

Reducing the Cognitive Load: Facilitating Learning in Organic Chemistry by Incorporating Mechanism Videos

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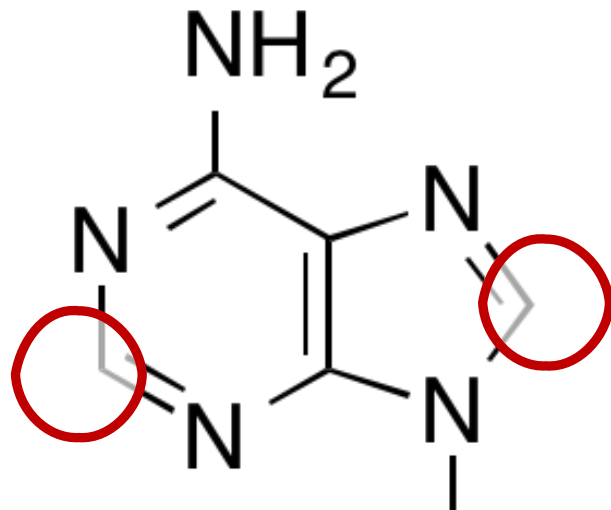


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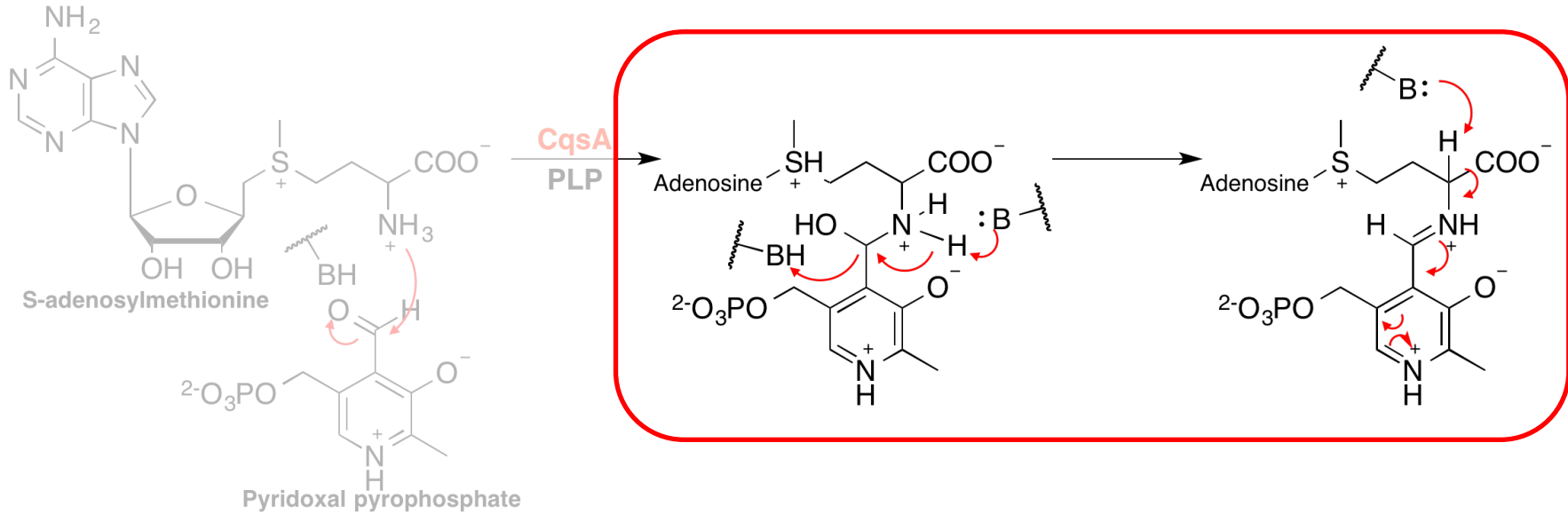


Image: freepic, freepic.com

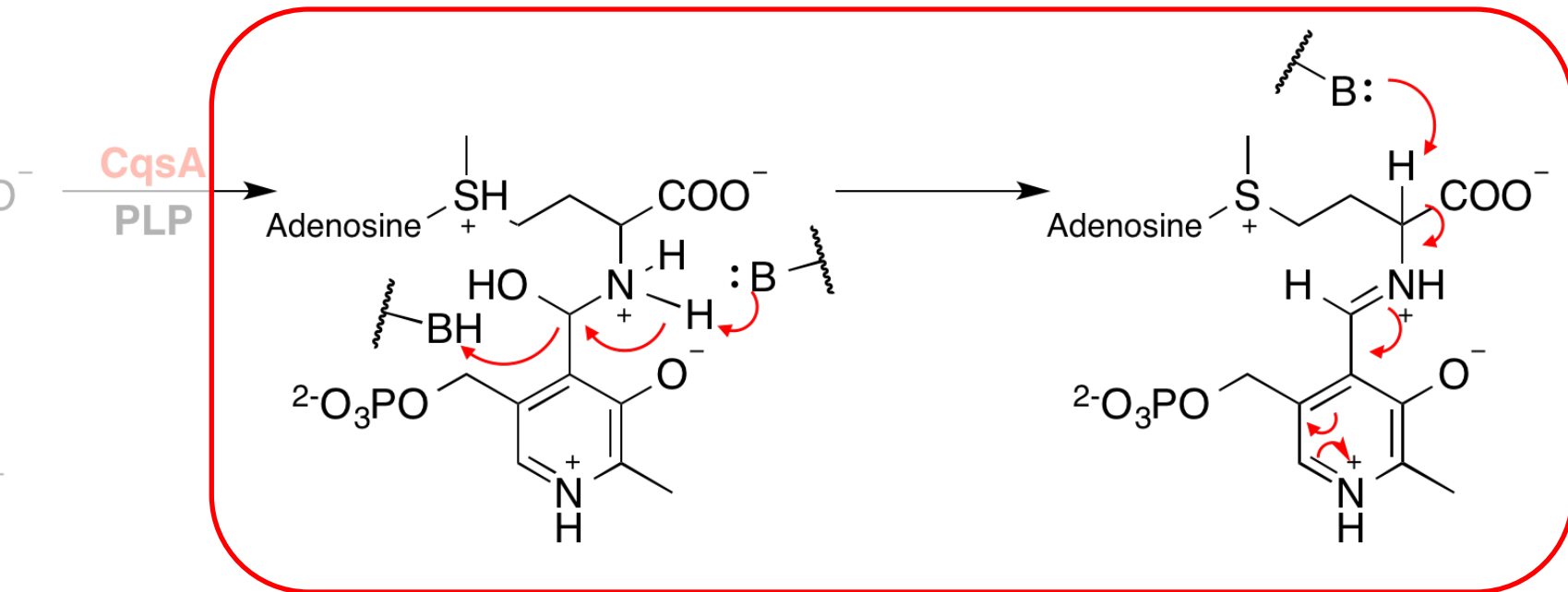
Difficulties in Organic Chemistry



Difficulties in Organic Chemistry



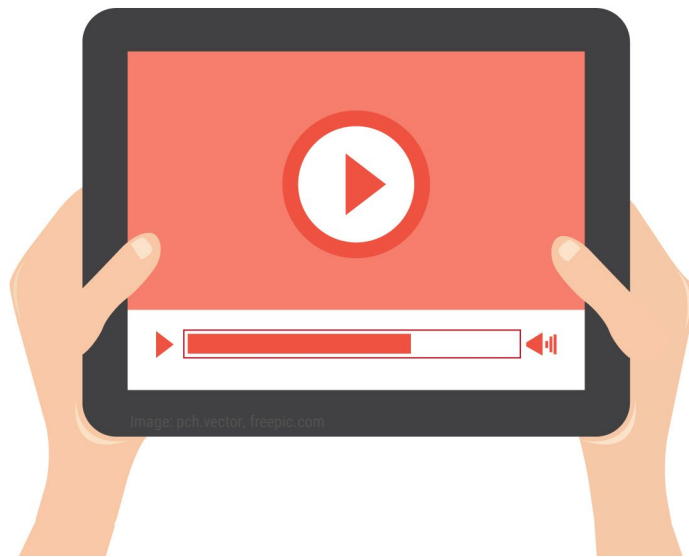
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Theoretical Framework

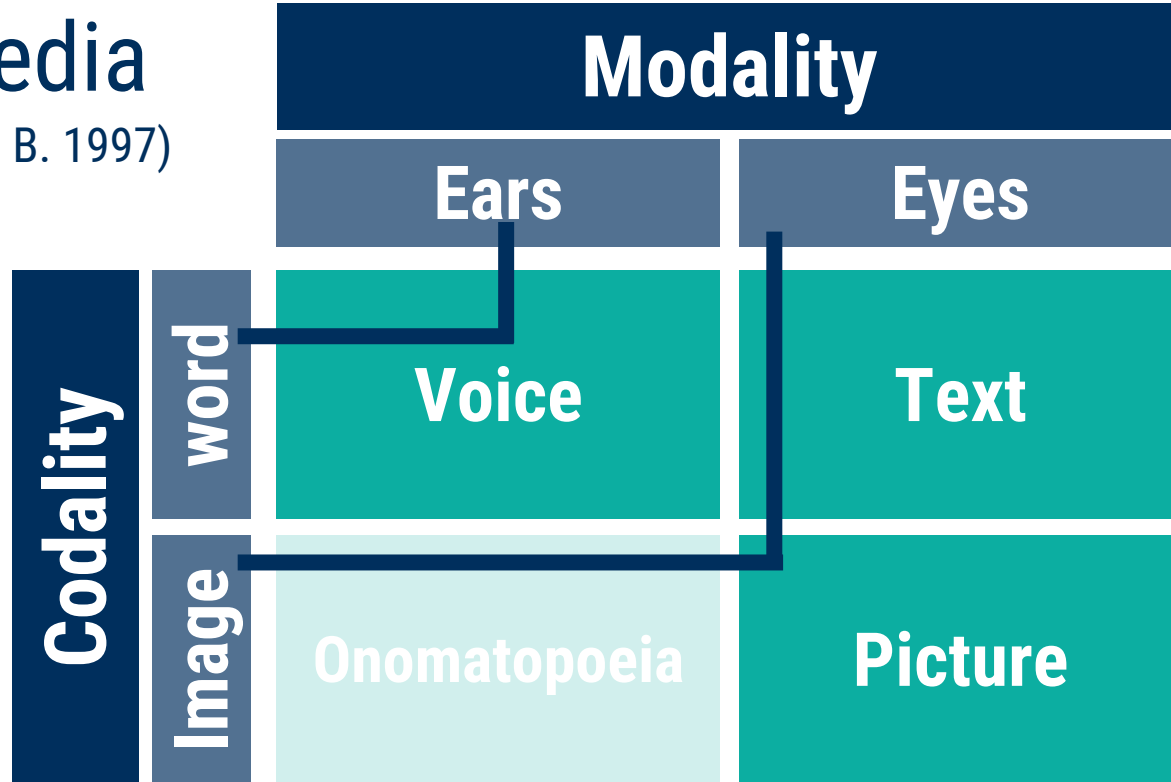
dynamic | multimedia

„[...] using a series of images shown in rapid sequence that mimic movement.“ (Williamson, V. 2015)



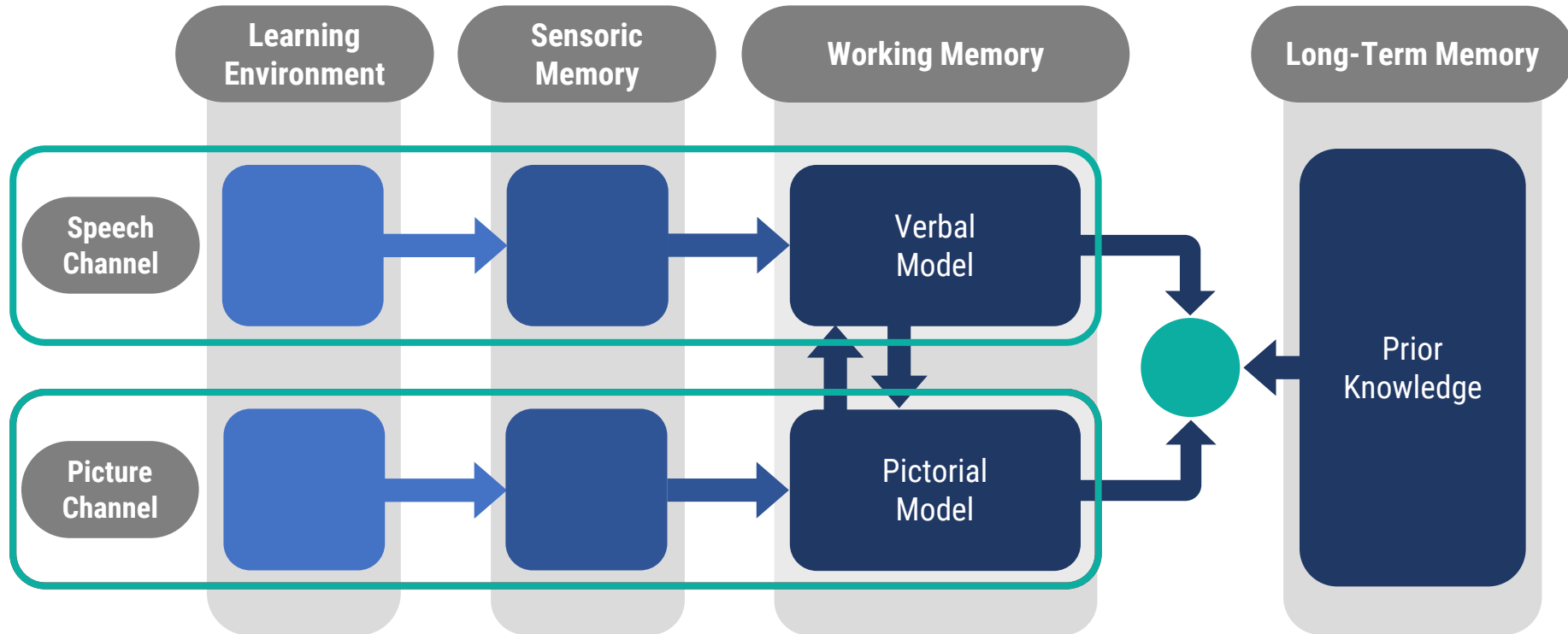
Theoretical Framework

Dynamic multimedia
(Weidenmann, B. 1997)



Cognitive Theory of Multimedia Learning

(Mayer, R. 2014)



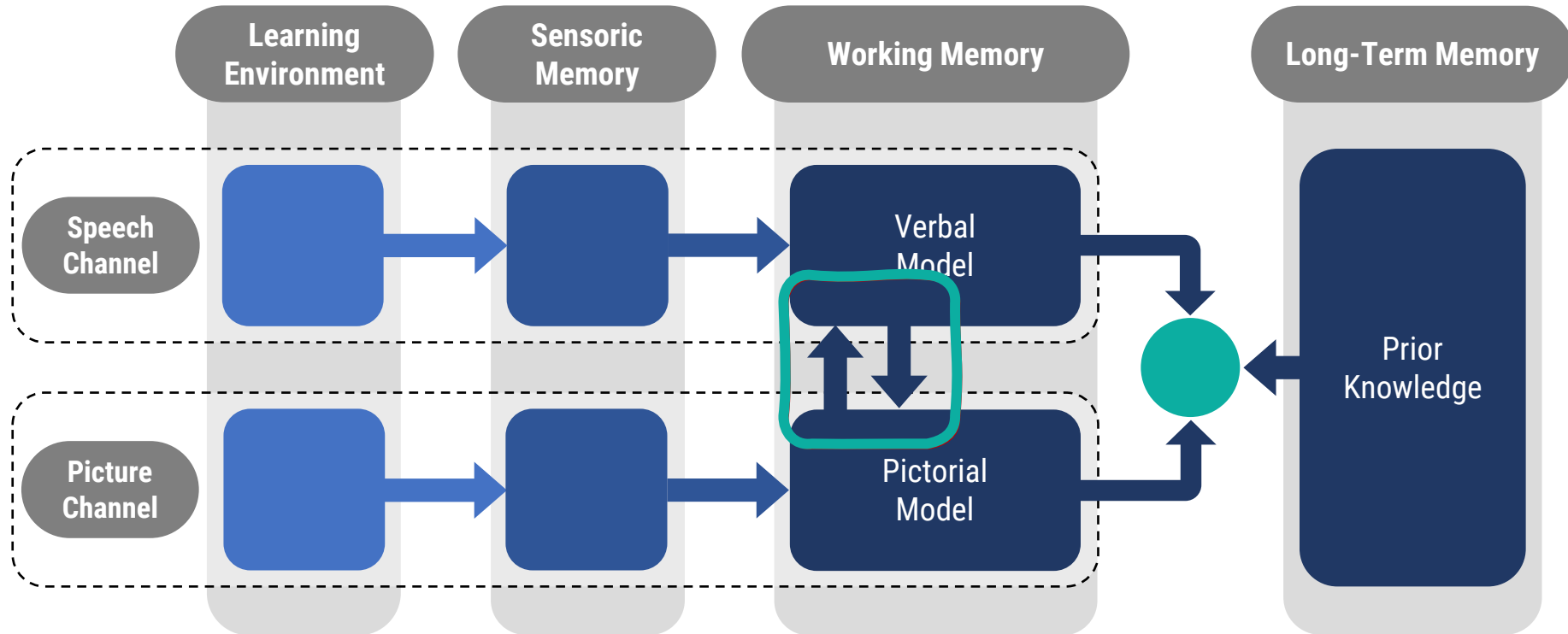
Implications for Teaching

dynamic multimedia:

- provide cognitive relieve by using both channels equally

Cognitive Theory of Multimedia Learning

(Mayer, R. 2014)



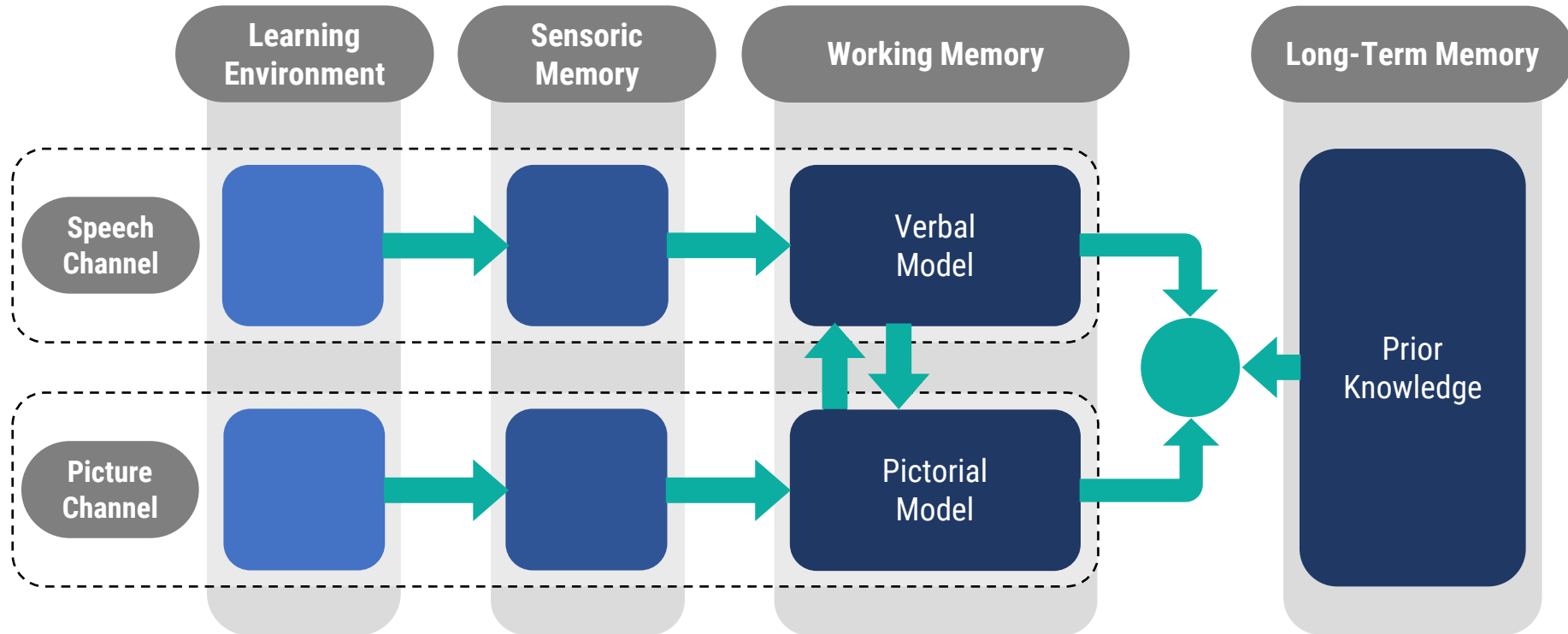
Implications for Teaching

dynamic multimedia:

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- result in more elaborate mental models

Cognitive Theory of Multimedia Learning

(Mayer, R. 2014)



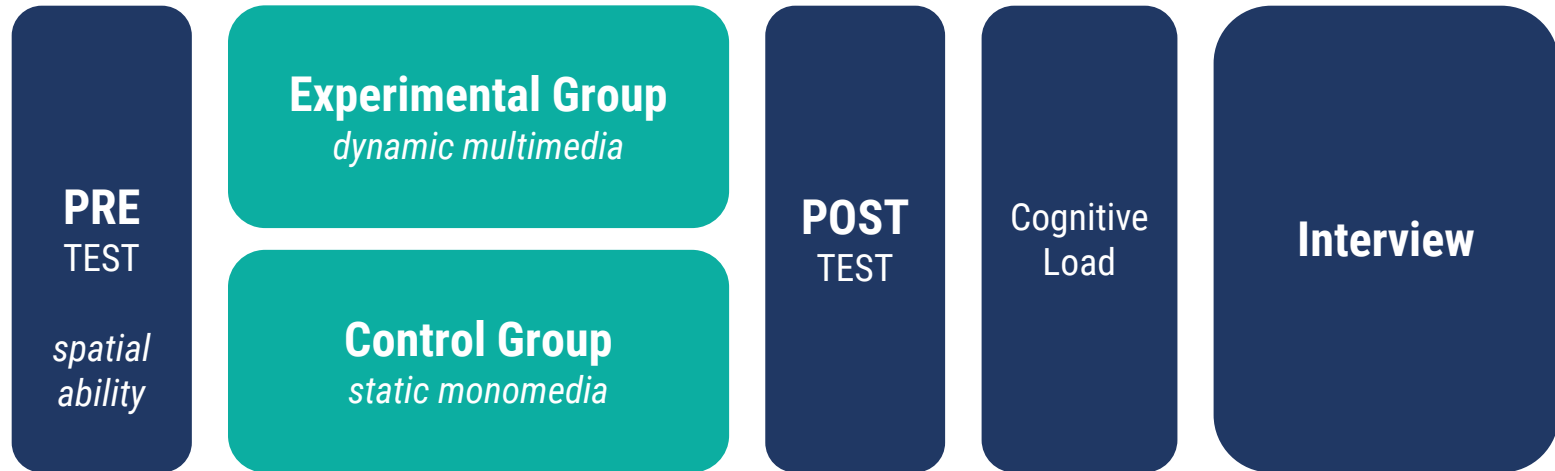
Implications for Teaching

dynamic multimedia:

- provide cognitive relieve by using both channels equally
- result in more elaborate mental models
- scaffold students (Salomon, G. 1972)

Further Research

- Cognitive Load + performance
- construction of mental models + spatial ability



References

Williamson, V. M. „*What is the research evidence for using visualization techniques in the chemistry classroom? How should these techniques be implemented?*“, LUMAT: International Journal on Math, Science and Technology Education, 2015, 3(4), 545-555.

Weidenmann, B. „Multicodierung und Multimodalität in Lernprozeß“ in Issing, L. J. (Ed.) „Informationen und Lernen mit Multimedia“, Weinheim, Beltz Psychologie Verlags Union, 1997, S. 65-81.

Mayer, R. E. “Cognitive Theory of Multimedia Learning”, In Mayer, R. E. (Ed.) “The Cambridge Handbook of Multimedia Learning”, New York, Cambridge University Press, 2014, 43-71.

Salomon, G. “Can we affect cognitive skills through visual media? An hypothesis and initial findings”, AV communication review, 1972, 20(4), 401-422.

Thank you for your attention!

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