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A Study on the Methods to Improve the Learning Ability of Students

Dr. Jesal S. Patel*

M.Sc, M.Ed, M.Phil, PhD, Principal Kameshwar College of Education Ahmedabad Gujarat University, Ahmedabad, Gujarat

Abstract – Initial Teacher Education can better prepare student teachers by considering the competences of the teacher more broadly than their subject knowledge – provided that the competences for diversity in the classroom are well defined. Students may have roots from around the world and speak a multitude of languages; but the teaching population remains largely homogenous and feels ill-prepared to teach students from such diverse backgrounds. Education systems need to make sure that teacher education opportunities equip teachers with the capacity to develop appropriate strategies for teaching and learning – especially relating to languages – as well as the ability to reflect on their own beliefs and cultural differences.

Keywords: Diversity, Education, Teacher

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INTRODUCTION

Classrooms are changing and in this first decade of the 21st century, teacher's need to be prepared for ensuring a high-quality education for an increasingly diverse school population coming from different racial, ethnic, linguistic and religious backgrounds, and differing abilities. Student diversity incorporates a number of dimensions including social class/socio-economic status, ethnicity, language, religion, disability, sexuality and special educational needs. It is important to recognize that these categories frequently overlap and when added together, it is clear that this is not a minority issue but is the reality of experience for all teachers and all potential teachers who will teach pupils from across this diverse spectrum.

Nevertheless, it is equally important to recognize that each of the dimensions does have a different 'history', with some having been classroom reality for many years and, therefore, being the subject of considerable research and literature, while other dimensions are relatively newly being recognized in mainstream classrooms and consequently much less has been written about them. Some dimensions are the subject of national legislation. Others are the subject of recent or imminent directives from the European Union (e.g. religion, sexual orientation, age).

Other dimensions are not yet subject to legislation as such (social class, language), although there may be national policy initiatives concerning underachievement, for example, which influence educational responses to children who are in lower achieving groups as a result of social class or language. Three main factors which appear to have highlighted diversity issues in education in recent years are demography, mainstreaming and underachievement. There has been a demographic and associated cultural shift due to the impact of an increasing number of immigrants in Europe and increasing mobility within and across countries.

At the same time, there has been a wide policy of mainstreaming of students with impairments or special needs, which calls 'for the acquisition by teachers of specific skills, such as the ability to offer teaching geared to individual needs and adapt the curriculum accordingly.

One may add to this the wider democratic concerns on the entitlement of each student to reach his/her potential, whether they are gifted or have a different learning style from the majority of the class.

Further, there is a new concern about the difficulties that are faced in modern society by youths who fail to achieve adequate levels of literacy or drop out of school, together with an awareness of the multiplicity and complexity of competences required in today's society.

METHODS TO IMPROVE THE LEARNING ABILITY OF STUDENTS

All teacher educators, whether engaged in theoretical approaches such as psychology, philosophy, or sociology of education, or as general or subject-specific pedagogy experts, have to consider how to respond to diversity in their teacher education.

Teacher educators also have to consider the diverse needs of an increasingly diverse student teacher population.

In keeping with the perspective of promoting cultural responsiveness by emphasizing sameness as opposed to otherness, textbooks and lesson plans which incorporate intercultural and critical perspectives are necessary in a multicultural, multilingual, pluralist educational system. If a textbook presents a single perspective, that of the dominant group, minority students are likely to be underrepresented and their realities minimized in an educational environment. The classroom is where young citizens learn about the values and mores of their country. Hence, if only dominant values are taught, a devaluation of the linguistic and cultural mores of minorities occurs and marginalization persists. Thus, the ultimate challenge for TEPs is to prepare reflective practitioners with sophisticated understandings of diversity and culturally relevant pedagogy who can connect, commit, and practice an ethos of care with heterogeneous students and their families.

Various studies have shown that teacher efficacy is an important component in demonstrating the ability of teachers to teach. The findings suggest that if teachers have a high belief in their ability to teach, students benefit from these teachers. While the results of teacher efficacy are consistent, the way in which teacher efficacy is measured is inconsistent.

One school of thought is to view teacher efficacy as a homogeneous phenomenon where teachers are viewed as having a common belief about their ability to teach as measured on a continuum from low to high efficacy. This approach is very common in measuring attitudes and beliefs and suggests that those with low or high attitudes or beliefs will have some effect on the academic outcomes of students.

However, the approach is limiting in that it does not allow researchers to determine at what point teacher efficacy starts to have a positive or negative effect of student outcomes.

The approach taken by the researchers of this study is that attitudes, behaviors, and professional approaches are seldom homogeneous. Agreeably, in examining teacher efficacy, researchers have used various techniques for demonstrating that teacher efficacy is a function of a two-group phenomenon in which a high and low teacher efficacy group is determined through various techniques including mean and median splits.

These approaches help in the understanding that those in a low scoring clustered group will perform differently than those in a high scoring clustered group. However, techniques such as mean and median splits are bias by nature. Given that groups are divided by a mean or median cutoff value, those with extremely low efficacy scores are measured against those with extremely higher efficacy scores.

Therefore, it should be expected that a significant difference between the two groups exists. However, researchers of this approach assume that the data is representative of two groups (a low- and high-score group). The limitation in this approach is whether the data is support of a two-group model, meaning what is the probability that the data totally represents a significant difference between groups.

Based on the two assumptions mentioned (homogeneous group beliefs and split-group beliefs), the research question of the present study is if teacher efficacy is statistically representative of one-efficacy group or representative of a multiple-efficacy groups using a more robust statistical analysis.

The robust statistical analysis chosen to address the research question was Latent Class Analysis (LCA). Generally, LCA is used to determine the conditional probability that outcome scores are reflective of subgroups of cases in multivariate data. In this current study, LCA was used to determine the probability or likelihood that mathematics efficacy of pre-service teachers is representative of a single clustered belief or representative of multiple sub-clustered groups.

DISCUSSION

An efficacy group is defined in the present study as participants quantitatively falling into a particular group (i.e., high, middle, or low) based on their personal mathematics teaching efficacy (PMTE) and mathematics teaching outcome expectancy (MTOE) score. The purpose of the present study was to analyze the Mathematics Teaching Efficacy Belief Instrument (MTEBI) scores for entering and midpoint pre-service elementary teachers (PSETs) based on their PMTE and MTOE scores using LCA to determine if teacher efficacy presented a one or multiple group model.

Based on Gibson and Dembo and Bandura's notice that efficacy is dependent on context, Enochs and Riggs developed a reliable preservice science teaching efficacy instrument, the Science Teaching Efficacy Beliefs Instrument (STEBI-B), which was modified from Riggs' in-service science teaching efficacy instrument (STEBI-A). This scale contains two subscales that measure personal teacher efficacy and outcome expectancy.

Formally, the subscales of STEBI-B are the Personal Science Teaching Efficacy Belief Scale (PSTE) and the Science Teaching Outcome Expectancy Scale (STOE). Enochs et al. later adapted the STEBI-B, creating the Mathematics Teaching Efficacy Beliefs Instrument (MTEBI).

Like the STEBI-B, the MTEBI is used with preservice teachers. The researchers found the two subscales, Personal Mathematics Teaching Efficacy Belief Scale (PMTE) and the Mathematics Teaching Outcome Expectancy Scale (MTOE) , to be a reliable and valid

instrument for measuring the mathematics teaching efficacy of pre-service elementary teachers (PSETs).

PMTE is the pre-service teachers' belief in one's ability to be an effective mathematics teacher, and MTOE is the pre-service teachers' beliefs that effective teaching of mathematics can bring about student learning regardless of external factors.

One approach categorizes participants as a homogenous group based on their efficacy scores. The second approach assumes that there are subpopulations (high and low efficacy) within the study population. This categorization of teachers used by researchers is important because they do not assume that all participants within a group represent one efficacy group. However, previous teacher efficacy research has not typically used sound statistical methods for determining the composition of the reported high- and low-efficacy groups.

The concept of teacher efficacy as a multidimensional model consisting of general and personal efficacy is well established in the literature. However, the concept of efficacy as a multilevel model with more than one non-homogeneous group is not as well established.

In Bandura's work, he describes various levels of teacher efficacy. His findings suggest groups of low and highly efficacious teachers, with highly efficacious teachers described as having a strong ability to teach difficult students. However, few researchers have evaluated teacher efficacy as a non-homogeneous model.

The work proposes that those who score lower on teacher efficacy scales are to some extent different from teachers who score high on teacher efficacy scales. However, statistical analyses are needed to confirm that there are two different efficacy groups.

To determine if efficacy is a one-group, two-group, or multi-group model, statistical analysis such as Latent Class Analysis is needed. This analysis categorizes individuals into classes based on an outcome variable. The analysis has two basic functions. First, the analysis is used to determine the optimal number of classes or groups that best fits the data. Second, the analysis is used to predict the probability that an individual will belong to a particular group or class.

CONCLUSION

Different from the median-split approach, this analysis does not assume that two groups are the best description of the data. Further, unlike median-split, LCA does not assign subjects to a group based solely on high or low scores. The analysis assesses the probability that an individual will be associated with a particular class based on "a set of mutually exclusive latent classes that account for the distribution of cases that occur within a cross tabulation of observed discrete variables".

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Corresponding Author

Dr. Jesal S. Patel*

M.Sc, M.Ed, M.Phil, PhD, Principal Kameshwar College of Education Ahmedabad Gujarat University, Ahmedabad, Gujarat