Apr 14th, 9:00 AM - 10:00 AM

**Students' Common Misconceptions on Basic Mathematics Skills**

Brittany Gonio  
*Illinois Wesleyan University*

Leah Nillas, Faculty Advisor  
*Illinois Wesleyan University*

Follow this and additional works at: [https://digitalcommons.iwu.edu/jwprc](https://digitalcommons.iwu.edu/jwprc)

[https://digitalcommons.iwu.edu/jwprc/2012/ESposters/15](https://digitalcommons.iwu.edu/jwprc/2012/ESposters/15)

This Event is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.  
©Copyright is owned by the author of this document.
Students’ Misconceptions on Basic Math Skills

Brittany Gonio and Leah A. Nillas*

Educational Studies, Illinois Wesleyan University

Research Questions

• What are students’ common misconceptions on basic math skills?
• How do these misconceptions impact their understanding of higher-level mathematics concepts?

Literature Review

• Denmark and Kepner, Jr. (1980) presented the results of a survey about basic skills as viewed by elementary and secondary mathematics educators, who formed a basic outline of which skills were considered essential topics, including, but not limited to fractions, percent, and decimals.

Methodology

• 37 mostly junior students from an urban public high school in Northern Illinois were the participants of the study.
• Mastery quizzes, teacher journals, and student work were collected during student teaching.
• Mastery quizzes teacher journals, and student work were collected during student teaching.
• Data analysis was conducted based on content analysis (Neuendorf, 2002).

Results

Mastery Quizzes:

<table>
<thead>
<tr>
<th>Common Misconceptions</th>
<th>Fractions</th>
<th>Decimals</th>
<th>Percentages</th>
<th>Integers</th>
<th>Scientific Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of Knowledge of Common Denominators while Adding or Subtracting (19.9% of Incorrect Answers)</td>
<td>Misjudging Decimal Place with Multiplication Answers (18.2% of Incorrect Answers)</td>
<td>Setting Up Proportion Incorrectly (9.9% of Incorrect Answers)</td>
<td>Forgetting Negative Sign in Final Answer (27.3% of Incorrect Answers)</td>
<td>Lack of Knowledge of Only One Digit on Left of Decimal (27.5% of Incorrect Answers)</td>
</tr>
</tbody>
</table>

Teacher Journals:

Findings from teacher journals were consistent with the misconceptions identified from the mastery quizzes. These were based on what topics student struggled with in class and discussions with other teachers.

Student Work:

There was less significant finding from teacher journals on misconceptions among secondary math students who struggled with specific topics. The percentages in the tables display misconceptions identified with the total incorrect answers (excluding blank answers).

Conclusion

There are several misconceptions evident in basic math skills without the use of calculators. However, findings were less conclusive within student work, where basic skills were needed to complete other computations and student journals were not as consistent with the study. If given more time, this study could focus more on development and use of specific materials which assess misconceptions among high school students. The common misconceptions evident in this study could be explored within higher level contexts in future research.