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Comparative Didactic Analysis of Calculus Textbooks through the MEA Framework

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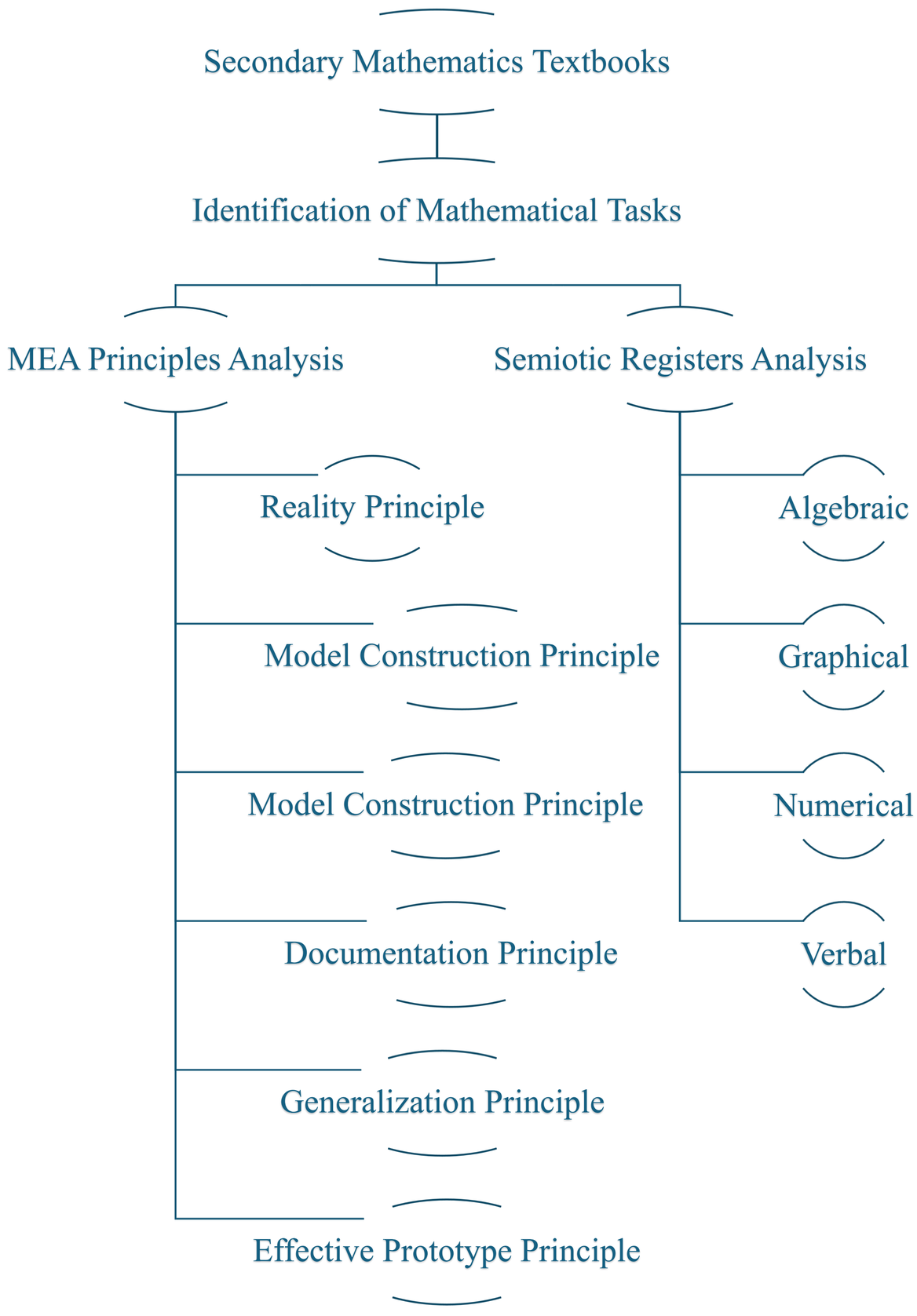
INTRODUCTION & AIM

- Textbooks strongly influence mathematics teaching practices and students' learning processes.
- This study compares secondary mathematics textbooks from Morocco, France, Italy, and the Philippines using: Modeling Eliciting Activities (MEA), Semiotic representation registers theory.

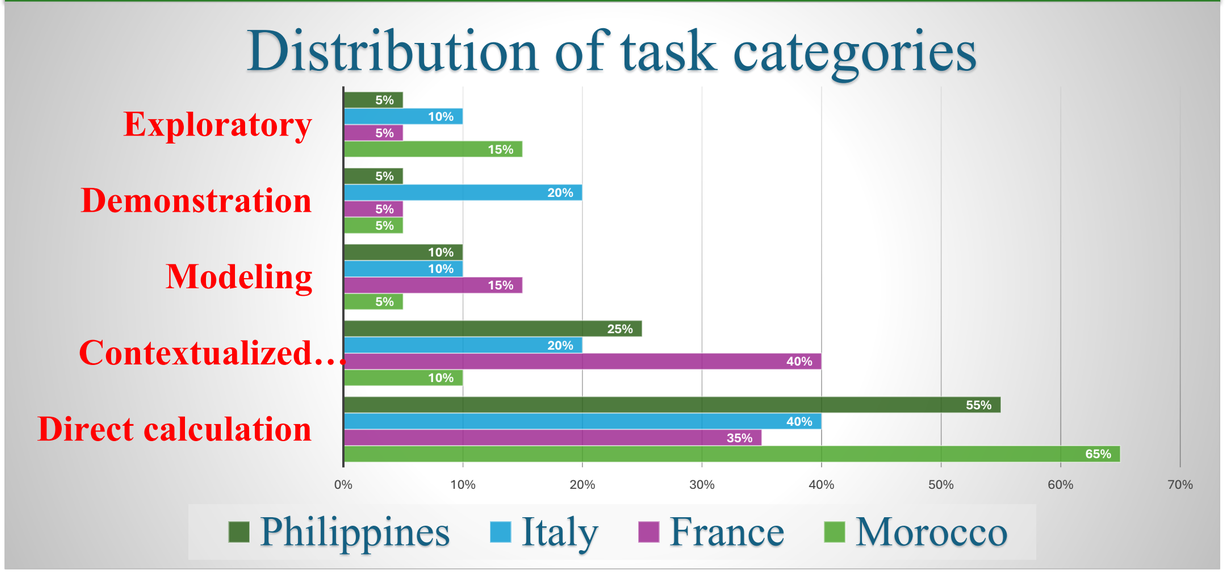
AIM

- Compare textbook approaches
- Analyze modelling opportunities
- Examine semiotic representations

METHOD



RESULTS & DISCUSSION



Country	MEA Integration
Morocco	Procedural
France	Contextualized
Italy	Theoretical
Philippines	Pragmatic

Country	Dominant Registers
Morocco	Algebraic
France	Algebraic Graphical Verbal
Italy	Algebraic Graphical
Philippines	Algebraic Numerical

- Most textbook activities focus on routine exercises rather than authentic mathematical modelling.
- Students rarely construct, test, or generalize mathematical models.

CONCLUSION

The study highlights the need to redesign textbook activities to better support:

- modelling,
- communication,
- transferable mathematical reasoning.

FUTURE WORK / REFERENCES

Future work will extend the analysis to:

- primary and middle school textbooks,
- teacher practices,
- classroom implementation of MEA activities.

- Lesh, R., & Doerr, H. (2003).
- Remillard, J. (2005).
- Duval, R. (2006).