



## **KNOWLEDGE OF DIVERSE LEARNERS: IMPLICATIONS FOR THE PRACTICE OF TEACHING**

**Fadzilah Abd Rahman, Jon Scaife, Nurul Aini Yahya & Habibah Ab Jalil**  
Faculty of Educational Studies, University Putra Malaysia, Malaysia  
*fadzilah@educ.upm.edu.my*

Knowledge of Diverse Learners (KDL) is increasingly recognized as an essential component of knowledge base for effective teaching as in today's schools, teachers must be prepared to teach a diverse population of student (Banks et al. 2005). In other words, teachers need to be aware that their students in a classroom are and always have been different from one another in a variety of ways. KDL refers to an understanding of diversity of students in terms of their abilities and interests and how they respond to diverse situations; an application of different teaching strategies; and how various types of classroom activities might be managed. Although KDL has come to be seen as important, details of its development, depth and quality among pre-service teachers (PSTs) has remained something of mystery, as has the capability of PSTs to adapt and employ KDL into their actual teaching. As an effort to develop coherent understanding of the feature of prospective teachers regarding KDL, this paper addresses three questions. First, to what extent are the PSTs prepared for KDL as they are finishing the teacher education programmes? Secondly, how do the PSTs apply the KDL in their teaching practices? Thirdly, how do PSTs reflect on their practice in undertaking the elements of KDL during the teaching practices? This paper illustrates the results of a study involving a sample of 74 PSTs at a university in Malaysia. At the beginning of the study, 74 PSTs were given a questionnaire. 11 PSTs have been observed and interviewed. Result indicates that PSTs were able to develop KDL and show their understanding of it, yet not readily apply such knowledge in modified situations

Key Words: diverse learners, pre service teachers, perspectives and practices

### **INTRODUCTION**

Diversity is an apart of the nature of the human species, and students are and always have been different from one another in a variety of ways (Banks et al., 2005). Recent research studies into effective teaching tend to indicate that

teaching is not any longer considered as a linear process of transmitting knowledge from the teacher to students, or from educational materials to students. In turn, the demands on teachers mean that not only they need to be able to keep order and provide useful information to students, but also to be increasingly effective in enabling a diverse group of students to learn ever more complex material and develop a wider range of skills (Arends, 2004; Rivkin *et al.*, 2000; and Wright, Horn & Sanders, 1997; Barnes, 1989). Clearly, in today's schools, teachers must be prepared to teach a diverse population of students.

Why is knowledge to deal with diverse groups of students such an important element in teaching? Linked to the idea of a knowledge base for teaching, Shulman (1987) asserts that in order to teach one needs a breadth and depth of knowledge of teaching and a rich factual knowledge base with many interconnections which represent a much more thorough understanding than that which is achieved purely as a curriculum learner. He refers to this as pedagogical content knowledge, that is, an understanding of how particular teaching, subjects, topics, problems, or issues are organized, presented, and adapted to the diverse interests and abilities of learners, and presented for instruction. This can be seen that teachers have always needed to address the diverse learning needs of their students; current and projected demographic trends prompt many educators to believe that awareness of and sensitivity to diverse learners have become even more pressing needs (Gay, 2003).

In existing classroom situations, pedagogical content knowledge is recognized as an essential component in assessing pre qualified teachers (PQTs) or in establishing 'quality teaching'. Moreover, pedagogical content knowledge has been described as a component of the important 'knows how' that PSTs should develop during their teacher education programme. Carpenter, Fennema, Peterson, and Carey (1988) claim that pedagogical content knowledge was positively linked to the students' achievement. Teachers with stronger pedagogical content knowledge were found to represent content more accurately (Gudmundsdottir, 1987, 1990; Wilson and Wineburg, 1988). Calderhead and Shorrock (1997, p. 13), stressed that developing pedagogical content knowledge requires not only an understanding of the subject matter, but also an understanding of children, their abilities and interests and how they tend to respond to different situations, and an appreciation of different teaching strategies and how various types of classroom activities might be managed. Thus, it can be considered that teachers have always needed to address the diverse learning needs of their students.

### **Defining Knowledge of Diverse Learners**

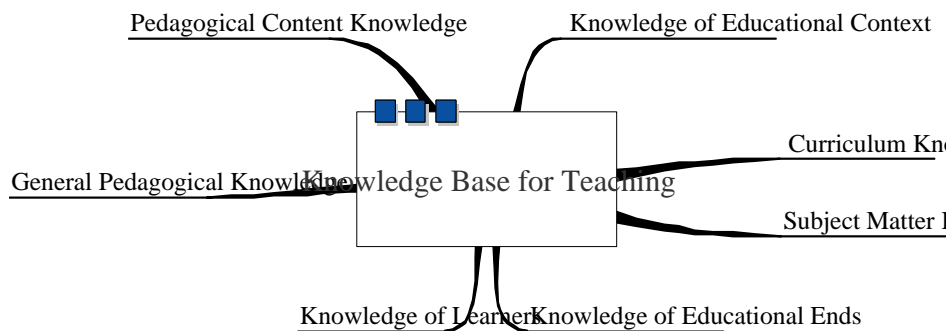
Since the early 1980s, the study of teachers' knowledge has received increasing attention from educational researchers of various disciplines and of different school subjects, particularly in the United States, Canada, and other western countries (Shulman, 1986; Clandinin & Connelly, 1995; Putnam & Borko, 2000). Teachers' knowledge also has been conceptualised by researchers in terms of beliefs, practical theories, or knowledge in action (Putnam and Borko, 1996; Schön, 1983). In addition, teachers' knowledge has been recognised as teachers' cognition, which includes metaphors, practical knowledge, beliefs, images, and events (Carter & Gonzalez, 1993).

In describing a category of knowledge, it is important to note that any categorization of teachers' knowledge and beliefs is somewhat arbitrary and there is no single system for characterising the organization of teachers' knowledge (Putnam and Borko, 1996). As the KBT has grown, fundamental concepts of teaching, learning, learners, and subject matter dynamically change. Thus, there is no definite concept of bounded knowledge base for teaching (KBT) on which everyone is agreed.

Valli and Tom (1988) claimed that KBT organise the domains of knowledge for teaching and guides how the knowledge is taught and learned in a teacher education programme. The phrase KBT is also linked to teacher assessment. In designing a new assessment of performance for beginning teachers, Reynolds (1992) first determined the sorts of tasks a beginning teacher should be able to do and then tried to identify what types of knowledge and skills are required in order to perform those teaching tasks effectively.

Among seven specific categories of teacher knowledge proposed by Shulman (1987) (Figure 1), he included a substantial and essential category namely knowledge of learners, that is, a specific understanding of the learners' characteristics and how these characteristics can be used to specialise and adjust instruction.

Figure 1: Teachers' Knowledge Base Categories (adapted from Shulman, 1987)



Knowledge of learners (KLS) consists of different elements namely the empirical and cognitive knowledge of learners. Empirical or social knowledge is a knowledge of what children of a particular age range are like, their social nature, how they behave in classrooms and schools, their interests and preoccupations, how contextual factors such as non routine events or adverse weather can have an effect on their works and behaviours, and the nature of the child-teacher relationship.

Besides that, cognitive knowledge of learners consists of two elements. First, there is the knowledge of theories of child development, which informs practice. The second element is context-bound to a particular group of learners: the kind of knowledge that grows from regular contact with these learners, of what they know, of what they can do, and of what they are likely to be able to understand. From this kind of knowledge come the skills and processes of adaptation activities and representations to the needs of particular learners; in other words of differentiation for differing abilities.

### Examining Knowledge of Diverse Learners

The disparity that is often present between the cultural backgrounds of students and teachers, this disparity in background can be problematic unless teachers are knowledgeable regarding the commonalities and differences among their students. We now know that students do not bring the same ways of knowing, language, family expectations, or strategies for learning to school (Cleary & Peacock, 1998; Heath & Mangiola, 1991), and there is often a mismatch between ways of learning at home and ways of learning at school. This mismatch contributes to students falling behind and failing to meet their potential as learners (National Center for Research on Education, Diversity, and Excellence Report, 2003; Viadero, 2004).

Effective teachers recognize differences among their learners and have the capacity and willingness to understand the impact of dissimilar backgrounds and abilities on learning (Wiseman, Cooner and Knight, 1999). With understanding and appreciation for diversity, successful teachers will be able to make effective decisions that allow them to respond to their students in appropriate ways.

As an effort to draw coherent understanding of the features of prospective teachers regarding KDL, this paper addresses three questions. First, to what extent are the PSTs prepared for KDL as they are finishing the teacher education programme? Secondly, how do the PSTs apply the KDL in their teaching practices? Thirdly, how do PSTs reflect on their practices in undertaking the elements of KDL during the teaching practices?

## **METHOD**

Based on the purposes and objectives of the study, the data gathering techniques of questionnaires, non-participant observation, and semi-structured interviews have been employed.

### **Participants**

The selection of the samples in this study was based mainly on purposive sampling to build up a sample that was satisfactory for specific purpose, that is, a group of PSTs were chosen on the basis of their programme, teaching experience and information that they responded with in the questionnaire. In order to be more focused, the research sample was narrowed to the PSTs from a specific Bachelor of Education programme, namely Teaching Malay as a First Language. The programme of Teaching Malay as a First Language has been chosen owing to researcher background and experiences in dealing with the PSTs in that programme. Out of 74 respondents who answered the questionnaire, 11 were selected and agreed to participate in further observations and interviews.

### **Bricolage as a Methodology of Research**

Denzin and Lincoln (1994) claim that the experience and background of the researcher very much reflect the journey of research. According to Denzin and Lincoln (1994), anyone who has experience of different research 'paradigms', such as positivist, constructivist or action-oriented research, is likely to have engaged in an 'overlapping journey'. This 'overlapping' gave rise to the notion of the 'bricolage' approach. Bricolage comes from the French word '*bricoleur*', referring to 'someone who uses whatever tools are at hand to get the job done' (Levi-Strauss, 1974). In educational research, the term bricolage is commonly

used to describe the employment of multiple methodologies. Denzin and Lincoln (2005, p. 5) claim that the use of a combination of methods, data, or perspectives in a study is a strategy that can add rigor, breadth and depth to any phenomenon in question. Tashakkori and Teddlie (2003) claim that 'by combining methods in one study we can confirm and explain, verify and generate theory, all at the same time'. In addition, Gorard (2004) points out that the use of a single method with phenomena presenting multiple appearances is likely to lead to a fragmented account.

In relation to research of KDL as it is a kind of pedagogical knowledge, the bricolage approach can be considered appropriate because of the inherent complexity of KDL. As in the production of a collage, a bricolage approach aims to create a compilation in order to develop a new picture from different perspectives (Abd Rahman & Scaife, 2005).

## RESULTS

The overall purpose of the study was to provide a coherent understanding of the nature of knowledge of diverse learners (KDL) among pre service teachers (PSTs) towards the end of their teacher education programme from various perspectives. This was achieved by identifying PST self ratings about their KDL perspective, examining their practices of KDL, determining how PSTs reflected on their practice in relation to KDL, and describing PSTs development of their KDL. Thus in this section PSTs' self ratings of KDL performance, PST practices of KDL and PST reflections of their KDL practices will be discussed.

### *Self-Rating of Knowledge of Diverse Learners*

Addressing student diversity was one of the two sub components in the KLS, and results are shown in Table 1.

Table 1. Pre-Service Teachers Addressing Students' Diversity

|  | <i>n</i> | <i>Min.</i> | <i>Max</i> | <i>M</i> |
|--|----------|-------------|------------|----------|
| Teaching goals that address the diversity of students' ability | 74       | 3           | 5          | 4.0      |
| Teaching strategies based on learners' learning styles         | 74       | 2           | 5          | 3.6      |
| Teaching material matching students' interests                 | 74       | 3           | 5          | 3.8      |
| Teaching material matching students' background                | 74       | 2           | 5          | 3.6      |
| Designing assessment that are significant for all students     | 74       | 2           | 5          | 3.7      |

Overall *teaching goals that address the diversity of students' abilities* was the easiest way for the PSTs to address diversity (M=4.0), while *teaching strategies based on learners' learning style* (M=3.6), *teaching material matching students background* (M=3.6), and *designing assessments that are significant for all students* (M=3.7) presented more of a challenge. Thus, we can conclude that PSTs were able to develop teaching goals that were related to different students' ability levels, but less able to transform those goals into specific strategies, materials, and assessments.

#### *Practices of Knowledge of Diverse Learners*

For practices of knowledge of diverse learners, observations were based on the following scale:

**3=considerable application inferred** – *PST displays thorough knowledge of students characteristic, their approaches to learning, interest and background; and assessment criteria and standard are clearly communicated to students and feedback usually gained*

**2=moderate application inferred** – *PST displays understanding of students characteristics, their approaches to learning, interests and backgrounds; and assessment criteria and standard are clearly communicated to students*

**1=low application inferred** – *PST displays generally knowledge of student characteristic; and assessment criteria and standard have been developed, but they are either not clear or have not been clearly communicated to students*

**0=could not be detected** – *PSTs display minimal knowledge of students' characteristics and assessment that proposed contains no clear criteria or standards*

Observations related to the knowledge of learners and self-practices are summarized in Table 2. There were six specific areas of interest within this category: learner background, learner interests, learner capabilities, learning style, multi-level questioning, and using various assessments.

Table 2. Summary of Observation Regarding KLS Practices

|                                     | <i>Learners' B.ground</i> | <i>Learners' Interest</i> | <i>Learners' Capabilities</i> | <i>Learnin g Style</i> | <i>Multi-level Question.</i> | <i>Various Assessments</i> |
|-------------------------------------|---------------------------|---------------------------|-------------------------------|------------------------|------------------------------|----------------------------|
| 3=Considerable Application Inferred | 0                         | 0                         | 0                             | 0                      | 0                            | 0                          |
| 2=Moderate Application Inferred     | 6                         | 6                         | 2                             | 0                      | 1                            | 2                          |
| 1=Low Application Inferred          | 4                         | 5                         | 8                             | 7                      | 4                            | 4                          |
| 0=Could Not Be Detected             | 1                         | 0                         | 1                             | 4                      | 6                            | 5                          |

Overall, the highest performance was in terms of learners' backgrounds and learners' interests, with six PSTs receiving ratings of moderate application inferred (the only categories with more than 2 PSTs in this category or higher). The lowest performance was in the area of multi-level questioning, using various assessments, and learning styles, with 6, 5, and 4 PSTs receiving the lowest ratings respectively.

#### *Reflection on Knowledge and Practices of Knowledge of Diverse Learners*

In this section of the interview, the interviewees' survey responses were examined, and specific questions about their responses were asked. Therefore there were different questions asked of each PST, although there was some overlap in terms of the questions asked. The survey responses of ten of the eleven interviewees led to a question regarding multi-level questions in the classroom. Many of the students who were asked about this felt that they did not adequately present questions in a multi-level format, with one noting that:

*I normally ask low level question because students could not understand high level question (Alin)*

Others noted that the stated course objectives were more strongly tied to the low level questions, and therefore that:

*I rarely applied them [the higher level questions] because probably I was afraid that the objective wouldn't be able to be achieved (Muis)*

Seven of the eleven interviewees noted that it is important to assess their students' current level of knowledge before teaching a lesson. For example, one interviewee noted that:



*Think[ing] of the students' abilities is the most important element (Alin)*

Another indicated that:

*We have to observe whether the students have been exposed, if they haven't, than we need to give the basic knowledge about that subject (Muis, )*

In addition, four interviewees indicated that they were satisfied with the way they controlled the class. Three interviewees indicated that they were most satisfied in how they had gotten to know their students on an individual basis, while two indicated that they were very good at developing student motivation.

## **DISCUSSION**

In the interpretation of results, this section first discusses PSTs' perspectives on KDL performance, followed by an interpretation of PST practices of KDL. The final subsection focuses on consistency between PST perspectives and their KDL practices to determine either if the vision and the reality blend well or the two were separate entities.

KDL in general had been developed by all PSTs and almost reached the mean of average level. Teaching practices in general showed, for example, that the PSTs related good values during the lessons were to be able to write a complete daily lesson plan and were familiar with the current teaching syllabus. They were less knowledgeable in gathering feedback from the assessments given and asking multi-level questions to the students.

Thus it was shown in the literature that teachers had acquired basic abilities but had lesser knowledge in applying more complex tasks and asking complex questions of their students. The most challenging practices for the PSTs were apply teaching strategies based on learners' learning styles, teaching materials matching to students' backgrounds, and designing assessments that were significant for all students. Perhaps this was because the teaching process for the PSTs centered more to knowledge transmission than on learning facilitation. As Gow and Kember (1993) have explained, those who function under the knowledge transmission orientation focus on content delivery. This does not allow them to perceive teaching as a facilitative process which assists students in developing problem solving skills and critical thinking abilities.

KDL practice scores also showed that PSTs had developed teaching goals that related to student ability levels, but could not convert these goals into specific materials and approaches to help students improve. Of the more important general KDL dimensions, PSTs scored lowest in class management and pupil motivation and highest in teaching approach and strategy.

Practices also showed that PSTs were able to match the terminology and language they were using to the students' attainment level and to make comparisons between the subject matter and student experiences, but were having problems creating additional examples related to the subject matter.

Reflection on practices is an important part of constructing KDL. Reflective practice, as explained by Kane *et al.* (2002), allows an examination of teaching theories and a review on the part of the teacher to reconsider the difficult problem or experience in the light of new or revised knowledge. As previously noted, reflective practice requires persistent and careful consideration of the problem or issue in the light of constructed knowledge and beliefs (Noffke and Brennan, 1988). It requires reflecting on the problem with an attitude of open-mindedness, taking responsibility for whatever the outcome of the reflection. The process starts when the PST encounters a complex and difficult experience or classroom event—one that cannot be adequately addressed immediately and requires time for resolution.

## CONCLUSION

The best performance was in terms of learner background and learner interests, while the lowest was in the areas of multi-level questioning, using various assessments, and learning styles. Another area of integration relates to the types of tasks that the PSTs were able to do, and the results across data sources indicated that the simpler tasks and responsibilities were being addressed adequately, while the more complex tasks and responsibilities presented more of a problem. For example, results from the survey indicated that multi-level questions presented a problem for these teachers, as was demonstrated in both the survey data and the observational results. In fact, some of the lowest ratings that the PSTs received for any of the items on the observational data were for multi-level questioning. The interview results similarly confirmed that the PSTs were much more likely to ask direct, low-level questions than multi-level or high-level questions.

There were two conditions in relation to the consistency of PSTs' perspectives and practices of KDL that have been revealed from this study. First, there is a condition where PSTs' perspectives were compatible with their practices. Second, there was a condition where PSTs believed they had developed a good KDL whereas their perspectives were not compatible with their practices. In other words when PSTs believed they are good in certain dimension it is not necessarily true in actual practices.

In relation to the first condition, from the perspectives of the PSTs, their perceptions as related to their practices were closely aligned. Specifically, as

reflected to their self-ratings versus their actual practices, their perceptions indicated that the PSTs felt least confident in their proficient to deal with student diversity. This was demonstrated in their practices, through the observations as well. In summary, PSTs' perspectives and their practices of KDL were very much in line with each other.

On the other hand, referring to the second condition, they believed that they had developed a good knowledge but this is just their perception which was clearly higher than the reality. While their scores were good, they were still a little below average in the practices.

In summary, it was concluded from the analysis that PSTs underwent significant promising learning during the teacher education programme and adequately met challenges in confidence and skill building in the area of KDL. The one aspect in need of the most improvement, however, was found to be the application of reflective skills for improving their practices because PSTs needed more confidence in their newly constructed skill (KDL) as they were hesitant to approach others to discuss the problems. It is therefore recommended that teacher education programmes include more practices on reflective skill building to develop the type of reflective skills that will result in continuous, life-long development of performance. PSTs should be exposed to real situations involving multiple components of KDL development. Teacher educator roles are to help them to see the problems of practice that the situation presents.

**REFERENCES**

- Abd Rahman, F., and Scaife, J. A. (2005). Assessing pre service teachers' pedagogical content knowledge using a 'bricolage' approach. *International Journal of Learning*, 12(10), 81-92.
- Arends, R. I. (2004). *Learning to teach* (6<sup>th</sup> Ed.). New York: McGraw-Hill.
- Barnes, H. (1989). Structuring knowledge for the beginning teachers. In Reynolds, M. C. (Ed.). *Knowledge base for the beginning teacher*, 13-22. Oxford: Pergamon Press.
- Calderhead, J., & Shorrock, S. (1997). *Understanding teacher education: Case studies in the professional development of beginning teachers*. London: Falmer Press.
- Carpenter, T., Fennema, E., Peterson, P., & Carey, D. (1988). Teachers' pedagogical content knowledge of students' problem solving in elementary arithmetic. *Journal for Research in Mathematics Education*, 19, 385-401.
- Carter, C., & Gonzalez, L. (1993). Beginning teachers' knowledge of classroom events. *Journal of Teacher Education*, 44, 223-232.
- Clandinin, D J., & Connelly, F. M. (1995). *Teachers' professional knowledge landscape*. New York: Teachers College Press.
- Cleary, L. M., & Peacock, T. D. (1998). *Collected wisdom: American Indian education*. Needham Heights, MA: Allyn & Bacon. (ERIC Document Reproduction Service No. ED 422 138)
- Darling-Hammond, L., Bransford, J., & LePage, P. (2006). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco: Jossey-Bass.
- Denzin, N. K., & Lincoln, Y. S.(Eds.) (1994). *Handbook of qualitative research* (1<sup>st</sup> Ed.). New York: Sage Publications.
- Denzin, N. K., and Lincoln, Y. S (2005). *Handbook of qualitative research*.(Eds.) (3<sup>rd</sup> Ed.). New York: Sage Publications.
- Gay, G. (2003). The importance of multicultural education. *Educational Leadership*, Dec. 2003, 30-35.
- Gorard, S. (2004). *Combining methods in educational and social research*. Berkshire: Open University Press.

- Gow, L., & Kembe, D. (1993). Conceptions of teaching and their relationship to student learning. *British Journal of Educational Psychology*, 63, 20-33.
- Gudmundsdottir, S. (1987). *Learning to teach social studies: Case studies of Cathy and Chris*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.
- Gudmundsdottir, S. (1990). Values in pedagogical content knowledge. *Journal of Teacher Education*, 3(41), 44 -53.
- Heath, S. B. & Mangiola, L. (1991). *Children of promise: Literate activity in linguistically and culturally diverse classrooms*. Washington, DC: NEA Professional Library.
- Kagan, D. M., & Tippins, D. J. (1991). How student teachers describe their pupils. *Teacher and Teacher Education*, 62 (2), 129-169.
- Kane, R., Sandretto, S., & Heath, C. (2002). Telling the half story: A critical review of research on the teaching, beliefs and practices of university academics. *Review of Educational Research*, 72 (2), 177-228.
- Putnam, R. T., & Borko, H. (1996). Learning to teach. In R. T. Putnam, (Ed.). *Handbook of educational psychology*. New York: Macmillan.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning. *Educational Researcher*, 29(1), 4-15.
- Reynolds, A. (1992). What is competent beginning teaching? A review of the literature. *Review of Educational Research*, 62, 1-35.
- Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2000). Teachers, schools and academic achievement. Retrieved on March 23 2004, from <http://www.utdallas.edu/research/greenctr/papers>
- Shulman, L. S. (1986). Paradigm and research programs in the study of teaching. A contemporary perspective. In Wittrock, M. C. (Ed.). *Handbook of research on teaching*. New York: McMillan.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.
- Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social and behavioural research*. London: Cassell.
- Wilson, S. M., & Wineburg, S. S. (1988). Peering at history through different

lenses: The role of disciplinary perspectives in teaching history. *Teachers College Record*, 89 (4), 525-539.

Wiseman, D. L., Cooner, D. D., & Knight, S. L. (1999). *Becoming a teacher in a field-based setting*. New York: Wadsworth.

Wright, S. P., Horn, S. P., & Sanders, W. L. (1997). Teacher and classroom context effects on student achievement: Implication for teacher evaluation. *Journal of Personnel Evaluation in Education*, 11(1), 57-67.