Impact of Backward Design on 4th Grade Mathematics Students’ Understanding of Adding and Subtracting Whole Numbers

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Impact of Backward Design on 4th Grade Mathematics Students’ Understanding of Adding and Subtracting Whole Numbers

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Introduction
The Backward Design method (1998), as explained by McTighe and Wiggins, is an approach to teaching and planning contrary to traditional methods. This framework causes thoughtful planning for what students should understand and be able to apply. Additionally, a teacher must ensure the content, instruction, and skills align with standards and objectives. The goal of this project was to explore the impact of the Backward Design method in a mathematics classroom consisting of 4th-grade students.

Methods
Following the design and planning portion of the unit, a pre-test was given, the instruction was implemented, a post-test was given, and the results were analyzed.

Data Analysis
Twenty-three students participated in this study. Pre-test and post-test results were analyzed to measure student growth. Results are shown below.

![Graph showing pre-test and post-test scores](image)

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Conclusions
As seen in the results in the graph, each student displayed significant growth throughout the unit. The class average raised from 35% on the pre-test to 82% on the post-test, resulting in a difference of 47% increase overall.