

Desired Traits of Preservice Math Teachers

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Abstract

There has been a constant shortage of highly qualified mathematics teachers in K-12 classrooms. To address the need for more math teachers, it is important to uncover the key factors that principals look for when hiring a new teacher in Hawaii. This research will elaborate on information from four individual principal interviews. Based on the feedback from the interviews, this study takes a closer look at identifying themes that support effective teaching qualities that are preferred in a mathematics classroom. The findings suggest that principals want to hire new teachers who demonstrate competence, people skills, kindness, teamwork, and receptiveness to new ideas. These common qualities were described as soft skills. The significant contribution of this case study will be used as a model for preservice teachers enrolled in a teacher preparation program working toward earning their teaching license. The results of this research will advance the knowledge of how preservice teachers as they prepare to seek full-time employment as classroom teachers.

1. Introduction

The Hawaii Department of Education has identified mathematics as a hard-to-staff area making the demand for teachers well-versed in mathematics an ongoing area of need in Hawaii [1]. This study began by looking at the characteristics of highly-qualified teachers. The goals were to 1) identify desired traits a preservice teacher needs to exhibit as they prepare to be hired to teach in a mathematics classroom and 2) determine if there has been a shift or change in the past three years that has had an impact on the ideal dispositions of new teachers. The research questions used to guide this study were: 1) What characteristics and traits do teachers need to demonstrate in a mathematics classroom? 2) What are the crucial factors that a principal is looking for when hiring a math teacher?

Hiring effective teachers can be a challenging task when a principal decides on the qualities of those they will hire [2]. Principals search to hire teachers with dispositions such as effective communication skills, relating well to students, and understanding different perspectives [3]. The principals look for teachers to demonstrate dispositions [4] that include, 1) Professionalism, 2) Reflectiveness, 3) Responsible, 4)

Respectfulness, and 5) Lifelong Learner.

2. Math Methods Course

At a local university on the Leeward side of O‘ahu, preservice teachers are required to take a semester-long math methods course their senior year before earning their Bachelor of Education degree. The math methods professor prepares preservice teachers to teach content, incorporate assessment strategies, expand their background knowledge, and create collaborative learning opportunities that contribute to their personal growth. The professor demonstrates teaching strategies, models desired performance tasks based on the standards, helps to develop their confidence in teaching mathematics, plans instruction to accommodate diverse students, and provides learning opportunities for hands-on problem-solving. Through experiences acquired in the math methods course, preservice teachers are expected to develop best practices, apply newly learned teaching techniques, and professionally conduct themselves.

3. Teacher Traits and Qualities

Quality teachers of mathematics promote creativity, critical thinking, communication skills, and collaboration for students to explore through hands-on tasks [5]. This would include creating an inclusive learning environment that engages students in discussing activities through analyzing mathematical ideas. Teachers need to create a positive classroom culture allowing students to feel comfortable asking questions instead of simply accepting answers [6]. Teachers want their students to have a positive attitude toward mathematics and the confidence to succeed and learn from each other as it plays a crucial role in education [7].

New teachers want to work toward a student-centered approach to give their students the foundation they need to become well-rounded and reach their full potential. Student-centered learning connects the students' interests to their preferred learning styles. This allows students to be creative, make pedagogical decisions, and explore interests at their own pace. A student-centered approach requires teachers to believe that all students can learn and have a growth mindset. A growth mindset is a framework

for looking at how students learn [8]. In the last decade, mindset ideas have affected education as teachers have discussed the significance of having a growth mindset and the importance of students trying hard while facing possible failure [9]. It is a belief that mistakes can be embraced and lead to better performance. When students develop a growth mindset they work and learn more effectively by forming new connections in their brains while challenging themselves when possibly facing failure [10].

Effective teachers emphasize discourse among students to make connections that deepen their understanding of mathematical procedures and engage them in the learning process. When students collaborate, they expand on new mathematical concepts [11]. The claim is that math helps to develop students' thinking through productive failures. By teachers creating relevant differentiated learning opportunities, students can retain mathematical information while using a variety of strategies. Every teacher can focus on making the classroom inviting as students' interests connect to the math content [11]. Teachers guide their students through the mathematical processes of systematic thinking creating greater independence and personalized learning that leads to the enduring understanding to lock in foundational skills.

To support instruction, the teacher must develop a well-rounded math program essential for best practices. When students feel they are safe, supported through strong systems and relationships, have experienced success, and are engaged in meaningful learning, they are more likely to enjoy learning and develop positive social skills. It is important to create supports rich learning experiences allowing students to take risks, learn through inquiry, and ask questions when they do not understand [12]. When having a deeper level of discussion, students can make their discoveries while talking about their thought processes when solving problems [13]. From this process, students increase their need to know why something works in math, not just how it works. Understanding why and how to solve problems requires students to acquire the proper language and terminology [14]. Thus, providing students with a supportive infrastructure in math is vital to their success.

When a teacher demonstrates soft skills, they further develop the teacher-student bond and emotionally connect with their students. This may be because soft skills are a way to increase social interactions, communicate clearly, enhance teamwork, and develop leadership skills [15]. Newly hired teachers need to develop soft skills to promote compassion, build connections, and celebrate students' achievements so they have more confidence in the math classroom. As a result, facilitating meaningful mathematical discourse and the

implementation of the desirable soft skills can bring a greater sense of community to the classroom.

4. Methods

This study will identify the characteristics principals in Hawaii look for when hiring new teachers and why it is important for preservice teachers to be aware of desired teaching traits. A qualitative research methodology [16] was used in this case study to collect data from individual face-to-face interviews. Within two weeks, interviews were conducted with a convenience sample of four male principals. Two principals were from elementary schools, one from the middle school, and one from the high school. Each principal had over 10 years of experience in an administrative leadership role.

The identical four open-ended questions were asked to determine what key characteristics that each principal looks for in a highly-qualified math teacher. After each interview was conducted, data was coded and placed in categories based on themes found in existing research on the topic and then combined to simplify reporting. The constant comparative methodology used coding procedures for analyzing data and helped to develop a grounded theory [17]. Two main categories were identified as common threads which emerged directly from their detailed responses.

5. Principal Interviews

Through face-to-face interviews conducted with four principals on O'ahu, data was collected as part of this study. The following are the questions that were asked along with the principals' responses:

1. What do you believe are the most important traits of a highly-qualified math teacher? Why?

All principals responded that they want their teachers to demonstrate soft skills and the joy of teaching. Soft skills would include communication, kindness, and collaboration. It was noted that being a team player would be a necessity at all grade levels. One principal said, "I want new teachers to show passion for the job regardless of the situation." Another principal replied, "I believe a valuable trait of math teachers means they need to be good listeners to promote mindful thinking and be able to clarify mathematical misconceptions." Three principals conveyed that important traits of effective teachers are for them to be lifelong learners who are driven to better themselves, take risks, have a growth mindset, be reflective, and not be hesitant of productive failures. To further elaborate, all principals described productive failures as mistakes that are viewed as learning opportunities.

2. What skills must a new teacher possess to make a positive impact on student learning?

The responses that the principals gave were that they wanted teachers to be able to 1) understand how learning takes place through individualizing and differentiating instruction, 2) provide a safe inclusive learning space for all students, 3) increase student interactions, 4) emphasize discourse to make connections that deepen students' mathematical understanding, and 5) build cultural connections. One principal replied, "I want my teachers to build a foundation in the mathematical processes that leads to an interconnection between the students' Ho'okō (achievement) and Hawaiian community culture." Another principal articulated that a new teacher has to be compassionate and have empathy to make a positive impact on student learning.

3. What dispositions do you believe a preservice teacher must have to be a "good fit" at your school

All principals agreed that desired dispositions of a preservice teacher would include their dedication to enhancing student learning, providing authentic feedback to students, promoting diversity in the math classroom, and being a strong role model for their students. Three principals communicated that they want teachers at their schools to be receptive to new ideas, accept feedback, and demonstrate a commitment to the profession. One principal stated, "It is important for my teachers to be able to build relationships in the community which demonstrates an invested interest in serving children and families who reside in our community." Finally, all principals described the importance of a new teacher embracing the Hawaiian ways of knowing through meaningful experiences that weave together Native Hawaiian culturally based practices and stewardship.

4. In the past three years, how have the desired qualities you look for when hiring a new teacher changed? Explain.

The principals agreed that they would still look for new teachers who exhibit a genuine love for teaching. However, all principals mentioned that in the past three years, they have noticed a shift in addressing the needs of the whole child in a more student-centered approach. The desired qualities were described as the list of "Ps."

- Putting students first
- Passion for teaching
- Personalize the learning
- Patience in the classroom

- Positive impact with positive results
- Prepared and organized
- Parent communication

The principals described the student-centered approach would assist new teachers to help their students build a solid foundation, develop self-esteem, reach their full potential, and receive social-emotional support. One principal said, "I look for a teacher who understands that a child's education and life outcomes are dependent upon their access to a safe welcoming learning environment in and out of school." Overall, the principals restated that to teach students at their schools, a teacher would need to be enthusiastic about teaching, respond to challenges, provide positive/authentic feedback, and be a team player.

When asked for additional comments at the end of the interviews, the four principals believed that many skills can be taught on the job. Furthermore, one principal said, "Extracurricular activities play a significant role in helping a teacher engage with students. My teachers attend extracurricular events, build relationships, and connect with students by promoting a sense of belonging while taking a sincere interest in their lives." One principal replied, "Advocating for children and putting them first shows great teacher leadership qualities." Another principal said, "Being open-hearted and open-minded is very important and makes a difference with students." One principal emphasized the importance of "developing a toolbox." The professional teaching toolbox would be a way of collecting information that includes approaches to make positive changes in the classroom, documentation of what was working, a physical place to compile resources, and identifying appropriate technologies. Overall, the principals expressed how important it was for all teachers to be professional, display integrity, be respectful, and use good judgment when interacting with others.

6. Conclusion

The purpose of this research was to identify desired traits needed by preservice teachers to help fill the hard-to-staff teaching positions. The outcome of the study provided insight into characteristics teachers need to demonstrate in a mathematics classroom. Based on the interview feedback, there are crucial factors that principals look for when hiring a new teacher. Additionally, principals noticed a shift in education that addressed the needs of the whole child in a more student-centered approach.

An examination of the aggregated data revealed two themes that serve as recommendations for practice:

- i. Enhance Soft Skills: need to model compassion,

be responsive to feedback, easily adapt to changes, build relationships, show patience, interact with students positively, show joy for teaching, and be a team player.

- ii. Develop Dispositions: enthusiasm for teaching, connecting with students, being open-minded, being reflective, communicating effectively, exhibiting genuine care, demonstrating a strong work ethic, and being a lifelong learner.

The principals believed that teachers who are more student-centered and demonstrate these traits can have a positive impact at their schools. Finally, this study serves as a model and has the potential to provide support to prepare preservice teachers when working toward earning their Bachelor of Education degree to become certified teachers in Hawaii.

7. References

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