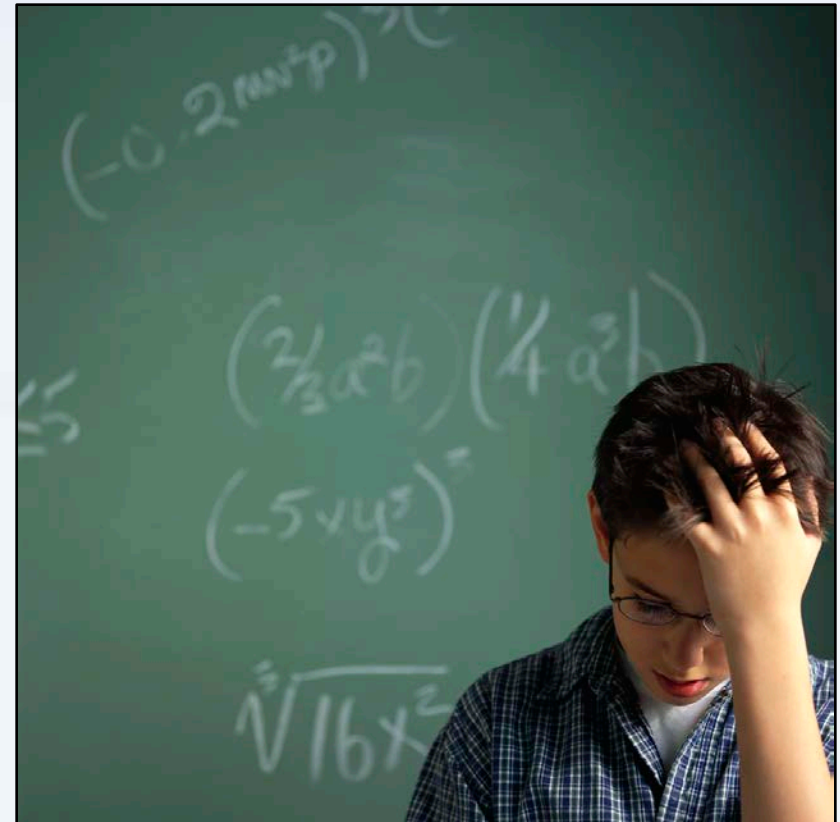


Educating Pre-Service Teachers on Effective Diagnosis and Correction of Math Errors Using Technology

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Introduction

- Teaching to teach math to young learners
- Exploring educational platforms to assist learning of diagnosing and correcting mathematical errors while teaching



Literature Review

- ❑ Potential for video-based teaching for student-centered approach (Friel & Carboni, 2000)
- ❑ Teachers need content, pedagogy & technology (Niess, 2006)
- ❑ Videos and discussions help recognize challenges (Star & Strickland, 2008)
- ❑ Video instruction connect knowledge to classroom context (Santagata, Zannoni & Stigler, 2007)

Research Questions

- *How* helpful are these supplemental teaching tools to the pre-service teachers' understanding of course content (diagnosing and correcting of mathematical errors)?
- In *what* ways are these teaching tools helpful to their understanding of course content?



Context and Participants



- Study conducted in a public university in Southeastern United States
- 24 pre-service teachers enrolled in an undergraduate education course participated in the study
- Used video clips produced by researchers that demonstrated practices of assessment and correction of mathematical errors

Data Collection Strategies

- **Online survey** following each clip
 - Helpful, useful & motivational
 - Overall feedback form: qualitative
- **Quantitative data**
 - Agreement scale
- **Qualitative data**
 - Common themes
 - Benefits and improvements



Findings

- **Helpfulness**

- Lowest agreement rate (87.5%): Videos “A” and “I”
- Highest agreement rate (100%): Video “D”

- **Usefulness**

- Lowest agreement rate (79.2%): Video “A”
- Highest agreement rate (100%): Videos “C” and “D”

- **Motivation**

- Lowest agreement rate (75%): Video “A”
- Highest agreement rate (95.8%): Video “D”

Findings

Words referring to visualizing repeated throughout the answers to the open-ended questions (32 times)

- *I was able to see it visually and auditory. It was like a second re-enforcer after class. (S15)*
- *The videos showed how to correctly administer and assess children's mistakes and how to correct them. It was good to see how it is done almost like in person. (S19)*
- *These videos broke down the process for me in order for me to easily follow the steps. (S25)*

Challenges and Limitations



- Users experiencing technical difficulties in accessing the video clips

Sample size
(n=24)

- Inadequate participation
- Inability to generalize due to limited respondents

Implications and Conclusion

- Visual aspect of videos enable a practical learning of diagnosing and correcting mathematical errors
- Videos are an effective tool to be employed in undergraduate teacher education classrooms
- Digital resources ease the learning experience of pre-service teachers



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