Analyzing Preservice Teachers’ Reflections of Their Mathematical Learning Experiences
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Abstract
The purpose of this study was to discover which mathematical experiences stood out the most for preservice elementary teachers. Using an assignment dictated by a prompt, 122 experiences were collected from 41 students. Frequency counts and percent of positive and negative experiences were calculated. The study suggests that experiences under the same category could be positive or negative. Additionally, the study proposes that the successes or lack thereof as determined by the student plays a prominent role in learning mathematics: positive, neutral and/or negative. After you have mentally reviewed these experiences, choose 3 of your experiences that you feel have had a significant impact on you as a learner of mathematics. On the left side of the page, draw a picture to illustrate each of your experiences. Beside each picture, provide a title for the picture. Next, on the right side of the page next to each picture, reflect on each of your pictures and titles. What were your feelings and emotions associated with each image?

Methodology
Participants and Setting
• 41 primarily female, Caucasian preservice elementary teachers enrolled in intermediate mathematics course
• Had at least 12 hours of mathematics courses
• Entered student teaching next semester

Design
• Qualitative Study
• Prompt: Find a nice quiet place. Relax, close your eyes, and imagine experiences from your past related to your experiences in learning mathematics: positive, neutral and/or negative. After you have mentally reviewed these experiences, choose 3 of your experiences that you feel have had a significant impact on you as a learner of mathematics. On the left side of the page, draw a picture to illustrate each of your experiences. Beside each picture, provide a title for the picture. Next, on the right side of the page next to each picture, reflect on each of your pictures and titles. What were your feelings and emotions associated with each image?

Data Analysis
The 122 learning experiences were analyzed using a constant-comparative method (Stauss & Corbin, 1998). In this method, the researcher is constantly examining the themes and categories that are emerging from the data. Individually, researchers initially categorized the drawings into positive, negative, and neutral experiences. They collaborated and agreed upon a final categorization for each experience. The frequency counts and percent of positive and negative experiences were calculated.

Results
• Experiences could be split up into 9 categories (5 neg, 4 pos)
• Immediate recall (neg) caused students to feel “embarrassed”, “nervous”, “stressed”, and “anxious”
• Stimulation (neg) was often characterized by boredom and worksheets
• Understanding (neg) was often linked to more challenging mathematics or not fully understand basic mathematical practices
• Stimulation (pos) often depicted hands-on activities or good mathematic strategies
• Success (pos) was characterized by students doing well in a course and having confidence

Categories of Learning Experiences

<table>
<thead>
<tr>
<th>Category</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Experience</td>
<td>9(13.0)</td>
</tr>
<tr>
<td>Instruction</td>
<td>19(33.3)</td>
</tr>
<tr>
<td>Stimulation</td>
<td>10(16.7)</td>
</tr>
<tr>
<td>Understanding</td>
<td>15(25.8)</td>
</tr>
<tr>
<td>Immediate Recall</td>
<td>19(32.7)</td>
</tr>
<tr>
<td>Positive (n= 52)</td>
<td>15(24.4)</td>
</tr>
<tr>
<td>Success</td>
<td>15(28.0)</td>
</tr>
<tr>
<td>Stimulation</td>
<td>19(32.7)</td>
</tr>
<tr>
<td>Teacher Experience</td>
<td>19(32.7)</td>
</tr>
</tbody>
</table>

Note: Percentages reflect the percent of each individual category.

Samples of Student Experiences

Conclusions/Implications
• Immediate recall and teacher experience exercises created strong reactions in both positive and negative categories
• A student’s interpretation of mathematics heavily depends on the level of success (or lack thereof) seen by the student
• These findings can be used to improve the mathematics education systems

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