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**A study on the completeness of ‘the understanding’ in the generalization process and justification. Centered on the arithmetical, geometric and harmonic average.**

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Summary: The understanding demands the different degree of the understanding according to student’s learning situation. In this paper, we investigate what is the foundation for the complete understanding for the generalization in the generalization process and justification of some concepts or some theories, through a case. We discovered that the completeness of the understanding in the generalization-process and justification requires ‘the meaningful mental object’ which can give the meaning about the concept or theory to students. Students can do the generalization process through the construction of ‘the meaningful-mental object’ and confirm the validity of generalization through ‘the meaningful mental object’ which is constructed by them. And we can judge the whether students construct the completeness of the understanding or not, by ‘the meaningful mental object’ of the student. Hence ‘the meaningful mental object’ are vital condition for the generalization process and justification.

*Classification:* C33

*Keywords:* understanding; generalization processes; justification; meaningful mental objects