

# Perfect Scores Indicate Good Students !? The Case of One Hundred Percenters in a Math Learning System



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## ABSTRACT

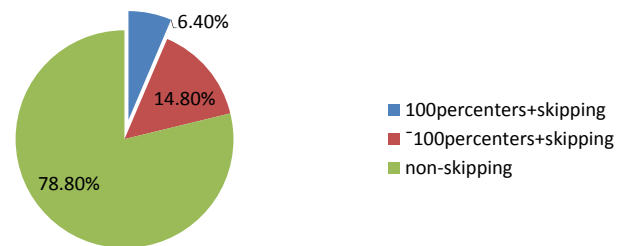
As a teacher or administrator, seeing a student scoring 100% in an exercise series within an online learning system would typically raise no immediate worries. This paper analyzes the "one hundred percenter" sessions in a math learning system. We argue that some student sessions with 100% score may actually not be predictive of student's learning success, and that a frequently exhibited student strategy of getting a perfect score by skipping exercises and repeating series is not ideal.

## Research Questions

- is the skipping strategy (aborting and restarting an exercise series after a mistake) actually a fast way to achieve a 100% success score, or are there more efficient strategies to reach this goal?
- from a pedagogical viewpoint, do students who take this strategy perform as good as their learning outcomes seem to indicate – i.e., perfectly?

## Data

- A Math learning system (bettermarks)
- K-12 (grades 4-10)
- Jan. – Nov. 2014
- #total sessions: 687,688
- #sessions of one Hundred Percenters: 8,640
- 14.5% students involved



## Analyses and Results

Typ(#)	#attempts before a 100% success	p-value
100percenters+no-skipping (59,941)	2.4	p<0.001
100percenters+skipping (8,640)	3.6	

- The skipping strategy needs more attempts to achieve a 100% success

continuous work after a 100% success		
Typ(#)	Score(0.0 - 1.0)	p-value
100percenters+skipping (129)	0.78	p<0.001
100percenters+no-skipping (1,414)	0.91	
strong 100percenters (3,854)	0.94	

- The average learning performance of one hundred percenters with skipping is much lower than their counterparts.

## Conclusion

- The adoption of the skipping strategy does not help to speed up to a 100% success. Instead, a non-skipping strategy leads students to achieve a perfect score faster.
- One hundred percenter behavior could put students at risk of being overlooked by teachers. They actually do not perform as excellent as their learning performance indicates.

