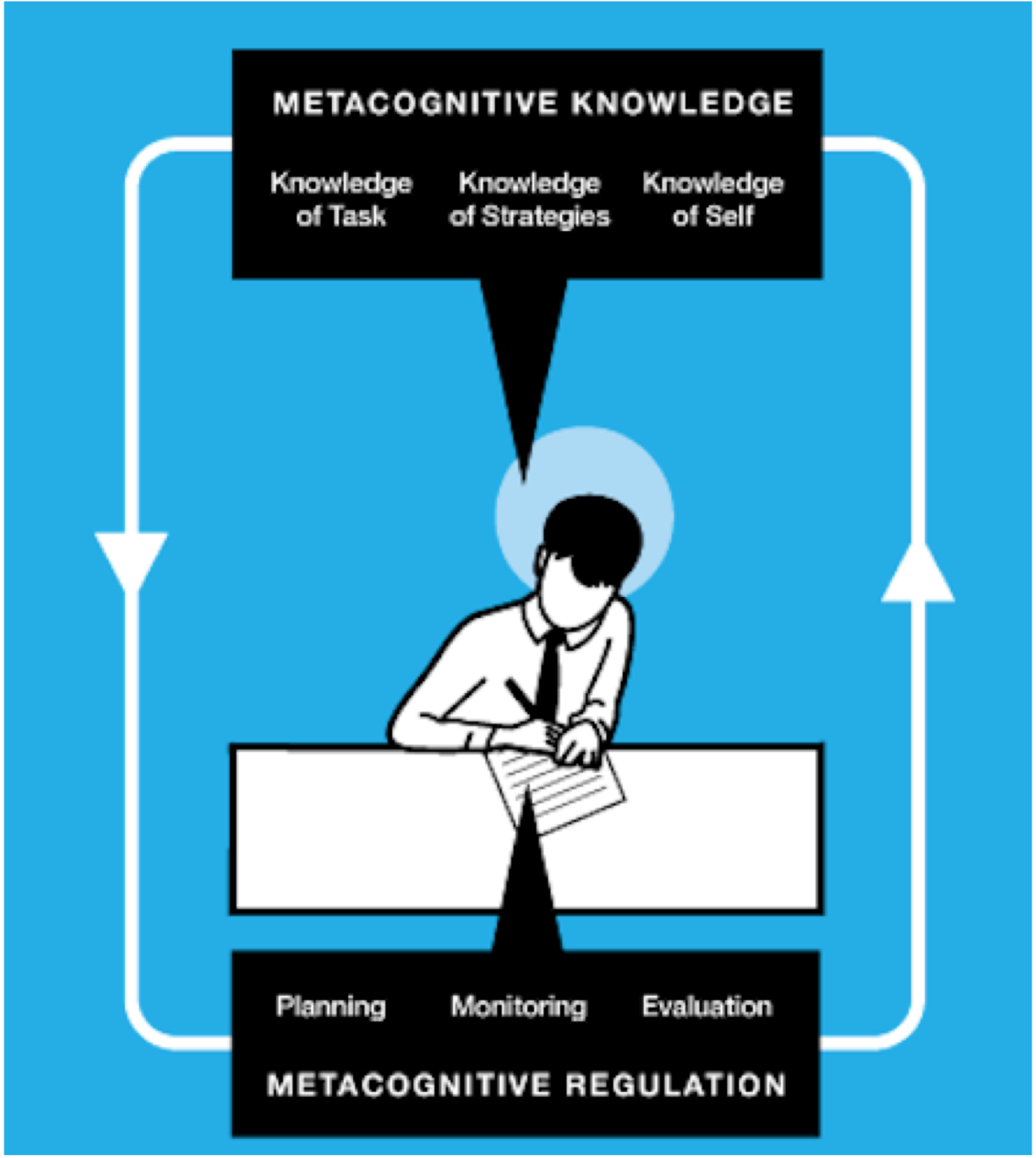
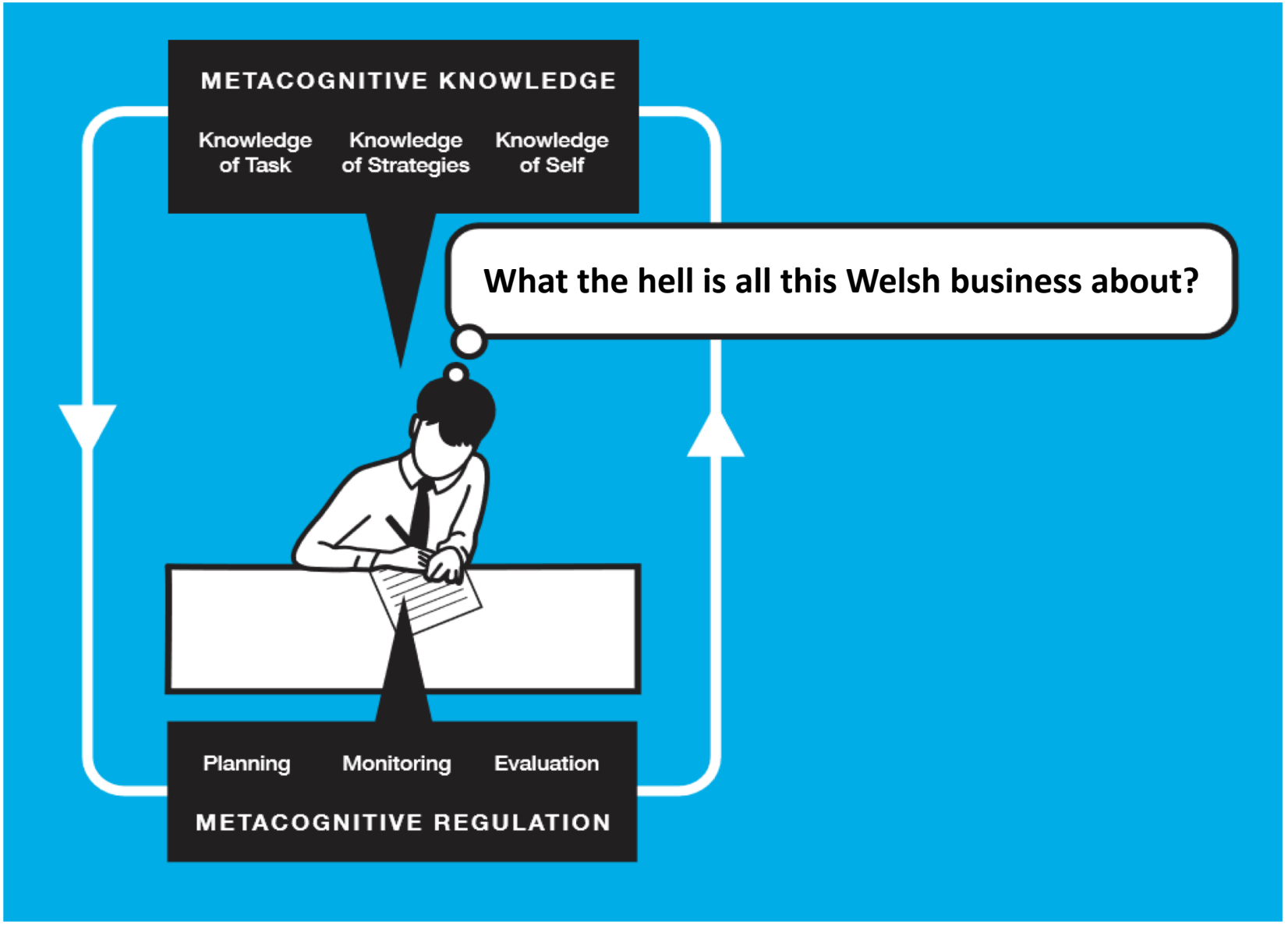
Alongside Ben Lake Rhun ap Lorwerth's support, it now means that four Plaid Cymru MP supports changing the leader.

A party must unite behind whoever the members chose and Ms Wood is in a fight to be re-elected following this challenge by Rhun ap Lorwerth and Adam Price.


METACOGNITIVE KNOWLEDGE
Knowledge of Task
Knowledge of Strategies
Knowledge of Self
Planning
Monitoring
Evaluation
METACOGNITIVE REGULATION

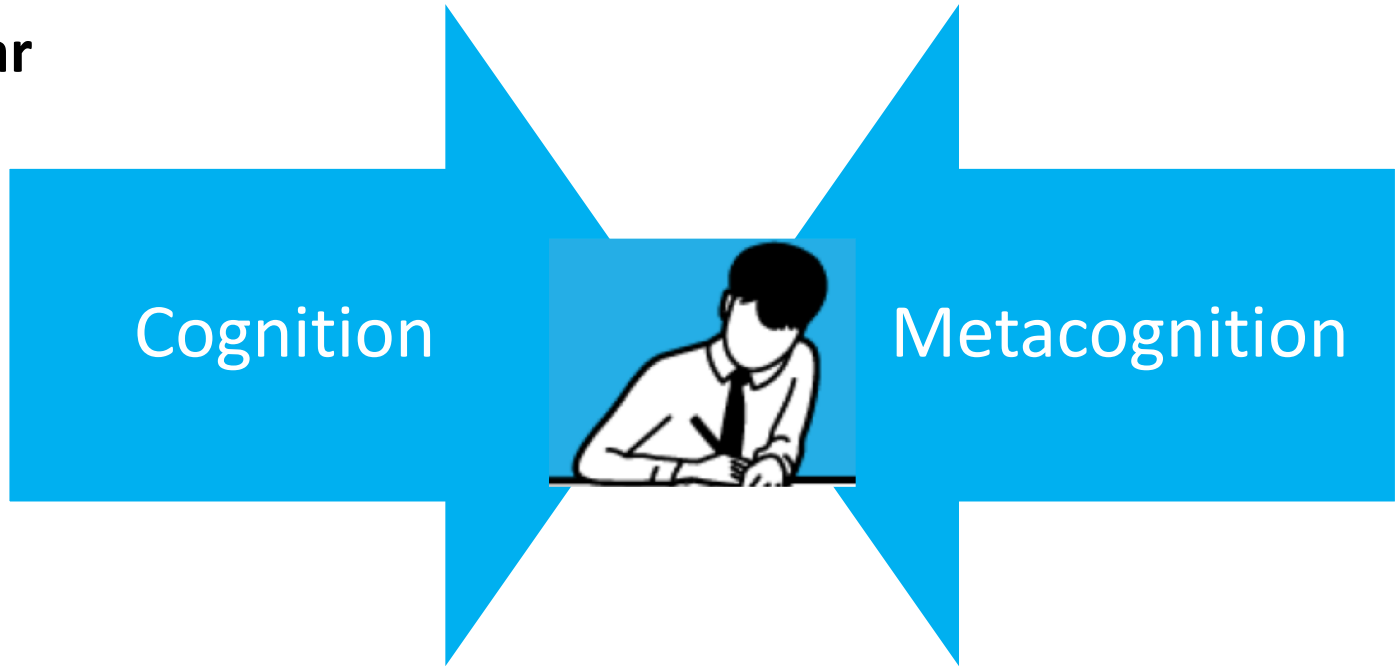

METACOGNITIVE KNOWLEDGE
Knowledge of Task
Knowledge of Strategies
Knowledge of Self
What the hell is all this Welsh business about?
Planning
Monitoring
Evaluation
METACOGNITIVE REGULATION

Decoding

Act of translation

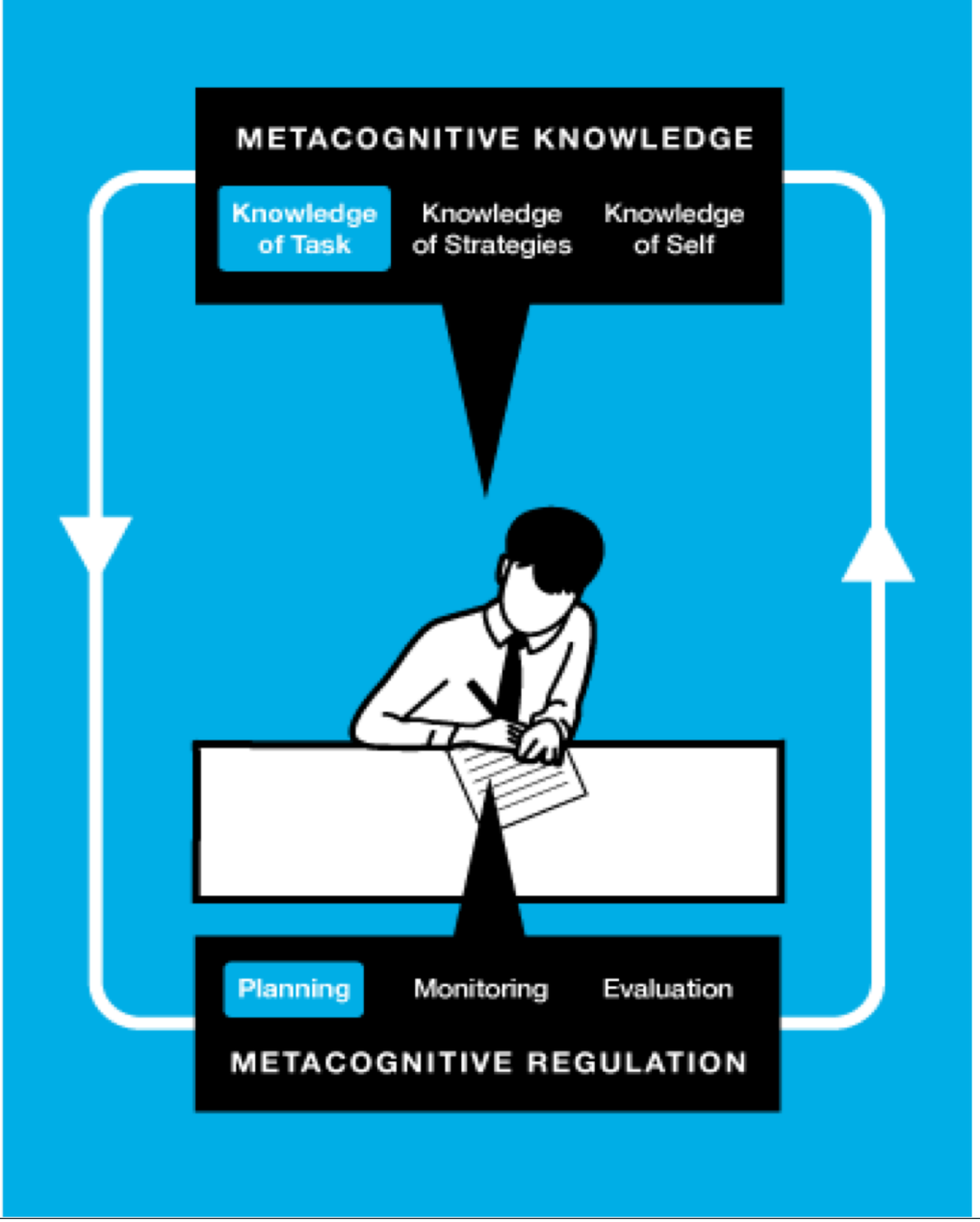
Syntax and grammar

Political knowledge



Vocabulary knowledge

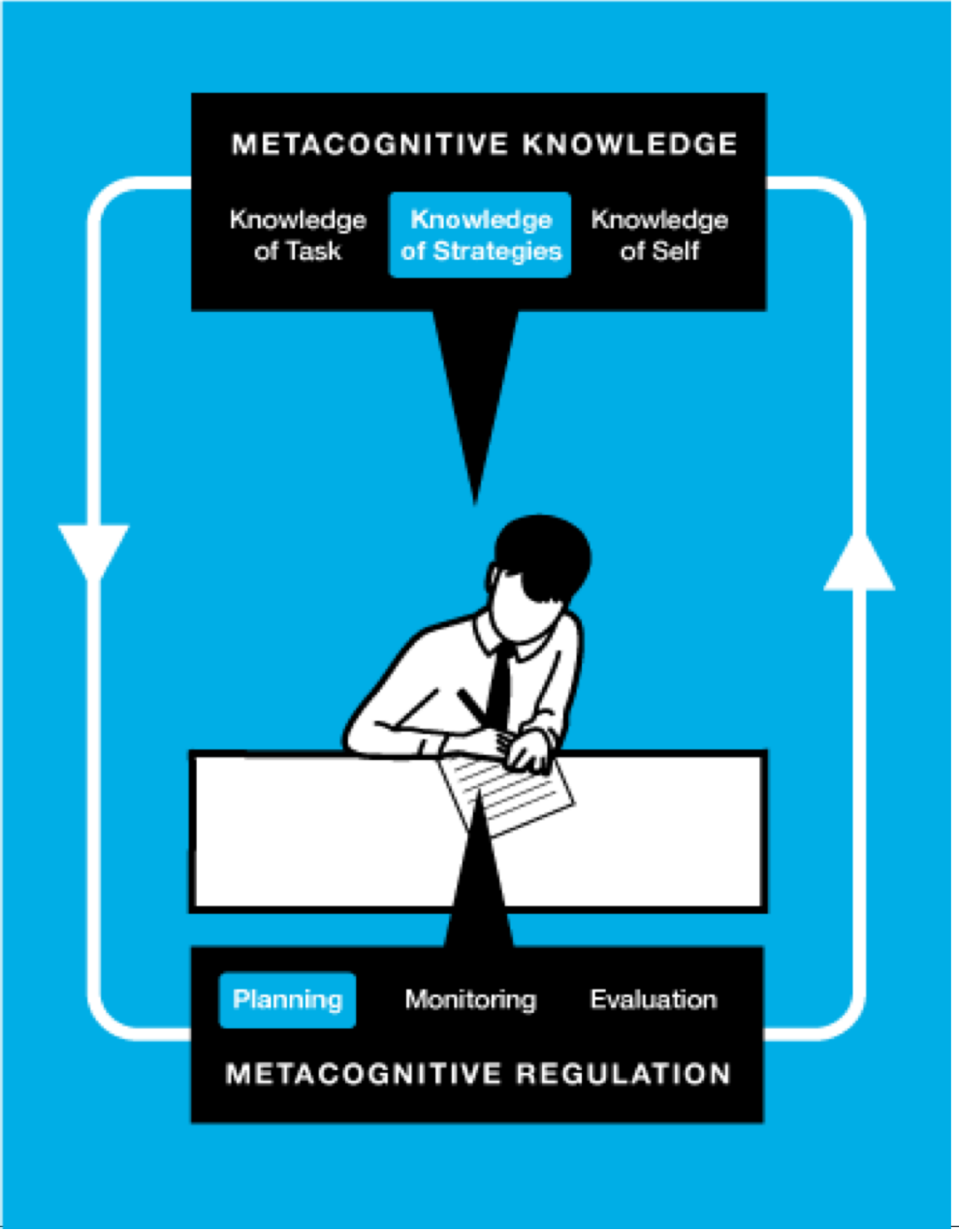
Welsh language



"I have done translation before but it was French! Is this similar at all? Do I know enough?"

"How long have I got to do this translation?

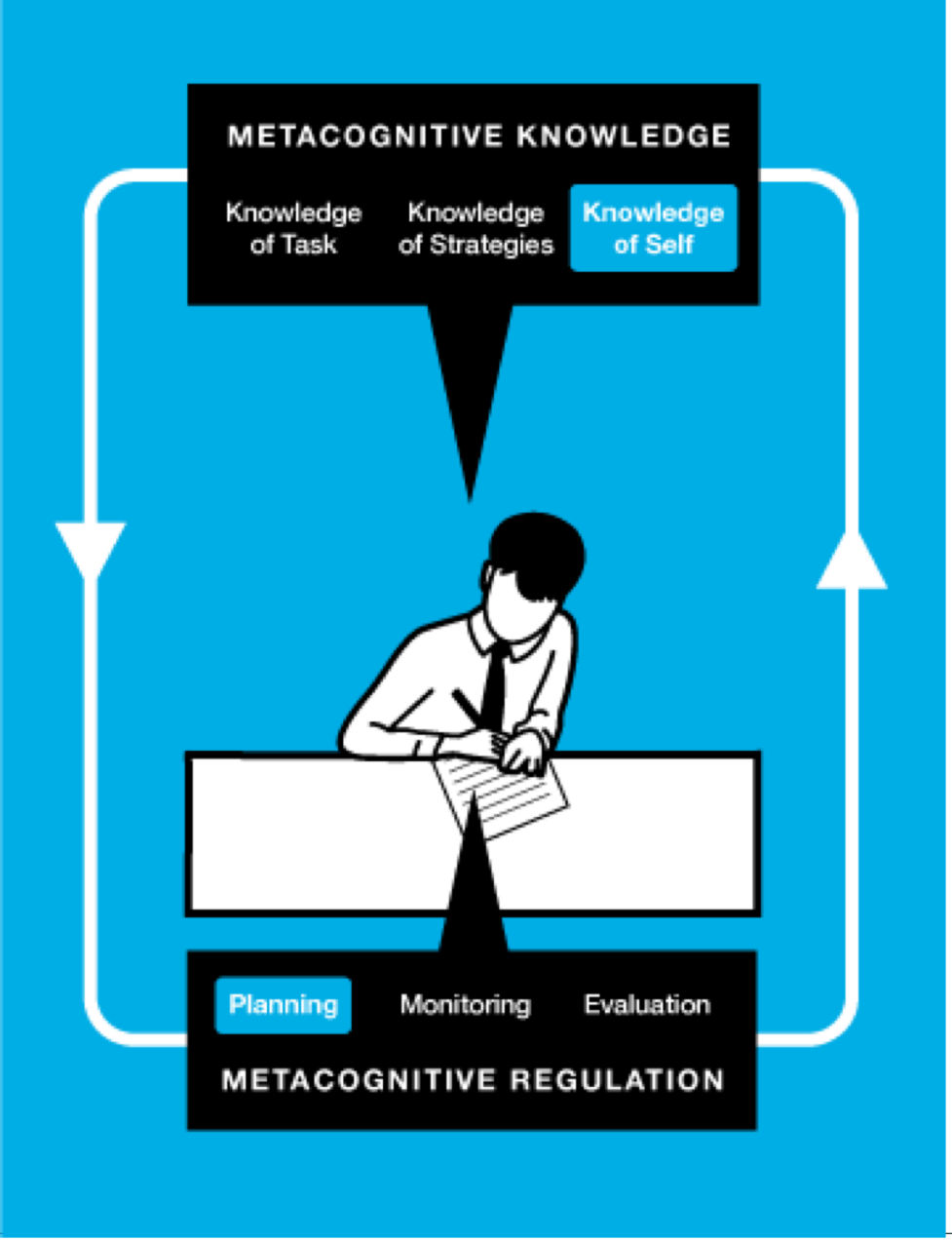
"Am I allowed any help? Are online translation tools any good for Welsh?"



"First, I need to identify the topic. Then I'll write down the names in the article. Do I know these people?"

"That's it…an online translation tool it is!"

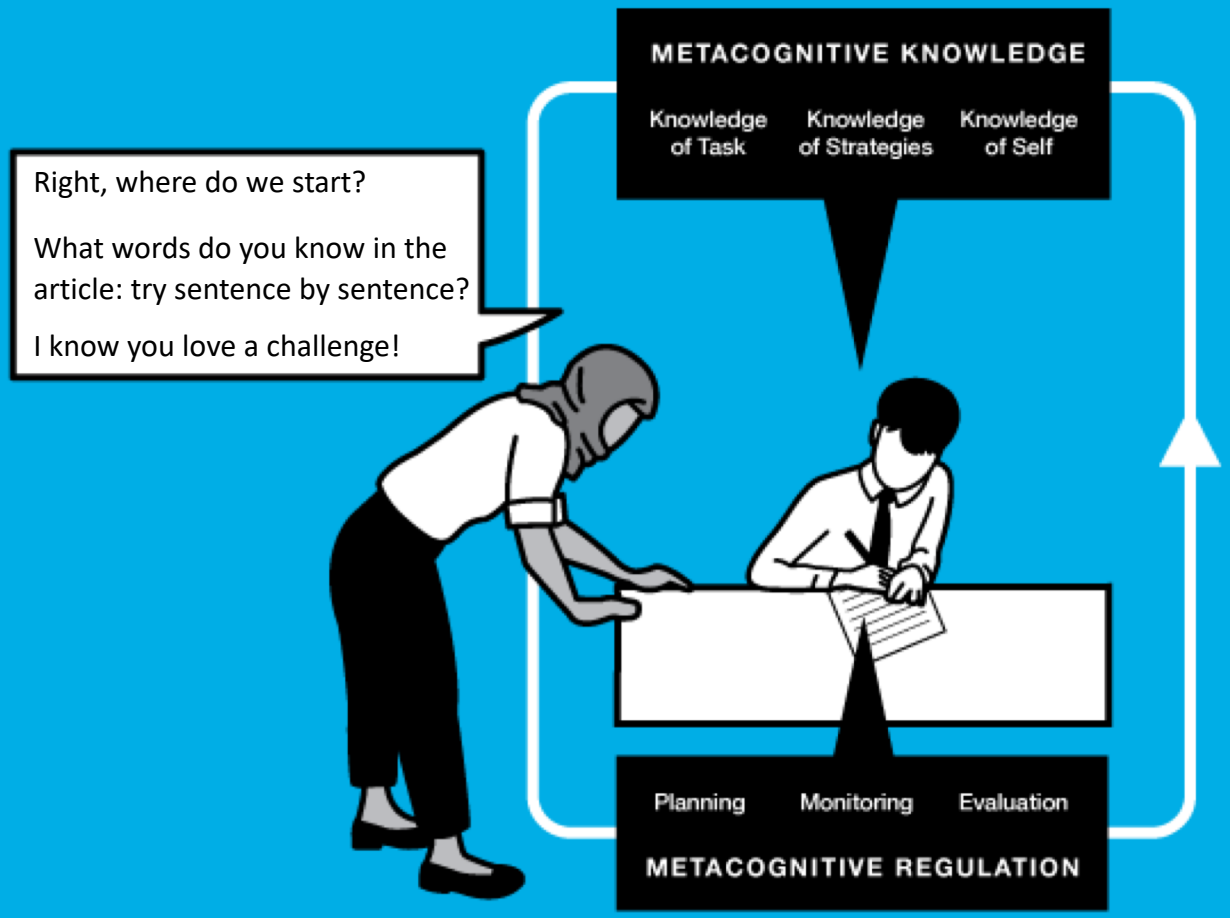
"How accurate are these online translations? I could always check afterwards."



"I bloody hate Welsh, I do. Can I be bothered?"

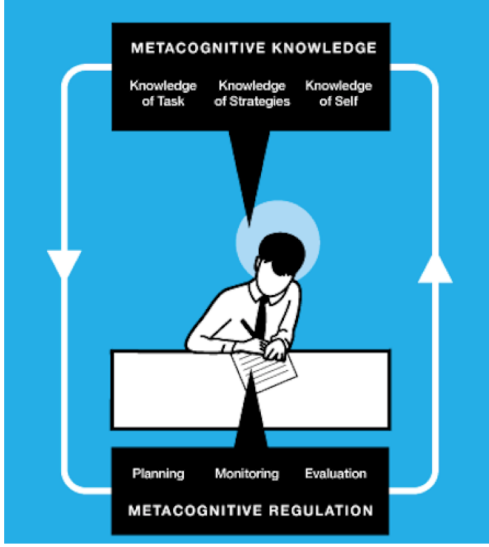
Or

"I need to be able to do this type of thing otherwise I'll struggle in my language class. I'll give it a go."


METACOGNITIVE KNOWLEDGE
Knowledge of Task
Knowledge of Strategies
Knowledge of Self
Right, where do we start?
What words do you know in the article: try sentence by sentence?
I know you love a challenge!
Planning
Monitoring
Evaluation
METACOGNITIVE REGULATION

Complete this mental maths challenge:

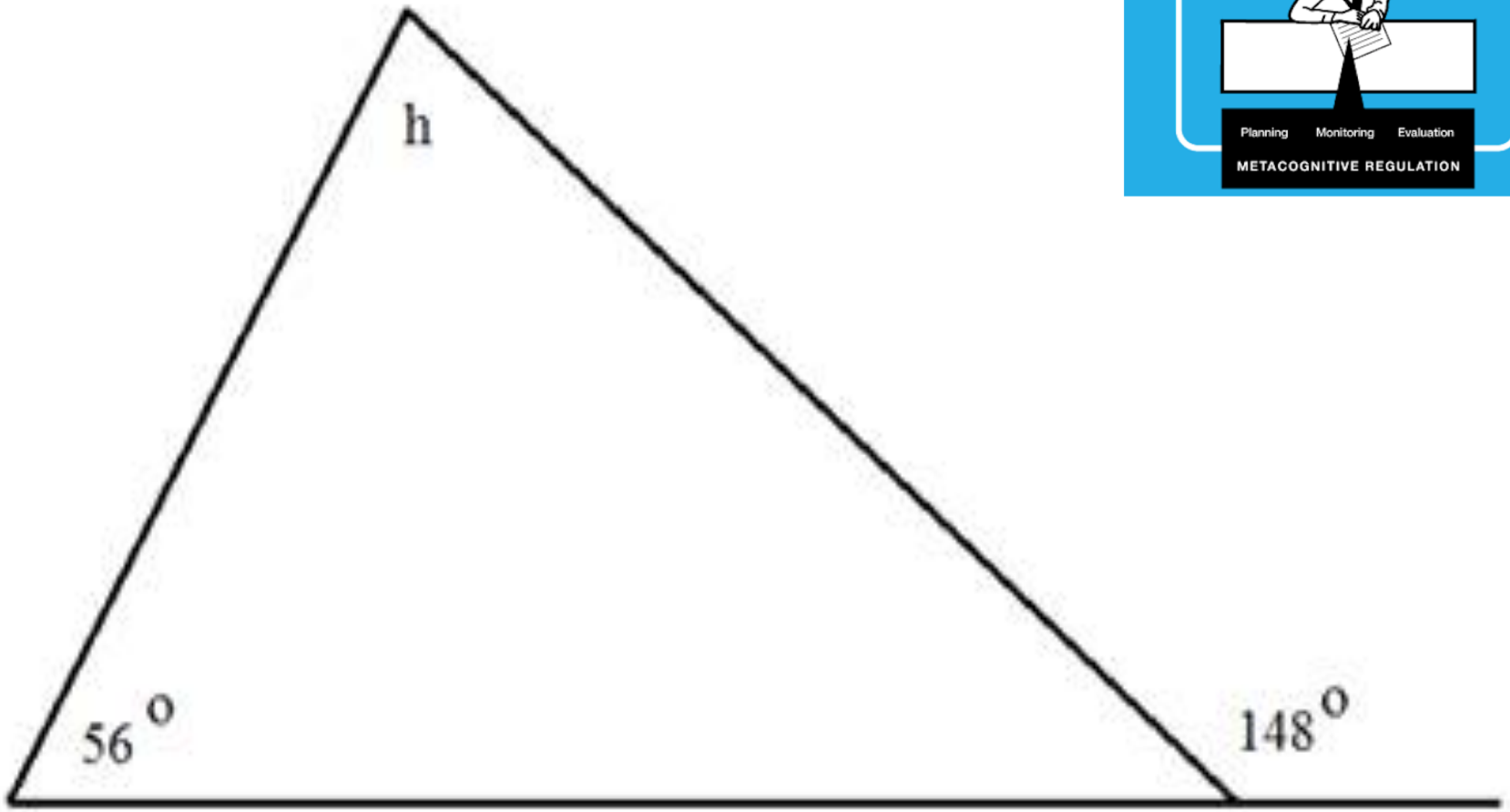
155 x 3 = 465

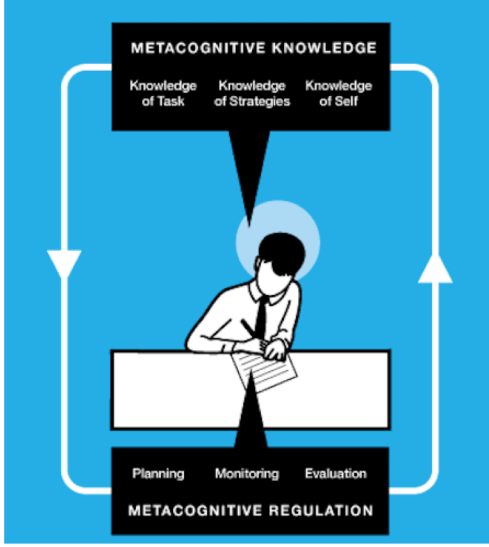


Complete this mental maths challenge:

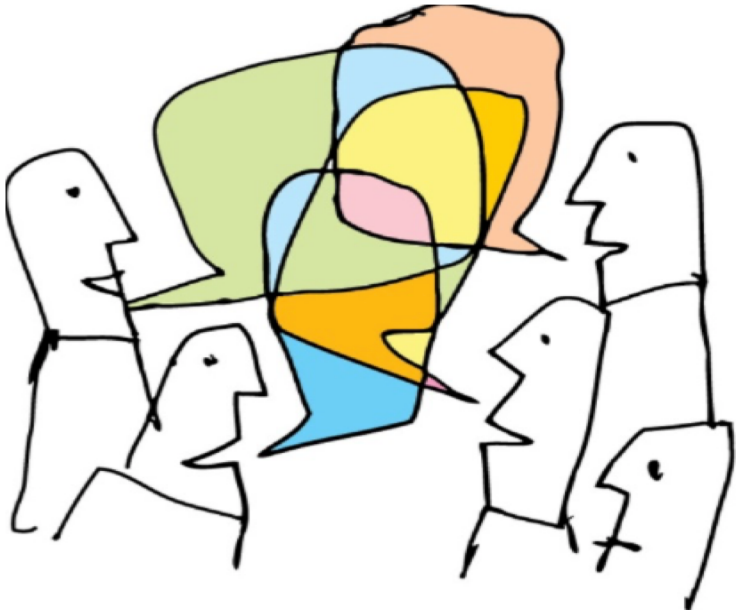
155,463,332 x 3 = 466,389,996

Determine the measure of angle h.





So what problem/s is metacognition solving?



What challenge for pupils, and teachers, is metacognition and self-regulation solving?

What does this look like for individual pupils in our classrooms?

Describe the specific knowledge, skills, behaviours and traits of one of the most effective learners in your school.

Effective learners use a number of strategies to help them learn well independently:

- ❑setting specific short-term goals;
- ❑adopting powerful strategies for attaining the goals;
- ❑monitoring performance for signs of progress;
- ❑restructuring one's physical and social context to make it compatible with one's goals;
- ❑managing time-use efficiently;
- ❑self-evaluating one's methods;
- ❑attributing causation to results and adapting future methods.

Zimmerman (2010)

Exploring metacognition in your school

SCHOOL AUDIT TOOL

Whole school approach to curriculum and teaching

Ineffective

- School leaders may exhibit knowledge of how children learn, but it is unclear in school policies and not consistently evidence in practice.
- School leaders and teachers cannot explain the relevance of metacognition and self-regulated learning to the needs of their pupils.
- No training opportunities are available for staff to deepen their understanding of metacognition.
- Staff are not signposted to tools to support metacognition, such as the guidance report.
- There is not the infrastructure for effective collaborative collaborative planning to support the development of metacognition and self-regulated learning.
- Teacher planning shows little evidence of a coordinated approach to teaching pupils explicit metacognitive strategies to tackle complex challenges.
- When addressing curriculum design, metacognition and self-regulated learning is not considered.

Improving

- School leaders exhibit knowledge of how children learn and there is some evidence of this in school policies and practices.
- Some school leaders and teachers can explain how metacognition and self-regulated learning is relevant to the needs of their pupils, but this is not consistently articulated.
- Some "light touch" training on metacognition, such as one-off INSET, has taken place, but this has not led to a deep understanding of metacognition and self-regulation.
- Staff have been signposted to tools to support metacognition such as the guidance report.
- There is some infrastructure for collaborative planning, which sees some colleagues develop shared planning to develop metacognition and self-regulated learning, but this practice is inconsistent.
- Teacher planning takes some account of the teaching pupils students to be explicitly taught metacognitive strategies to tackle complex challenges.
- When addressing curriculum design, there is some consideration of metacognition and self-regulated learning.

Exemplary

- School leaders exhibit deep knowledge of how children learn and these are exemplified in school policies and practices.
- Almost all staff can confidently confidently explain how metacognition and self-regulated learning is relevant to the needs of their pupils and this is evident in their planning and practices.
- Staff have access to effective CPD, with sufficient time to develop a deep knowledge and understanding of metacognition and self-regulated learning.
- Staff have been supported with a range of tools for metacognition, including the guidance report, as well as other tools that have been developed by the school to support practice.
- There is a well organised infrastructure that promotes collaborative planning so that all staff are supported to develop metacognition and self-regulated learning .
- Teacher planning consistently displays attention to explicitly teaching metacognitive strategies so that pupils have high success rates when tackling complex challenges.
- When addressing curriculum design, metacognition and self-regulation is embedded consistently in plans.

Supporting your work…

ReflectED

Metacognition for primary schools

by Rosendale Primary School

ROSENDALE SE21

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National Literacy Trust

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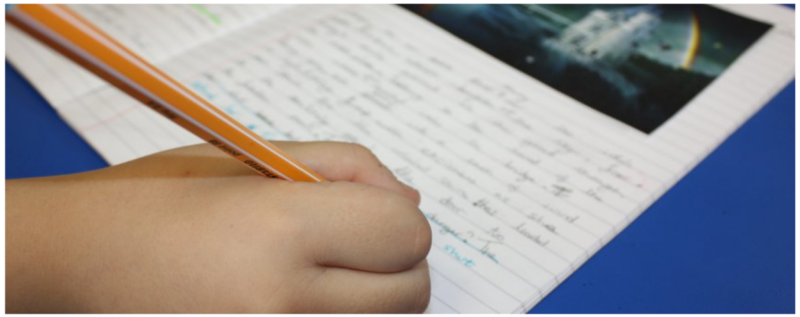
IPEELL: Improving Writing Quality



Thinking Doing Talking Science

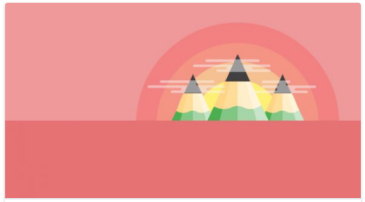
Claire Barnes, Hannah Munro, Kirsty Davies

Metacognition Lead Practitioners

Swaledale Alliance SLEs

'Metacognitive Minds; Lessons from a successful SSIF Project'

Supporting your work…



Preparing for Literacy
Primary

Seven recommendations to support improving early language and literacy

Improving Mathematics in Key Stages 2 and 3
Primary & Secondary

Eight recommendations to improve outcomes in maths for 7-14 year olds

Putting Evidence to Work - A School's Guide to Implementation
Primary & Secondary

A guide to implementation applicable

SCHOOL AUDIT TOOL
Whole school approach to curriculum and teaching

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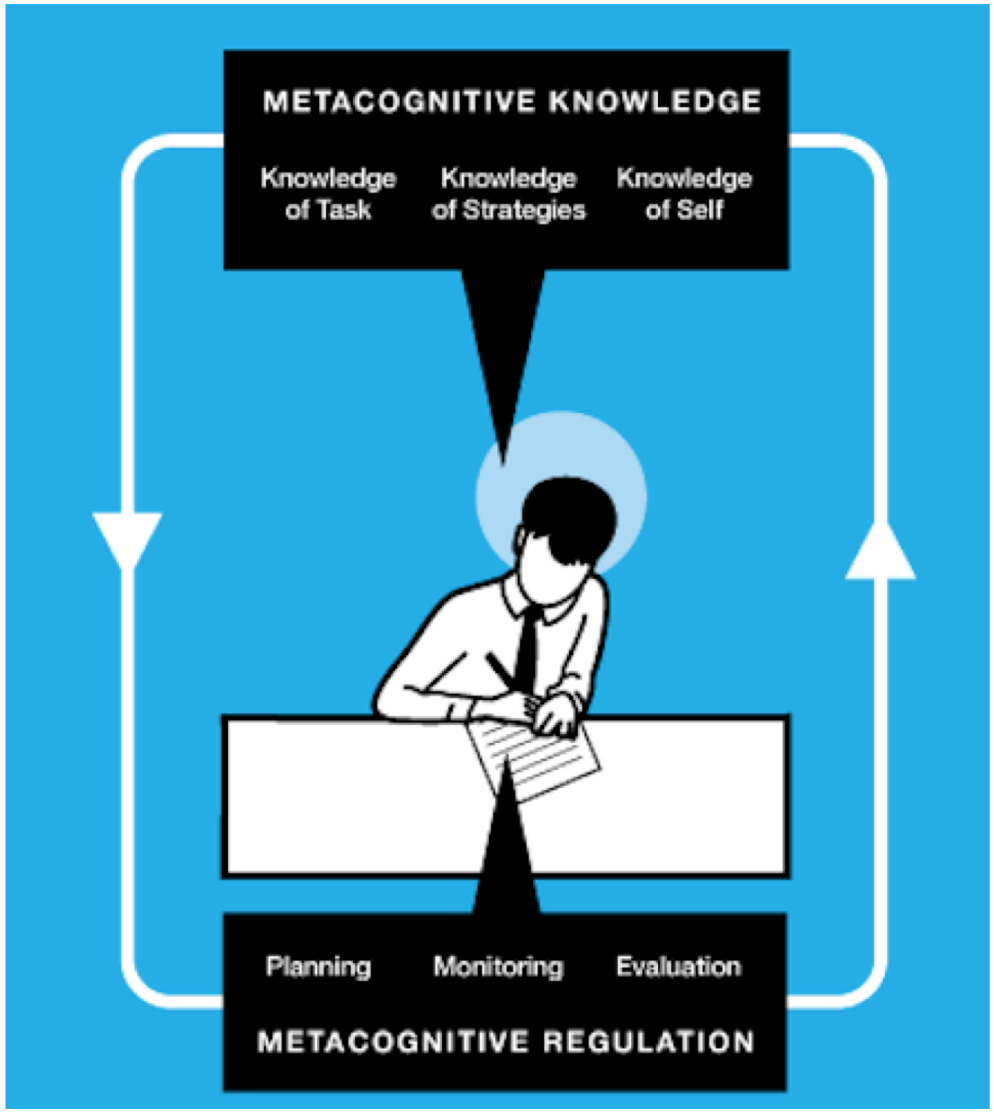

Consider what knowledge, understanding and plans you are returning to school with:

- **What understanding do you have of metacognition after the conference today?**
- **How could the 'Big Blue' metacognition model be helpful for staff at your school?**
- **What aspects of metacognition & self-regulation impact on your daily practice?**


Thank
you

Contact

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https://educationendowmentfoundation.org.uk